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TWO ESSAYS ON THE ROLE OF EMPATHY IN CONSUMER RESPONSE TO USER-
GENERATED CONTENT

ESSAY 1: IS THIS 4.0-STAR EQUAL TO THAT 4.0-STAR? INVESTIGATING THE ROLE
OF PERSPECTIVE-TAKING IN CONSUMERS' INFERENCE FROM ONLINE REVIEWS

ESSAY 2: MORE THAN A SELFIE: INVESTIGATING THE CONTAGIOUS EFFECT OF
EYE GAZE ON BOOSTING THE IMPACT OF POSITIVE USER-GENERATED CONTENT

By

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ABSTRACT

TWO ESSAYS ON THE ROLE OF EMPATHY IN CONSUMER RESPONSE TO USER-GENERATED CONTENT

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GENERATED CONTENT**

Mohammadali Koorank Beheshti

Old Dominion University, 2022

Director: Dr. Yuping Liu-Thompkins

Empathy is known to be the basis of all human interactions and an essential component of human psychology. Empathy includes a cognitive component (perspective-taking) and an affective component (e.g., emotional contagion). The two essays of my dissertation investigate how each of these components of empathy affect consumer responses to user-generated content.

Essay 1: Although both price and online review ratings are important cues in consumers' product quality judgment, most previous studies have treated price and review ratings as separate inputs into consumer decision-making. The current research shows that the two cues are intertwined, such that consumers' perception of the same review rating is different depending on the price of the rated product. Through four experimental studies with a variety of operationalizations, I show that consumers have the tendency to adjust the review rating of higher-

priced products upwards compared with that of lower-priced products. For example, the same 4.0-star rating signals a higher-quality product when the price is \$37 than when the price is \$17, above and beyond the quality signaling effect of the price itself. This price-based bias in review rating perception is attributed to consumers taking the perspective of review writers and to the shared knowledge of review writers taking the price paid into consideration when rating a product. This research extends the existing literature on online reviews by introducing perspective-taking as a metacognitive mechanism that can influence consumers' responses to online reviews.

Essay 2: Companies make significant efforts to encourage positive word-of-mouth (WOM) about their brands on social media. One common tactic is to encourage consumers to post a picture of themselves (i.e., a selfie) with the product on social media. The current research investigates the role of eye gaze in such social media messages in facilitating emotional contagion and its subsequent effects on consumers' engagement with the content and attitude toward the associated product. Through five online experiments and one lab experiment using facial expression analysis, I show that the mere presence of direct (vs. averted) eye gaze facilitates the transfer of emotions expressed in a positive message, which in turn, leads to positive downstream consequences. I also explore two boundary conditions of this emotional contagion effect, the valence of emotion shown in the selfie and the concurrent cognitive load of the consumer. This research contributes to marketing research by extending our knowledge of eye gaze effects beyond the cognitive mechanisms and attentional effects typically considered in previous studies. It suggests a more primitive, automatic process through emotional contagion.

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I dedicate this dissertation to the beloved members of my family who mean so much to me and never deprived me of their love and support. First and foremost, my parents Amir and Zahra who always loved me unconditionally and are the constant source of inspiration for me. I have no words to express my feelings and gratitude to you. I love you!

Next, my siblings Fatemeh and Mehdi who are the source of support and encouragement during the challenges of my life. I love you too! I also dedicate this dissertation to my aunt Shahin and my uncle Iraj who were always there for me, especially on the tough days. Last but not the least, I'm dedicating this dissertation to my grandfather Nematollah who is no longer in this world but will always remain a great source of inspiration to me.

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GENERAL INTRODUCTION

“The commercial pressure comes more from consumers’ peers and friends, rather than from ads” (Berg 2018, P. 380).

Retailers’ websites and social media platforms are full of brand-related content posted by regular consumers and social media users. Consumers post diverse types of content including texts, images, and videos to share their brand experiences with others (Zheng 2021). These user-generated-contents have been widely shown to play an important role in consumers’ decision-making process (BrightLocal 2018).

Online reviews posted by regular consumers are among the earliest types of online word-of-mouth and have become an essential part of consumers’ decision-making (Zheng 2021). Due to their growing importance in consumers’ decision-making journey, online reviews posted on retailers’ websites and the research to understand them grew considerably in the past decade (Rocklage and Fazio 2020). This stream of research offers strong evidence that online consumer reviews affect different aspects of consumers’ purchase decisions including brand image (Jalilvand and Samiei 2012), product choice (Senecal and Nantel 2004), consumer attitudes (Shihab and Putri 2019), and shopping decisions (Maslowska et al. 2017). Online reviews provide valuable information for consumers, including review rating that is known to be the most prominent information (Kordrostami and Rahmani 2020) and has been shown to affect consumers’ assessment of product quality (Filieri 2015).

In contrast to online reviews, brand-selfie is a more recent type of user-generated content that has become popular among both social media users and brands (Taylor 2020). “Selfie” was named the word of the year in 2013 by Oxford Dictionaries (Hartmann et al. 2021). It is estimated that millennial social media users are likely to take more than 25,000 selfies in their lifetime (Glum

2015). More than 475 million images with the hashtag #selfie are posted on just one of the photo-sharing platforms, Instagram. Not surprisingly, this popular phenomenon (selfie) attracted the attention of marketing practitioners. As a result, many companies such as Lay's potato chips, Turkish Airlines, Budweiser, and Coca-Cola designed marketing campaigns to encourage consumers to post selfies featuring their products (Karp 2015; Hartmann et al. 2021). For example, Coca-Cola invented a selfie-snapping bottle named the "Selfie Bottle" to accommodate consumers taking selfies while drinking (Pendlebury 2016). As brand-selfies proliferated, marketing researchers have started to investigate the selfie phenomenon as a new type of electronic word-of-mouth on social media. This growing body of research provides evidence of the power of brand-selfies in influencing consumers' behavioral intentions such as purchase likelihood (Jin et al. 2018).

The overarching goal of my dissertation is to extend our knowledge of the psychology of consumer-to-consumer interactions through user-generated-content such as online reviews and brand-selfies. In particular, my two essays draw upon the common theoretical background of empathy. Despite a large body of research on user-generated-content, there is limited investigation of the role of empathy in such consumer-to-consumer interactions. Yet psychology researchers consider empathy to form the very basis of all types of human interactions (Duan and Hill 1996) and to be a key component of psychological phenomena (Kohut 1959). The limited consideration of empathy in consumer-to-consumer interaction through user-generated content is therefore surprising and should be remedied.

Formally defined, empathy refers to "the reactions of one individual to the observed experiences of another" (Davis 1983, p.113). Scholars agree that empathy is a multidimensional construct with both cognitive and affective aspects. The cognitive component is known as

perspective taking (Preston and de Waal 2002), which enables a person to understand the roles or viewpoints of another person (Devoldre et al. 2010). This cognitive aspect of empathy forms the primary theoretical basis of my first dissertation essay. The affective aspect of empathy refers to the ability to feel an emotional response to others' emotional state (Davis 1983). My second dissertation essay focuses on one common form of affective empathy, emotional contagion, commonly used to describe humans' tendency to take on and mimic the emotional state of others (Preston and de Waal 2002).

By studying the role of empathy in consumer-to-consumer interactions through two important types of user-generated-content, my dissertation offers a deeper understanding of the psychology of interactions among consumers in online environments. The two essays of my dissertation investigate how each of the cognitive and affective components of empathy affects consumer responses to user-generated content. By investigating the role of perspective-taking in consumers' inference from online review ratings, the first essay enhances our understanding of indirect consumer-to-consumer interactions when shopping online. The second essay is centered on consumers' interactions through brand-selfies posted on social media. This essay studies how the presence of direct (vs. averted) gaze facilitates emotional contagion from selfies-taker to the viewer and, in turn, enhances the effectiveness of positive brand-selfies.

ESSAY 1

IS THIS 4.5-STAR EQUAL TO THAT 4.5-STAR? INVESTIGATING THE ROLE OF PERSPECTIVE TAKING IN CONSUMERS' INFERENCE ABOUT ONLINE REVIEWS

ABSTRACT

Although both price and online review ratings are important cues in consumers' product quality judgment, most previous studies have treated price and review ratings as separate inputs into consumer decision making. The current research shows that the two cues are intertwined, such that consumers' perception of the same review rating is different depending on the price of the rated product. Through four experimental studies with a variety of operationalizations, I show that consumers have the tendency to adjust the review rating of higher-priced products upwards compared with that of lower-priced products. For example, the same 4.0-star rating signals a higher-quality product when the price is \$37 than when the price is \$17, above and beyond the quality signaling effect of the price itself. This price-based bias in review rating perception is attributed to consumers taking the perspective of review writers and to the shared knowledge of review writers taking price paid into consideration when rating a product. This research extends the existing literature on online reviews by introducing perspective taking as a metacognitive mechanism that can influence consumers' responses to online reviews.

INTRODUCTION

Daniel is shopping online for a blanket, and he really cares about the quality of the product. In order to pick the highest quality one, he decides to use the information provided by the online retailer for each item. Since product descriptions are very similar from item to item (e.g., all blankets are queen size, soft, and made from cotton, etc.), he relies on consumer review ratings to compare the quality of the different items because he believes that consumer-generated information is more reliable than retailer-provided information. He came across a blanket that was \$18 and had an average rating of 4.0, and another one that was \$56 and had an average rating of 4.0 as well. He wondered whether the people who rated the \$18 blanket were as demanding of product quality as those who rated the \$56 blanket.

Many consumers are just like Daniel. They rely on online review ratings to infer the quality of products. Indeed, online reviews are a key source of quality information for consumers and have profound downstream market impact (Sunder et al. 2019). The importance of online reviews has prompted many studies within the marketing literature (Purnawirawan et al. 2015) and has led to significant knowledge about how consumers respond to review information such as review rating and volume. Despite the large number of studies, however, how consumers process online ratings along with other available non-review information is still not well understood (Kuo 2016).

One type of information frequently available simultaneously with online reviews is the price of the focal product. Previous research suggests that review writers are biased by product price when rating a product's quality (Li and Hitt 2010). This suggests a potential inter-dependence between price and online review content. Yet existing research on price and online reviews has typically treated the two as independent, parallel inputs into the consumer decision making process. Departing from this view, the current work argues that consumers' perception and

interpretation of online review information is influenced by the price of the product being reviewed. Consequently, a potential buyer may interpret the same 4.0-star rating differently depending on whether the rating pertains to a \$20 product or an \$80 product. I argue that this is due to online shoppers taking the perspective of the review writers and making upward adjustments to review ratings for higher-priced products in order to compensate for the biases exhibited by review writers.

Perspective-taking is the cognitive component of empathy, which many claim is the “very basis of all human interaction” (Duan and Hill 1996) and an essential component of human psychology (Kohut 1959). Perspective-taking is the ability to understand other people’s perspectives, to see their point of view, and to anticipate their reactions (Devoldre et al. 2010). In marketing, perspective-taking has mostly been studied as a desirable quality in sales and service interactions (e.g., Dietvorst et al. 2009; McBane 1995; Moriuchi 2020). There is very limited research on how perspective-taking may affect consumers’ purchase decision processes. Applied to the current research setting, perspective-taking allows consumers to take the review writers’ perspective in order to infer accurately the writers’ true evaluation of a product’s quality. As mentioned earlier, existing research shows price biases in online consumer review ratings such that reviewers tend to assign higher ratings to a less expensive product than a more expensive product, even when both products have equivalent quality. I investigate whether perspective-taking would prompt consumers to offset the price bias present in online review ratings, leading to diverging interpretations of the same rating depending on product price.

This research makes several important contributions to marketing research and practice. First, it contributes to the perspective-taking literature by extending its domain to consumer-to-consumer marketplace interactions. This research is one of the first to investigate the role of

perspective-taking in consumer-to-consumer interactions through user-generated content. By exploring the perspective-taking account, the current research extends our knowledge of how consumers derive information from user-generated content and utilize it in their purchase decisions. The perspective-taking account suggests that consumers put themselves in content creators' shoes in order to understand the "true" intent of the content creators based on the creators' criteria and mentality, rather than making external attributions about the content based on their own judgment. Second, my research shows that the presence of other informational cues not only increases or decreases the effect of online review ratings on consumer decision-making but also influences *how* consumers make inference about online reviews posted by other consumers. In this case, the price information that accompanies product reviews changes consumers' view of the review writers' expectations and intentions, which subsequently affects the consumers' interpretation of the reviews. Third, previous research shows that review writers' ratings are biased by product price (Li and Hitt 2010). The current work extends that research stream and shows that consumers' interpretation of online review ratings is biased by product price as well. In doing so, it introduces more nuance into the subjective process through which consumers utilize online reviews. Finally, although previous studies suggest that marketing practitioners should lower prices in order to increase their online review rating (e.g., Kocas and Akkan 2016; Zhu et al. 2019), the current research questions the appropriateness of this strategy. My research argues that when inferring product quality, consumers mentally discount the ratings assigned to lower priced products, while mentally raising the ratings of more expensive products. Therefore, raising instead of reducing the price may make consumers adjust the low review ratings upwards, making the low ratings less detrimental.

LITERATURE REVIEW

REVIEW VALENCE AND CONSUMER PURCHASE BEHAVIOR

Consumers usually consult online reviews before making purchase decisions because online reviews are perceived to be credible (Allard et al. 2020; Chen and Xie 2008; Godes and Mayzlin 2004; Herr et al. 1991). Review valence is one of the most prominent information provided by online reviews (Kordrostami and Rahmani 2020). It refers to the numeric ratings given to a product by reviewers. It helps consumers to understand how previous customers have evaluated the product and can be used to infer overall product quality (Ahani et al. 2019). Review valence has been studied both empirically and analytically in the literature. Prior empirical research has often focused on how review ratings affect consumer decision making (Jiang and Guo 2015), such as how valence affects consumers' assessment of product quality (Chintagunta et al. 2010; Duan et al. 2008; Filieri 2015).

Most research in this domain finds that high review valence leads to higher firm sales by sending a signal of high quality to potential customers and enhancing consumers' attitudes (Dellarocas et al. 2007; Tata et al. 2020), whereas low review valence lowers firm sales, evaluations, and purchase intentions (Zhu and Zhang 2010). As such, consumer reviews can dramatically affect firm outcomes, including willingness to pay (Houser and Wooders 2006) and product sales (Chevalier and Mayzlin 2006; Liu 2006).

Positive reviews are not always beneficial, however. Some studies suggest that disproportionately positive online reviews may lead consumers to dismiss the positive reviews as unreliable (Chevalier and Mayzlin 2006) and therefore may negatively affect sales. In accordance with this reasoning, Bosman et al. (2013) show that valence significantly affects review credibility such that for every additional star, credibility decreases on average by 2.39% (if all other factors

remain unchanged). This suggests that a review with a poor rating may be perceived as more trustworthy. In line with this notion, O'Reilly and Marx (2011) show that consumers are skeptical of reviews that are too positive. Similarly, Dholakiya (2014) find that consumers who see only 5-star reviews become suspicious, while Mudambi and Schuff (2010) find that moderate reviews are better than extreme reviews for experience goods.

Yet a third set of previous studies find that review valence does not have a significant effect on consumers' purchase behaviors and sales (e.g., Forman et al. 2008; Amblee and Bui 2011). For example, in their study of online movie reviews on Yahoo.com, Duan et al. (2008) show that valence has no significant effect on box office sales, which is in line with the findings from Liu (2006). Similarly, Chen et al. (2004) show that online reviews do not affect book sales rank on Amazon. Finally, Amblee and Bui (2011) find that valence does not predict purchases of digital microproducts. These contradictory findings suggest that the effect of review valence is not straightforward but is subject to other influences. In the next two sections, I briefly review both non-numerical and numerical factors that can moderate the effect of review valence.

THE MODERATION ROLE OF OTHER AVAILABLE NON-NUMERIC INFORMATION ON REVIEW VALENCE EFFECT

Previous studies have identified four main types of non-numeric information that may moderate review valence effects: review content, reviewer characteristics, product or brand characteristics, and platform characteristics.

Review content. The effect of review valence varies depending on the review content. For example, previous studies show that the effect of neutral online reviews varies based on the type of detailed information provided in the review. Tang et al. (2014) show that neutral reviews that contain both pros and cons of a product positively affect online sales, while indifferent neutral

reviews with only product details have no significant effect on online sales. Roy et al. (2019) also find that positive or mixed neutral reviews which share pros and cons are more influential on consumers' product choice than reviews with a similar valence but without detailed positive and negative information about the reviewed product. Presences of temporal cues in the review content also moderates the valence effect. Chen and Lurie (2013) show that temporal cues increase the value of positive reviews on consumers' product evaluations because the review is more directly tied to the actual use of the product. Emotional content of the review moderates the valence effect as well. For example, positive emotionality in review content enhances the effect of positive review ratings when the review is for hedonic products but not for utilitarian products (Rocklage and Fazio 2020). Finally, Allard et al. (2020) show that highly unfair review content leads to higher purchase intentions for negatively rated products by activating consumers' empathy for the firm.

Reviewer characteristics. The review literature suggests that reviewer characteristics moderate the review valence effect on consumers' evaluation of a product. One of the leading cues for consumers using online reviews is the source cue (Baber et al. 2016). Consumers unfamiliar with review writers search for other cues to determine the accuracy of the reviews, such as source credibility and review characteristics/personality (Llamero 2014; Yoo and Gretzel 2011). Shin et al. (2017) show that perceived similarity to reviewers of the same age-range positively moderates the relationship between review valence and product evaluation, such that the effect of review valence on consumers' attitude is higher for consumers who perceive high similarity with the reviewers than those who do not perceive such a similarity. In another study, Lin and Xu (2017) show that the interaction between reviewer ethnicity and review valence has a significant effect on purchase intention. As such, the lesser the perceived social distance to the reviewer's ethnic group, the higher the effect of review valence on purchase intention. Finally, a majority of the research

studying review source effects asserts that online consumers would trust other consumers' reviews on a retailer's websites more than an expert's review, since reviews provided by online shoppers are highly likely to be unbiased and are not likely to favor any specific brand (e.g., Hennig-Thurau et al. 2004; Lee and Youn 2009; Tata et al. 2019).

Product/brand characteristics. The effect of review valence is known to vary depending on the type of product under consideration. For example, Hao et al. (2010) find that positive reviews have a greater impact on consumer evaluations for search goods than for experience goods. Another product characteristic that has been found to moderate the review valence effect is brand strength. Positive online reviews exert a greater influence on products from weak brands than from strong brands (Ho-Dac et al. 2013). Finally, the product consumption setting also matters. Drawing from social influence theory, Tata (2020) suggests that the influence of review valence on attitude is stronger in the case of public consumption than in the case of private consumption.

Review Platform. The effect of review valence also depends on the website where the review appears. For example, Park and Lee (2009) show that the effect of review valence on consumers' perception of quality is greater for established websites than for unestablished websites. Lee and Youn (2009) compare buyer behaviors across three types of review platforms: retailer websites, third-party websites, and personal blogs. They find that participants reading blogs are more suspicious of the review writers' intentions than those who were exposed to the reviews posted either on the independent review website or the brand's website. Hence blog reviews have less influence on purchase decisions than other platform reviews. Comparing movie reviews available on social media, review sites, blogs, and messaging platforms, Yeap et al. (2014) show that consumers consider movie reviews posted on review sites more credible than reviews posted on other sites. However, a few other studies that compare shopper review processing on retailer

websites versus third-party websites do not report a significant review platform effect on perceived credibility, purchase intention, and sales (e.g., Bickart and Schindler 2001).

THE MODERATION ROLE OF OTHER NUMERIC INFORMATION IN THE REVIEW VALENCE EFFECT

Previous studies show that other numeric online review components such as review volume and review variance can influence the effect of review valence on consumer purchase intention and other downstream market variables. For example, the trustworthiness and impact of review valence increases with review volume (Kostyra et al 2016), due to the overall rating converging toward the true value as the volume of ratings increases (Ho-Dac et al. 2013; Zhu and Zhang 2010). Quality perception decreases if a great number of people agree on a product's inferior quality (i.e., high volume and low valence). When review volume is low, however, consumers may have concerns about the review valence's reliability and therefore pay less attention to the reviews (Kostyra et al 2016).

The variance in review ratings indicates the ambiguity in consumer opinions and has also been found to moderate the effect of valence on consumer choice. For example, Langan et al. (2017) show an interaction effect between review variance and valence on purchase intention such that the negative effect of high variance on purchase intention is amplified for negatively valenced products. High review variance may not always be harmful, however. For example, Sun (2012) found a significant interaction between average review valence and variance such that the negative effect of low valence is smaller for products with higher rating variance than those with lower rating variance. In another study, Langan et al. (2016) suggest that high variance may actually increase the sales of medium-rated products since it denotes that at least a group of consumers were highly satisfied with their purchases.

PRICE AND REVIEW VALENCE

Another type of numeric information that is frequently co-present with review valence is product price. Previous studies that simultaneously considered price and review valence have mostly addressed three research questions: (1) Are prices or online reviews more important in consumer decision making and sales? (2) How should companies adapt their product prices based on the existing review ratings for a product? (3) What are the downstream consequences of price on consumer reviews?

Relative influence of price versus review valence. A limited number of studies have compared the influence of price and review valence on consumer decisions. For example, Noone and McGuire's (2013) study of the hotel industry shows that price no longer has an effect on quality perception in the presence of consumer reviews, but both review valence and price significantly influence perceived value. In a cross-cultural context, Kübler et al. (2018) show that consumers in countries with higher masculinity and uncertainty avoidance have higher price sensitivity, while those in countries with higher individualism and uncertainty avoidance have higher rating valence sensitivity. As another example, Wu and Gaytan (2013) find that buyers' risk attitude (averse, neutral, or seeking) simultaneously influences the effect of both online review rating and price on consumers' willingness to pay.

Adapting price to review valence. Another stream of research has examined how companies should adapt their pricing and promotion strategy based on online consumer reviews. In an analytical study, Jiang and Guo (2015) show that a firm's optimal pricing strategy depends on the size of the target market and the true quality of the product in order to take advantage of positive consumer review valence. At the other end of the quality spectrum, Nakhata (2016) examines how companies can use price discounts to help low-rated products. The study finds that

when time-to-purchase is short, a small discount is sufficient to increase consumers' purchase intention for low-rated products; but when time-to-purchase is long, a small discount is effective only if the deal is offered as a bundled package. In another study of the tourism and hospitality industries, Ye et al. (2014) find that price can function as a stronger quality signal when review rating is high than when it is low.

Downstream consequences of price on consumer reviews. Finally, several studies have examined the impact of product price on subsequent consumer reviews. Examining the effect of price promotions, previous studies find that offering price deals lower subsequent consumer ratings in most cases but can increase consumer ratings for highly priced and previously highly-rated products (Mejia et al. 2020; Byers et al. 2012a; Byers et al. 2012b). Li and Hitt (2010) investigate more directly the effect of price paid on consumer ratings and find that consumer review ratings tend to be lower for higher priced products.

Combining the discussions above, it would appear that price and review valence can both exert a significant impact on consumers' quality perception and subsequent purchase decisions. However, significant gaps remain in this research area. In particular, previous studies have either treated price and review rating as separate inputs into consumers' decision making or have considered the time-lapsed impact between the two. In reality, consumers often face the two pieces of information simultaneously, and one's effect can spillover to the other. Building on the role of perspective-taking in consumers' online shopping journey, the current research argues that review rating and price are intertwined, such that consumers' interpretation of the same review rating is different depending on the price of the rated product.

PRICE-QUALITY INFERENCE

Before moving on to hypothesis development, I would like to briefly review research on price-quality inference, which is relevant to the later discussion on the effect of price on review valence interpretations. Most of the early studies in this area focus on whether people use price as a sign of quality (e.g., Rao and Monroe 1989). Subsequent research explores the situations under which people make price-quality judgments (e.g., Dodds et al. 1991) and the implications of this tendency in various situations (e.g., Suri and Monroe 2003). Overall, existing studies suggest that price strongly influences consumers' quality judgments (Lalwani and Monroe 2005). Consumers often assume that there is a strong positive correlation between price and quality, such that as the price of a product increases, its quality increases correspondingly ("you get what you pay for") (Kardes et al. 2004).

Considerable research has explored the conditions that facilitate or hinder this price-quality inference (Suri and Monroe 2003). For example, Völckner and Hofmann's (2007) meta-analytic review shows that price-quality relationship is stronger for durable goods than consumer goods. Kardes et al. (2004) find that consumers rely less on price-quality inference when information is presented randomly (vs. ordered) or in smaller amounts and when consumers' concern about closure is low. Ye et al. (2014) suggest that price-quality inference is stronger for luxury hotels than economy accommodations. Finally, individual consumer differences can also affect the tendency to make price-quality inferences. For example, Lalwani and Shavitt (2013) show that consumers high (versus low) in power distance belief have a greater tendency to use price to judge quality since they have a greater need for structure. Yang et al. (2019) suggest that consumers' local and global identity influences price-quality associations such that consumers with a local

identity have a greater tendency to make price–quality associations than those with a global identity.

Given the pervasiveness of price-quality inference, I argue in this research that consumers not only use price to infer the quality of a product, but their knowledge of other consumers using the same heuristic will also influence their interpretation of other consumers' reviews of the product. This is due to consumers putting themselves in the shoes of the review writers and trying to infer the true intention of the review writers. I elaborate more on this perspective-taking mechanism in the next section.

HYPOTHESIS DEVELOPMENT

PRICE BIAS IN CUSTOMER REVIEWS

Previous studies have argued that price can affect consumers' rating of a product (Li and Hitt 2010). That is, when writing the review of a product, individuals take into consideration how much they have paid for the product. This is attributed to two reasons (Li and Hitt 2010). First, individuals review a product based on not only the perceived quality of the product but also the perceived value they received from the purchase. The latter component reflects a trade-off between the benefit (quality) and cost (price) of the purchase (Bolton and Drew 1991). As a result, quality assessment is likely to be made in conjunction with the cost (i.e., did I get my money's worth?). Appendix 1 shows some examples of consumer reviews that reflect this consideration of price.

Second, price can shape individuals' pre-purchase expectations of product quality (Kirmani and Rao 2000), which may then be compared with later actual experience with the product. Since the gap between prior expectations and actual experience has been shown to significantly influence satisfaction (Cadotte et al. 1987; Churchill and Surprenant 1982; Spreng et al. 1996; Rust et al. 1999), the price paid for a product may indirectly enter into how well individuals rate a product through the expectation-setting role of price.

In line with the above discussions, previous research using both real-world data and lab experiments has shown a clear price bias in the reviews individuals give for a product, such that a high-priced product is likely to be rated lower while a low-priced product tends to be rated higher (De langhe 2015; Li and Hitt 2010). Thus far, the price bias present in consumer reviews has been explored from the review writers' perspective. An interesting question is whether such biases may also be manifested at the review readers' end and influence how consumers perceive review ratings in their decision-making process. The current research argues that there is also a price bias in how

consumers interpret the review ratings from other consumers due to consumers taking the perspective of the review writers while reading reviews.

PERSPECTIVE-TAKING AND A PRICE-CONTINGENT INTERPRETATION OF REVIEW VALENCE

Every day, individuals engage in diverse social interactions and complete complicated tasks such as information acquisition, interpretation, and evaluation to fulfill social goals (Byom and Mutlu 2013). Shopping is one of the complicated tasks where people have to use a variety of signals to evaluate the quality of products (Park et al. 2020). Online ratings generated by other consumers are one of the information sources that consumers widely use to evaluate and judge a product's quality (Kostyra et al. 2016). Through the writing and reading of online reviews, consumers engage in virtual social interactions with one another. In these social encounters and complicated tasks, people tend to use their perspective-taking ability to infer the thoughts, beliefs, and feelings of others (Byom and Mutlu 2013).

Formally defined, perspective-taking is the state in which person A intellectually takes on person B's role or perspective by seeing, understanding, or perceiving experiences from person B's point of view (Deutsch and Madle 1975). Perspective-taking enables an individual to understand the role or point of view of another person (Devoldre et al. 2010) and to "read the minds" of another individual (Moriuchi 2020). Although perspective-taking has been examined frequently in an in-person interaction setting, there is evidence that it is not limited to face-to-face interactions. For example, Gentina et al. (2021) show that online users, especially teenagers, employ their perspective-taking ability when interpreting ads posted on online social networks.

A requirement for taking the perspective of another individual is knowledge of the shared context (Sebanz et al. 2006). For example, in a typical conversation, individuals would try to give

an appropriate response by integrating cues from the conversational partner and the context such as knowledge about the relationship between individuals (e.g., how much disclosure is appropriate with a close friend vs. a co-worker), prior world knowledge (e.g., amount of personal space with which a partner might be comfortable), and the conditions under which the conversation is occurring (e.g., in a group setting) (Byom and Mutlu 2013). By analogy, consumers' knowledge of price as an influential factor in review writers' evaluation of a product's quality can be considered shared knowledge to help them better understand the "true" meaning of online reviews.

Combining the discussion above, when consumers take the perspective of the review writers, they are likely to be cognizant of the mindset and biases present in the review generation process. To the extent that the impact of price on consumers' assessment of a product's quality is common shared knowledge, consumers will be motivated to use their perspective-taking ability to take into account such influences when interpreting consumer reviews (Byom and Mutlu 2013). Consequently, in order to arrive at the "true" quality of the product, consumers will make reverse adjustments to correct for the biases present in the review generation process. This translates into an upward mental adjustment to the review ratings of higher-priced products and a downward mental adjustment to the ratings of lower-priced products. Consequently, the same 4.0-star rating would be seen as signaling higher quality for a \$80 option than a \$20 option. This leads to the following hypothesis:

H1: *Consumers' product quality inference from online review valence is affected by product price, such that the same review rating will be perceived as higher quality for a more expensive product than for a less expensive one.*

The impact of price on consumers' quality inference from online ratings as hypothesized in H1 is due to consumers taking the perspective of the review writers. However,

consumers may not always be inclined to exert the effort needed for perspective-taking, such as in the case of low-involvement purchases or purchases with a low degree of uncertainty. Individuals also differ in their innate ability or tendency to take others' perspectives (Johnson et al. 1983), leading to variations in how much they take the review writers' point of view into account. If the price bias in the perception of review ratings is indeed the result of perspective-taking, the observed bias should be stronger when consumers are particularly motivated to take the perspective of the review writers.

H2: *Perspective-taking moderates the impact of price on consumers' quality inference from online review valence, such that this effect is stronger for high perspective-taking consumers than for low perspective-taking consumers.*

Research on perspective-taking suggests that shared experiences play an important role in one's ability to "read the mind" of another individual (Byom and Mutlu 2013). The more an individual shares similar experiences with the other individual, the more the individual will be able to understand the other individual's perspective and see things from the other person's view. In the current context, the ability to take the perspective of the review writer may be enhanced if consumers have served as reviewers themselves. Therefore, while individuals with no or low review experiences may not be completely aware of the impact of price on online review ratings, individuals with enough review experiences are likely well-informed about the price bias in online reviews. Consequently, shared experience as a review writer should help consumers understand the biases present in the rating process, making it more likely that they will adjust their interpretation of others' ratings as a result.

H3: *An individual's prior experience as a reviewer moderates the impact of price on consumers' quality inference from online review valence, such that the effect is stronger for*

individuals with a moderate or high level of review experience than for individuals with a low level or no review experience.

The consumers' biased quality inference from online ratings as hypothesized in H1 is due to consumers taking the perspective of the review writers who are themselves biased by product price when rating a product's quality. But if the product review comes from an authoritative and ostensibly objective source (e.g., *Consumer Reports*) rather than from ordinary consumers, the price bias would be presumably absent in the review process. Therefore, even taking the perspective of that review source should no longer motivate consumers to adjust their perception of the review ratings based on price. This points to the review source as a boundary condition to the proposed price effect on consumers' quality inference from online review ratings.

H4: *Review source moderates the impact of price on consumers' quality inference from online review valence, such that this effect is only present for reviews from subjective reviewers and not for reviews from objective reviewers.*

OVERVIEW OF THE STUDIES

Five studies using a variety of operationalizations were conducted to demonstrate the robustness of the proposed phenomenon and its underlying mechanism. The pilot study showed that consumers are aware of the effect of price on online review ratings. Therefore, it is shared knowledge in the online shopping context. Study 1 demonstrated that consumers' inference from online review ratings is dependent on product price such that consumers discount the ratings assigned to lower priced products while adding to the ratings of more expensive products. Study 2 tested the price bias using an alternative approach that allowed the inference of how much each participant adjusts the review valence upward or downward depending on the product price. It also tested the moderating role of reviewer experience as hypothesized in H3. Study 3 examined the moderating role played by perspective-taking ability in the proposed phenomenon. Finally, study 4 tested review source as a boundary condition to the price effect on consumers' inference from online review ratings.

PILOT STUDY: THE IMPACT OF PRICE ON REVIEW GENERATION AS SHARED KNOWLEDGE STUDY DESIGN AND PROCEDURE

The hypotheses proposed in the last section rest on the fundamental assumption that consumers are aware of the price bias in the review generation process. The pilot study is designed to test this assumption. After removing individuals who failed attention checks, the final sample consisted of 40 undergraduate students from a public University in Virginia (Mean age = 21.81, 54.16% female). They read a scenario narrating that Daniel recently purchased a product from Amazon.com and received an email encouraging him to rate the product's quality and to share his experience with other consumers. Participants were asked to rate on a 7-point scale (1= a little to 7= a lot) how much each of the following factors may influence Daniel's rating of the product's quality: 1) performance of the product, 2) sturdiness of the packaging, 3) on-time shipping, 4) price he paid for the product, and 5) his expectation of the quality of the product when making the purchase. Participants also specified the direction of the impact for each of the above factors. For example, on the price factor, participants were asked whether the higher the price of the product, the more negatively (=1) or the more positively (=7) Daniel will rate the product.

RESULTS

I conducted two one-sample t-tests on the participants' responses to (1) the question about the extent of the impact of price on Daniel's rating, and (2) the question about the direction of the price's impact on his rating. The results showed that participants considered the price paid to be an important consideration in Daniel's rating (Mean = 5.58, compared with the mid-point of the scale, $t = 6.56$, $p = <0.01$). Furthermore, they believed price would negatively impact Daniel's rating of the product's quality (Mean = 3.55, compared with the mid-point of the scale, $t = -1.76$,

$p = 0.04$). These findings suggest that consumers are indeed aware that reviewers tend to give a lower rating to a higher-priced product than to a lower-priced product.

STUDY 1: THE ROLE OF PRICE IN CONSUMERS' INFERENCE FROM ONLINE REVIEW VALENCE STUDY DESIGN AND PROCEDURE

Study 1 was designed to test the first hypothesis. After removing individuals who failed attention checks, the final sample consisted of 90 participants (Mean_{age} = 48.16, 69% female) recruited through Qualtrics. The participants were asked to classify 18 blanket items into either high-quality or low-quality categories. To make the experiment realistic, the study was conducted under the guise of a classification job for an online retailer operating in the United States rather than as a research study. The participants were told that the online retailer plans to import various types of high-quality blankets from an international company. The scenario asked them to use price and average review rating coming from consumers to classify available blankets as either a high- or low-quality item because product descriptions are very similar from item to item (e.g., all blankets are queen size, soft, and made from cotton, etc.). The prices for the blankets ranged from \$17 to \$57, and the rating range was from 3.2 to 4.7 on a 5-star scale. These ranges were adopted from actual prices and ratings of blankets on Amazon.com. The entire price range was divided into three intervals to make products within each interval more comparable with each other: low (\$17 to \$29.99), medium (\$30 to \$42.99), and high (\$43 to \$57). The products within each price interval were randomly paired with six different ratings (3.2, 3.5, 3.8, 4.1, 4.4, 4.7) and were displayed in random orders to participants. For each product, participants selected whether it is a high- or low-quality product.

RESULTS

I ran a random effect logistic regression of the classification outcome (1 = high-quality and 0 = low-quality) with price, review valence, and their interaction as independent variables. The random effect captured unobserved differences across participants that may influence their

classification of all products. The results showed a positive significant interaction between price and valence on consumers' quality judgment ($b = 0.06$, $se = 0.02$, $t = 3.77$, $p < 0.01$). This positive interaction between price and valence means that one unit of increase in review rating means more for a high-priced product than for a low-priced product. That is, the scale point difference is more meaningful for a high- (vs. low-) priced product. The results also suggested a positive significant effect of review rating and price on the classification outcome (table 1).

Table 1. Study 1 Regression Outcomes

	b	se	t	p
Intercept	0.92	0.18	5.02	< 0.001
Review rating	4.60	0.24	18.88	< 0.001
Price	0.05	0.01	6.93	< 0.001
Review rating*Price	0.06	0.02	3.70	< 0.001
sigma	1.56	0.17	9.17	< 0.001

As a further test of the hypothesis, I identified the minimum review valence classified as high-quality within each price range for each participant. Averaging this minimum valence threshold for each interval across participants showed that the review valence participants accepted as high quality was the lowest in the high price range (3.78), followed by the medium price range (3.81), and highest for the low-price range (3.97). The differences in minimum review valence between low and medium price ranges ($t = 2.43$, $p = 0.04$) and between low and high price ranges was significant ($t = 2.85$, $p = 0.01$), but the difference between medium and high price ranges was not significant. As shown in table 2, a higher percentage of the participants under the high and medium (vs. low) price condition categorized items with the same rating as high-quality blankets.

Table 2. Percentage of Participants Categorizing Each Blanket Item As a High-Quality Product.

Price / Rating	3.2	3.5	3.8	4.1	4.4	4.7
Low	13.33%	25.55%	36.66%	63.33%	84.44%	85.55%
Medium	14.44%	33.33%	41.11%	91.11%	92.22%	95.55%
High	21.11%	35.55%	44.44%	90.00%	98.88%	98.88%

DISCUSSION

These findings suggest that consumers were more likely to accept a lower review valence as high-quality for a high-priced product than for a low-priced product. This points to potentially upward mental adjustment for the rating of high-priced products and downward mental adjustment for the rating of low-priced products, providing preliminary support for H1. One may argue however that consumers may have classified lower-rated products as high-quality in the higher-price ranges because of allowances made for higher-priced products due to price-quality inference. In other words, consumers may have adopted an either-or approach, where either the price or the rating signal may have sufficed to mark a product as high quality. To address this limitation, Study 2 used an alternative approach to infer exactly how much each participant adjusted the review valence upward or downward depending on product price.

STUDY 2: ASSESSING PRICE IMPACT ON REVIEW VALENCE

INTERPRETATION USING AN ALTERNATIVE METHOD

STUDY DESIGN AND PROCEDURE

Study 2 featured a one-factor (price: high vs. medium vs. low) between-subjects experimental design. After removing individuals who failed attention checks, the final sample consisted of 126 (Mean_{age} = 52.51, 32% female) participants recruited through Qualtrics that were randomly assigned to one of the experimental conditions. I asked them to imagine that they are shopping for a blanket on Amazon.com. They were first asked to divide 100 points into product description, price, and average review rating based on how important each criterion would be to their judgment of a blanket's quality. Participants' answers to this question served to indicate the weights of these three components in their product quality inference.

Following the task, participants read the actual product description, price, and average review rating of a blanket being sold on Amazon.com. The product description and review rating (4 out of 5) were the same across all conditions, but price varied among conditions (\$17 for low price, \$37 for medium price, and \$57 for high price). The prices used are based on the prices of similar blankets sold on Amazon.com. After reading the product information, participants were asked to rate the overall quality of the blanket ("How do you rate the overall quality of the blanket above?") on a 7-point scale (1=low quality; 7=high quality). Following Kardes et al. (2004), participants also were asked two additional quality rating questions using only price or product description as the basis for the rating: (1) Only using **price** as the basis for your quality inference, how would you rate the quality of the blanket above on a 7-point scale (1= very low quality to 7= very high quality)? (2) Only using **product description** as the basis for your quality inference, how would you rate the quality of the blanket above on a 7-point scale (1= very low

quality to 7= very high quality)? After the rating questions, I asked participants' opinions about the blanket's price level using the following items (Dodds et al. 1991): (1) inexpensive/expensive, (2) unreasonable/reasonable, (3) inappropriate/appropriate, and (4) unaffordable/affordable. These served as manipulation check for the price manipulation. Finally, following Packard and Berger (2017), I measured participants' cumulative rating experience as the number of review ratings they had submitted on online retailers' websites.

RESULTS

To check the price manipulation, I conducted a one-way ANOVA using the perceived price level of the blanket as the dependent variable and the price level condition as the independent variable. Each participant's perceived price level was calculated by averaging the participant's responses to the four manipulation check questions (Cronbach's alpha = 0.92). The results suggested that price manipulation was successful ($F = 16.48, p < 0.001$). Subsequent planned contrast analysis showed that consumers in the high-price condition (Mean = 4.23) perceived the blanket as more expensive than those in the medium-price condition (Mean = 3.63), who in turn viewed the blanket as more expensive than those in the low-price condition (Mean = 2.66).

Combining the weights obtained at the beginning of the study with the actual review rating and participants' quality ratings based only on price and product description, I calculated a composite quality score for each participant, as shown in the formula below.

$$\text{Composite quality score} = (\text{product description weight} * \text{quality rating based on product description} + \text{price weight} * \text{quality rating based on price} + \text{review valence weight} * \text{adjusted actual review valence}^1) / 100$$

¹ Since price-based and description-based ratings were on a seven-point scale, I rescaled the 5-star based rating to a 7-point scale to be equivalent to the other two attribute-based quality ratings. This means that the 4.0 review rating was converted to 5.6 ($=4.0 * 7/5$) when calculating the composite quality score.

As the actual review rating of the product was used to calculate the composite quality score above, the score reflected a baseline “unbiased” quality rating that was free from any potential adjustment to the review rating. In contrast, participants’ responses to the overall quality question reflected their overall assessment of product quality and would include internal adjustments they may have made to the review rating based on product price. Therefore, the difference between this “biased” overall quality rating and the “unbiased” composite quality score reflected how participants may have adjusted their quality inference from review valence. If a participant adjusted the quality inference from the review valence upward, his/her overall quality rating should be higher than the unbiased composite quality score. In contrast, if a participant adjusted the review valence downward, the overall quality rating should be lower than the composite quality score.

I calculated the bias score as the percentage difference between the overall quality rating and the composite quality score for each participant (i.e., $(\text{overall quality rating} - \text{composite quality score}) / \text{composite quality score}$). I regressed this bias score on price, review experience and their interaction (with medium price as the baseline). The results suggested a marginally significant negative effect of the low-price dummy ($b = -0.39$, $SE = 0.30$, $t = -1.91$, $p = 0.06$), suggesting a downward mental adjustment of the overall quality rating in the low- (vs. medium) price condition. The coefficient of the high dummy was not significant. Comparing the means of the bias score across the three conditions ($\text{Mean}_{\text{Low}} = -0.03$, $\text{Mean}_{\text{Medium}} = 0.05$, $\text{Mean}_{\text{High}} = 0.03$) revealed an interesting ceiling effect in the consumers’ upward price-based adjustment to review valence (figure 1). That is, although consumers make upward adjustments when inferring quality from online review ratings for a higher-priced product, this upward adjustment decreases when the price becomes unreasonably high.

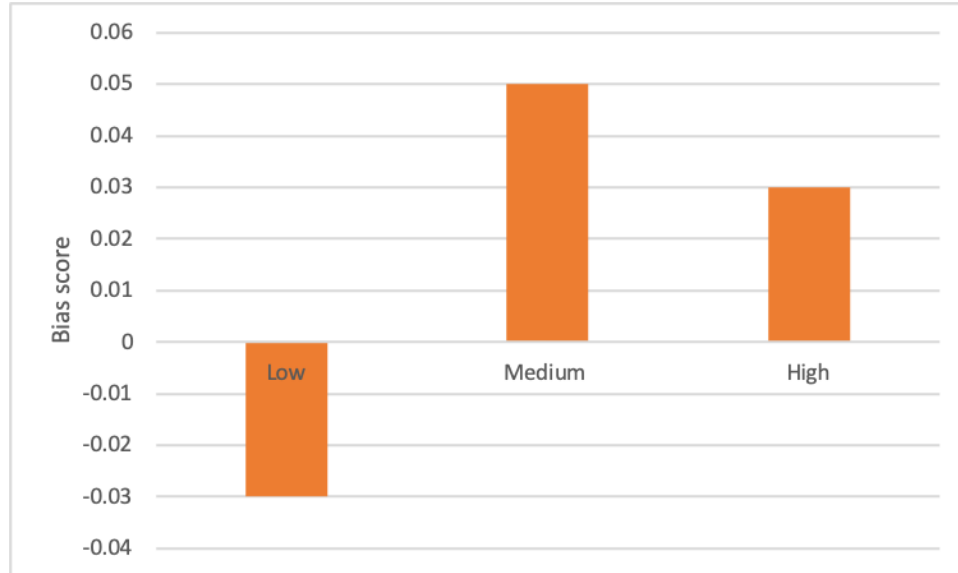


Figure 1. Bias score as a function of price

H3 was not supported as the interaction between review experience and price was not significant (table 3).

Table 3. Study 2 Regression Outcomes

<i>IV</i>	b	se	t	P
Intercept	0.21	0.14	1.52	0.13
Low price dummy	- 0.39	0.20	- 1.91	0.06
High price dummy	- 0.10	0.19	- 0.54	0.59
Reviewer experience	0.0003	0.0	0.22	0.82
Low price dummy * Reviewer experience	0.01	0.02	0.61	0.54
High price dummy * Reviewer experience	- 0.001	0.01	0.15	0.88

Figure 2 displays the percentage of participants in each condition that made upward and downward adjustments. Consistent with expectations, more participants made upward adjustments in the medium-price condition and to a lesser extent in the high-price condition. In comparison, participants in the low-price condition were evenly split in upward and downward adjustments, with the largest percentage (7.70%) making no adjustments.

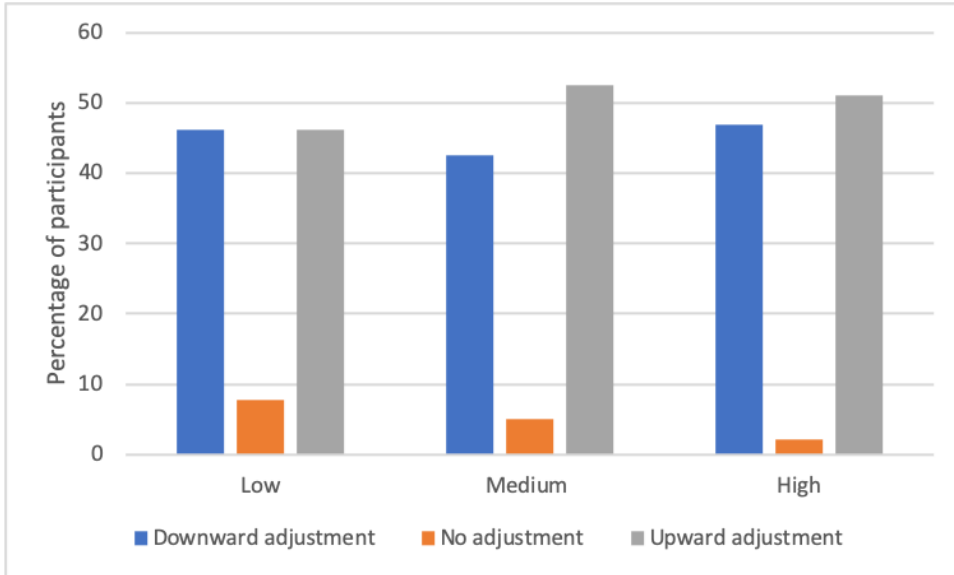


Figure 2. Percentage of the Participants Who Made Downward (vs. No vs. Upward) Adjustments in Each Price Condition

DISCUSSION

Using the difference between overall quality rating and a composite quality score calculated from attribute values and weights, Study 2 quantified the bias present in consumers' quality inference from review valence as a result of product price. The results confirmed the upward adjustment to review valence for higher-priced products. Close to 60% of the participants in the medium-price condition made upward adjustments to how they interpreted the review valence. The study also showed a ceiling to this effect, where the upward adjustment actually decreased at the really high and presumably unreasonable price range. It is possible that the unreasonable price charged for the product may have alerted consumers to potential price manipulation. As a result, they no longer used price as a reliable piece of information to adjust the true meaning of review valence. One limitation of both Study 1 and Study 2 is that I did not consider explicitly the reason behind the price-based adjustments consumers make to review ratings. I address this limitation by testing perspective-taking as the mechanism underlying consumers' price-based adjustments in the next two studies.

STUDY 3: THE UNDERLYING MECHANISM OF PERSPECTIVE-TAKING

STUDY DESIGN AND PROCEDURE

Study 3 aims to replicate the findings in the last two studies and demonstrate perspective-taking as the underlying mechanism. If perspective-taking is indeed the reason behind consumers interpreting review valence differently according to price, people with a higher perspective-taking ability should be better able to adjust their interpretation of the review ratings based on product price than those with a lower level of perspective-taking ability, as hypothesized in H2. To test this, the study investigated the moderating role of perspective-taking ability on the proposed price bias effect in consumers' quality inference from online review ratings. After removing individuals who failed attention checks, the final sample consisted of 427 participants (Mean_{age} = 45.42, 82% female) recruited from Qualtrics. The procedure was similar to Study 1, in addition to measuring perspective-taking ability. I measured perspective-taking ability using the following three items adapted from McBane (1995): (1) "I try to look at everybody's side of a disagreement before I make a decision," (2) "When I am upset at someone, I usually try to "put myself in their shoes," and (3) "I believe that there are two sides to every question and try to look at them both." For all items, I used seven-point scales (1 = "Strongly disagree," and 7 = "Strongly agree").

RESULTS

Similar to Study 1, I ran a random effect logistic regression with the quality classification outcome (1 = high-quality and 0 = low-quality) as the dependent variable and price, valence, perspective-taking ability and their interactions as the independent variables. The results replicated the findings of the first study by showing a significant positive coefficient for the interaction

between price and rating effects ($b = 0.04$, $SE = 0.00$, $t = 4.53$, $P < 0.001$), providing support for H1. However, the expected three-way interaction among price, review rating, and perspective-taking ability was not significant ($b = 0.00$, $SE = 0.00$, $t = 0.60$, $P = 0.54$). Therefore, H2 was not supported. Similar to Study 1, the effects of price and rating on the classification outcome were significant (table 4).

Table 4. Random Effect Logistic Regression Outcome

<i>IV</i>	b	se	t	P
Intercept	0.87	0.07	11.03	< 0.001
Rating	5.20	0.12	41.91	< 0.001
Price	0.03	0.00	10.86	< 0.001
Perspective-taking ability	0.13	0.06	2.19	0.03
Rating*Price	0.04	0.00	4.53	< 0.001
Rating*Perspective-taking ability	0.40	0.08	4.94	< 0.001
Price * Perspective-taking ability	- 0.00	0.00	-0.25	0.80
Rating*Price * Perspective-taking ability	0.00	0.00	0.60	0.54
sigma	1.40	0.07	19.05	< 0.001

Discussion

The results from this study did not show perspective-taking ability as a moderator of the observed price effect on consumers' inference from online review valence. I attribute this result mainly to the limitation of the scale I used to measure perspective-taking ability. All three items of the scale asked participants their agreement with normatively correct practices in society and hence may have suffered from a social desirability bias. This is partly evidenced by the high average perspective-taking ability (Mean Perspective-taking ability = 5.32) across participants. Only 12.07% of the participants had a perspective-taking ability score less than the midpoint of the scale (= 4), which results in limited variance in the perspective-taking ability variable.

STUDY 4: REVIEW SOURCE AS A BOUNDARY CONDITION

STUDY DESIGN AND PROCEDURE

To test H4, Study 4 examined the role of review source as a boundary condition to the observed price effect in previous studies. If a review rating comes from an authoritative and ostensibly objective source rather than ordinary consumers, taking the perspective of that review source should no longer motivate consumers to adjust their interpretation of the review ratings based on price. The study featured a 3 (price: low vs. medium vs. high) x 2 (review source: consumer reviews posted on Amazon.com vs. expert reviews from ConsumerReports.org) between-subjects experimental design. We screened participants for their awareness of Consumer Reports so that they could see reviews from the organization as relatively objective. After removing individuals who failed attention checks, the final sample consisted of 260 participants (Mean_{age} = 56.58, 73% female) recruited through Qualtrics. The participants were randomly assigned into one of the experimental conditions. The procedure was similar to Study 2, with the exception that the product rating was described as either coming from a professional team of reviewers at Consumer Reports based on objective testing of the product performance (expert review condition), or as coming from consumer reviews on Amazon.com (consumer review condition). Finally, to check the review source manipulation, I asked participants to rate their agreement with the following question on a 7-point scale (1 = very strongly disagree, 7 = very strongly agree): The product rating you saw for the blanket earlier is based on personal opinions, which was adapted from Uhlmann and Cohen (2007).

RESULTS

To check the price manipulation, I ran a two-way ANOVA with the perceived price level of the blanket as the dependent variable and price level, review source, and their interaction as the

independent variables. The results showed that the price manipulation was successful ($F = 10.17$, $p < 0.01$; Mean_{Low} = 2.72, Mean_{Medium} = 3.10, Mean_{High} = 3.59). Other effects in the ANOVA were not significant. To check the review source manipulation, I ran a similar two-way ANOVA with the review source manipulation check question as the dependent variable. Results showed a significant main effect of review source, such that consumer reviews coming from Amazon.com were rated as based more on personal opinions than the expert ratings coming from consumerreport.org ($F = 10.75$, $p < 0.01$; Mean_{Amazon.com} = 5.22, Mean_{Consumerreports.org} = 4.37). Other effects in the ANOVA were not significant.

To test hypothesis 4, I followed the same procedure as study 2 to derive the bias score for each participant. I regressed this bias score on price level, review source, and their interaction. Similar to study 2, the results showed a significant coefficient for the medium price dummy ($b = 0.15$, $SE = 0.04$, $t = 3.35$, $p < 0.01$) and a significant interaction between medium price dummy and review source ($b = -0.12$, $SE = 0.06$, $t = 1.99$, $p < 0.05$). I performed planned contrast analyses to compare the means of consumers' bias scores across the three price levels under each of the review source conditions (consumer reviews vs. expert reviews). As expected, under the Amazon.com consumer review condition, the bias score was significant greater when the price was medium (Mean = 0.10) than when the price was low (Mean = -0.05; $t = 3.36$, $p < 0.01$). Similar to Study 2, I observed a price ceiling effect such that the price-based adjustment of review valence lessened under the high-price condition (Mean = -0.005; $t = 2.31$, $P = 0.06$) compared to the medium level. In contrast, the bias score was not significantly different across the three price levels under the "expert review" condition (Mean_{Low} = 0.08, Mean_{Medium} = 0.11, Mean_{High} = 0.03, $F = 1.85$, $p = 0.16$). These results supported the role of review source as a boundary condition to the price effect as hypothesized in H4. Figure 3 shows the average bias score across each condition.

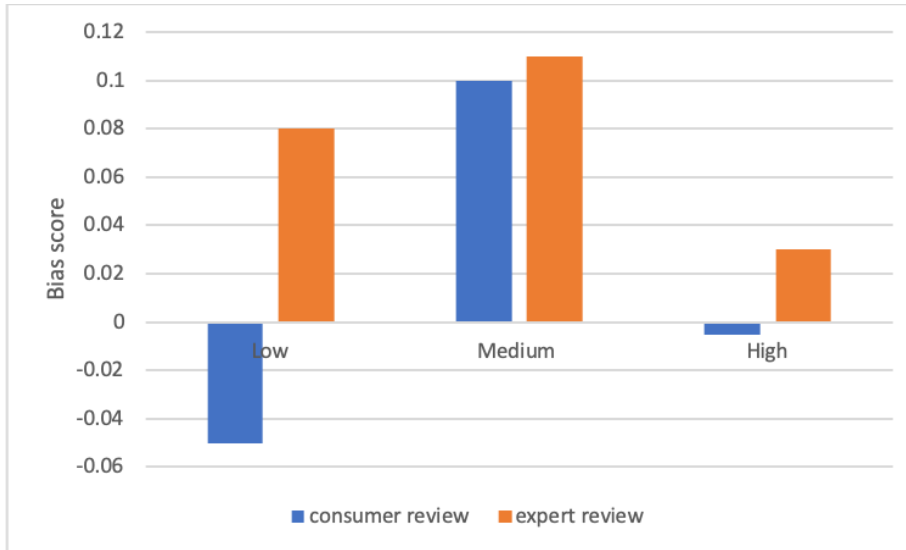


Figure 3. Bias Score As a Function of Price and Review Source

The regression also showed a significant effect of review source on consumers' quality inference from online review valence ($b = 0.13$, $SE = 0.04$, $t = 3.05$, $p < 0.01$). Given the use of the low-price condition as the baseline, this effect suggests that consumers made less upward adjustments to review valence in their quality inference of the low-price product when the ratings came from other consumers (Mean = 0.01) than when the reviews came from experts (Mean = 0.07). Table 5 shows the complete outcome of the performed regression.

Table 5. Study 4 Regression Outcome

IV	b	se	t	P
Intercept	- 0.05	0.03	- 1.65	0.10
Review source	0.13	0.04	3.05	<0.01
Medium price dummy	0.15	0.04	3.36	<0.001
High Price Dummy	0.05	0.04	1.05	0.29
Medium price dummy * Review source	- 0.12	0.06	- 1.99	0.05
High price dummy * Review source	- 0.10	0.06	- 1.63	0.10

DISCUSSION

Comparing consumer reactions to review ratings from other consumers versus Consumer Reports, a third-party organization, the current study finds that the price-based adjustment to review valence in quality inference applies only to when other consumers provided the ratings. In the case of Consumer Reports, since these ratings came presumably from experts through objective testing, it was not necessary to take the perspective of the review writers and adjust the bias that may be present in other consumers' reviews. These findings support perspective-taking as the underlying mechanism for the observed effect of price on consumers' quality inference from online review ratings.

DISCUSSION AND THEORETICAL CONTRIBUTIONS

Across four experimental studies, this research shows that consumers' quality inference from online review rating is contingent upon product price and that perspective-taking is the underlying mechanism of this phenomenon. Under the guise of a classification job, studies 1 and 3 showed that the minimum acceptable rating to consider a product as high-quality decreased as the product price increased. While participants accepted products rated 3.78 as high quality when product was high, they required a higher minimum of 3.97 in the low-price range. Furthermore, only 63% of the participants labeled a low-priced product with 4.1 rating as a high-quality blanket, whereas 90% of the participants labeled the same 4.1-rated products as high-quality in medium- and high-price ranges.

Study 2 and Study 4 employed an alternative method to shed light on the first study's findings and to validate whether consumers' inference from online review ratings are biased by product price. By comparing consumers' overall quality rating and their multi-attribute composite quality score using the actual review valence, I was able to quantify the amount of bias present in quality inference from online review valence. The results showed that consumers made downward mental adjustments to the review rating for the low-price product and upward adjustments for the medium-price products. The observed price bias was in the opposite direction of the price biases present in the review generation process identified in previous research (Li and Hitt 2010). In this regard, I extend previous research on price bias in the review process and show a reverse bias correction process when consumers read others' reviews. Both studies further revealed an interesting ceiling effect on the price-bias effect, as consumers made less upward mental adjustments under the high-price condition than under the medium-price condition. Consumers

may have resisted making upward mental adjustments if the product price goes unreasonably high. Why this may be the case is an interesting question for future research.

Study 4 also contributes to research on the effect of review source on consumer inference from product reviews. The existing literature suggests that consumers' reliance on product reviews is dependent on review source such that they perceive reviews from consumers similar to them (vs. expert) as more trustworthy and reliable. However, my findings offer contradicting evidence that suggests consumers are also aware of biases present in other consumers' reviews and make corresponding adjustments to correct the bias. In contrast, expert reviews are not subject to the same bias correction. In this sense, review source can affect the meaning of product reviews to consumers.

My research also contributes to the perspective-taking literature by extending its domain to consumer-to-consumer interactions in the context of review reading. Consumers use their perspective-taking ability to put themselves in the review writers' shoes to understand their expectation about product quality. This helps them to arrive at the true meaning of the review ratings and allow more accurate information be used in their purchase decision-making. In the current context, the same 4-star review rating assigned to the same products with different prices does not imply the same level of quality to consumers. Rather, consumers interpret the real-quality of the product by anticipating and adjusting for the quality expectations of the review writers.

MANAGERIAL IMPLICATION

My research offers important insights to marketing practitioners and retailers to improve their pricing strategy and to manage the detrimental effect of low review ratings. Many studies suggest that marketing practitioners should lower prices in order to increase their online review ratings (e.g., Kocas and Akkan 2016; Zhu et al. 2019). However, my findings question the appropriateness of this strategy. I showed that consumers make reverse mental adjustments to offset this price bias when inferring online reviews because they take the perspective of the review writers to arrive at the true meaning of online reviews. This translates into discounting the review ratings assigned to lower-price products while increasing the ratings assigned to higher-priced products. As a result, the high ratings assigned to a low-priced product are not as meaningful of a quality signal as high ratings assigned to a higher-priced product. This means that a lower rating assigned to a medium- or high-priced product can signal better quality than a higher rating assigned to a low-priced product. For example, Study 1 found that 85% of the consumers considered a 4.7-star rating, low-priced product as high-quality, whereas a 4.1 star-rating assigned to a medium- or high-priced product was considered high-quality by more than 90% of the consumers. Therefore, raising instead of reducing product price may encourage consumers to perceive the low review ratings in a more positive light and create positive purchase outcomes.

This strategy does have a few conditions. First, it may be particularly effective for relatively undifferentiated product categories where consumers' purchase decision-making is not brand-oriented and the descriptions of the products are very similar across different items. In such cases, online review rating becomes the main indicator of quality. Second, Study 4's findings further suggest that managers need to limit the use of the price-increasing tactic to only consumer

reviews and not expert reviews. Finally, the observed ceiling effect in Studies 2 and 4 suggests that the price effect on consumers' inference from online review ratings is not linear. Therefore, marketers need to be careful not to exceed a reasonable price limit when using price to offset the negative impact of low review ratings.

LIMITATIONS AND FUTURE RESEARCH

This work has a few limitations that offer interesting avenues for future research. I used a multi-attribute decision-making model to generate the unbiased quality scores in Study 2 and Study 4. However, this model may not apply to everyone or to every purchase setting. Future research needs to develop a more generalizable method for calculating an unbiased quality score. In addition, I only studied the role of one information cue, price, in the perspective-taking process. Future research is needed to explore whether and how other information cues such as product description, reviewer name, retailer website, and profile picture affects consumers' perception of the review writers' thought processes and in turn their inference from online reviews. Future research also should use real-world data to test the generalizability of my research findings.

In a similar vein, future research needs to replicate this study for different product categories to examine whether and how consumers' tendency to adjust online reviews based on product price differs between different product categories. Another interesting question is whether consumers' tendency to take the review writers' perspective and make reverse adjustments is contingent upon the rating level. For example, should we expect to see the same reverse mental adjustment even at very low review ratings (e.g., 1 out of 5)?

In this research, I studied the role of one boundary condition, review source, to the observed price effect. Marketing researchers are encouraged to study how other factors such as the perception of in-group vs. out-group with the review writer moderates the observed price and review rating interaction. Consumer reviews usually contain both numeric and non-numeric information. An interesting avenue for future research is to study how other parts of product reviews such as review volume and variance can affect consumers' ability to take the perspective of the review writers. For example, previous research showed that high review variance denotes

inconsistent evaluation of product quality. An interesting question to ask is how this information cue affects consumers' ability and willingness to take the review writers' perspective.

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APPENDIX 1. EXAMPLES OF PRICE IMPACT ON CONSUMER REVIEW CONTENT

EXAMPLE A

A consumer posted the following review on July, 2016 on the Amazon.com after she noticed that the price of a blanket she rated 5-star has jumped three times.

“It has happened again. I purchased a "moderate" quality item that is serviceable, because of the relatively LOW PRICE. And then, when I post a 5-star review, the price shoots up to something SO UNREASONABLE that I can no longer recommend it. Folks, I paid \$14.99 for this Throw Blanket. The quality is decidedly MEDIOCRE, but it does the job and at \$14.99 it was a bargain. However, now I see that the price has SKYROCKETED to \$45.00. My 5-star review stands, only because YOU CAN STILL GET THIS AT \$14.99 IF YOU CONTINUE TO LOOK. But please, please do not pay \$45.00 for this. It is a cheap piece of microfiber that is soft and warm, but for \$45.00 you can get something really special. So, 5-stars for the low, low price of \$14.99; 1-star for the exorbitant price of \$45.00”.

EXAMPLE B

As another example, in a review posted on CNet.com on December, 2005, for the SONY Cyber Shot DSC-S40 digital camera, a consumer writes "some problems but at this price can't complain, but for a 4 Mp camera at this price it is fantastic!" and gives a rating of 8 out of 10, while for the same camera the CNet editor gives a rating of 6.6 out of 10.

ESSAY 2

MORE THAN A SELFIE: INVESTIGATING THE CONTAGIOUS EFFECT OF EYE GAZE ON BOOSTING THE IMPACT OF POSITIVE USER- GENERATED CONTENT

ABSTRACT

Companies make significant efforts to encourage positive word-of-mouth (WOM) about their brands on social media. One common tactic is to encourage consumers to post a picture of themselves (i.e., a selfie) with the product on social media. The current research investigates the role of eye gaze in such social media messages in facilitating emotional contagion and its subsequent effects on consumers' engagement with the content and attitude toward the associated product. Through five online experiments and one lab experiment using facial expression analysis, I show that the mere presence of direct (vs. averted) eye gaze facilitates the transfer of emotions expressed in a positive message, which in turn, leads to positive downstream consequences. I also explore two boundary conditions of this emotional contagion effect, the valence of emotion shown in the selfie and the concurrent cognitive load of the consumer. This research contributes to marketing research by extending our knowledge of eye gaze effects beyond the cognitive mechanisms and attentional effects typically considered in previous studies. It suggests a more primitive, automatic process through emotional contagion.

INTRODUCTION

User-generated contents posted on social media play an increasingly vital role in every aspect of the consumers' decision-making, motivation, attitudes, and purchase behavior. For example, 78% of travelers reported that they explore other consumers' experiences posted online before making travel purchases (Lodging 2018). "Selfie" is a recent but popular form of user-generated content that is heavily affecting consumers' purchase behavior and attitude towards brands and products (Taylor 2020). Millions of selfies are taken every day and posted on a variety of social networking sites all over the world (Sung et al. 2018). As social media usage becomes prevalent and the selfie phenomenon has become a global trend, companies have begun to encourage consumers to take and post brand-relevant selfies on social media (Fox et al. 2018). Indeed, many of the companies have sought to tap into the burgeoning selfie phenomenon by incorporating selfies into their marketing strategies. For example, Turkish Airline's advertisement "Kobe vs. Messi: The Selfie Shootout" features two legendary athletes posing selfies at many of Turkish Air's most popular destinations. With over 140 million views on YouTube, it was voted YouTube users' favorite advertisement of the decade (Karp 2015). Moreover, marketers have tried to encourage social media users to post their personal selfies on social networking sites, using targeted brand hashtags as a way to build a community around a brand and facilitate brand electronic word-of-mouth. For example, to promote its newly launched product, Lancôme introduced the #bareselfie project on its Instagram account to encourage customers to post pictures of themselves without makeup using the #bareselfie tag (King 2014). Consumers share selfies with brands to express themselves, and brands gain benefits from these expressions. As consumers are both viewers and producers of these brand-selfies (Lee et al. 2015), the content generated has a

greater influence on customer engagement than content created by brands (Thompson and Malaviya 2013).

Several studies have explored the selfie phenomenon in the marketing literature under different notions and concepts such as influencer brand-selfies (Jin and Ryu 2020; Gannon and Prothero 2016), consumer selfie-taking and sharing behaviors (Taylor 2020; Sung et al. 2018; Prideaux et al. 2018; Eagar and Dann 2015), consumer engagement with and reactions to posted selfies (Holiday et al. 2019; Farace et al. 2017; Berg 2018), leveraging consumer brand-selfie as a new marketing tool and the subsequent impact on brand image (Uzunboylu et al. 2020; Ma et al. 2018; Kedzior et al. 2016; Presi et al. 2016). However, less attention has been paid to the visual aspects of the selfie-taker. One important visual component in consumer selfies that did not receive enough attention from marketing scholars is eye gaze direction.

However, gaze direction in interpersonal settings has received considerable attention from marketing and psychology researchers. While the psychology literature suggests that direct gaze is preferred to averted gaze in social interactions as it is associated with positive traits such as trust, social openness and competence (Argyle and Cook 1986; Macrae et al. 2002; Mason et al. 2005), advertisers believe that the presence of an averted (vs. direct) gaze increases the effectiveness of advertisements featuring a human face (To and Patrick 2021). The goal of this research is to study *how* and *when* a direct gaze, rather than an averted gaze, can increase the effectiveness of the content promoting brands such as brand selfies.

Previous research suggests that the gaze direction of the looked-at person influences viewers through both automatic and intentional mechanisms. Studies on the instinctive effects of gaze direction focused on the role of gaze direction in redirecting the viewers' attention (Carlson 2016) and heightening the observers' arousal (e.g., Akechi et al. 2013), whereas research on the

cognitive effects of gaze direction explored how the gaze direction of the looked-at person helps viewers process the looked-at person's facial information (Macrae et al. 2002), such as recognizing and evaluating the emotions expressed by the looked-at person. For example, an early study shows that job applicants were evaluated more favorably when they gazed at their interviewer (Kleinke 1986). Ilicic and Brennan (2019) suggest that a celebrity's direct (vs. averted) eye gaze increases the perception of self-celebrity connection and consumers' behavioral intentions. It is also well-established that people with a direct (vs. averted) gaze are perceived to be more trustworthy (Strachan et al. 2017).

In this research, I ask the question: how does gaze direction in brand-selfies with happy faces affect viewers' emotional valence and subsequent behavioral responses through a more primitive automated mechanism, emotional contagion? My work fills an important gap in research on eye gaze direction because although the psychology literature suggests that gaze direction plays a major role in emotion recognition (Adams and Kleck 2003), research has yet to explore the role of gaze direction in boosting the impact of specific emotions portrayed in a picture (To and Patrick 2021).

Emotional contagion refers to the process in which a person acquires emotions, such as happiness (positive) and sadness (negative), from other individuals (Deng and Hu 2018). Through this process, sharing of Person A's emotions through verbal and nonverbal communications between the sender and the receiver (Schoenewolf 1990) can in turn lead to Person B experiencing a congruent emotional state with Person A (Peters and Kashima 2015). Relying on the theory of emotional contagion, I hypothesize that the presence of direct (vs. averted) gaze in a brand-selfie facilitates the transfer of positive emotion from the selfie-taker to the viewers. I also demonstrate

the moderating role of susceptibility to emotional contagion and social identification in the relationship between gaze direction and viewers' emotional valence.

This research makes several important contributions to existing research and practice. First, existing research on the impact of gaze direction on the behavioral responses of viewers has usually examined the gaze direction effect through cognitive and evaluative mechanisms. Little research has linked eye gaze direction to automatic emotional mechanisms. My work fills this gap by understanding how eye gaze direction may facilitate the automatic transfer of emotions from one person to another through emotional contagion, which occurs beyond cognitive mechanisms. Second, previous research on the role of images in social media mostly focuses on factors such as structural properties of images (e.g., simplicity, symmetry, or image contrast) (Kostyk and Huhmann, 2021), visual appeals (e.g., emotional, informative, arousal) (Rietveld et al. 2020) and relevance of the image to the text (Li and Xie 2020). I contribute to this stream of research by introducing eye gaze direction as another important component of social media images that influence viewers' emotions and in turn their response towards the posted image. Finally, my research provides valuable insights to marketing practitioners on how to leverage selfies as a marketing tool. Marketers are increasingly encouraging consumers to post brand-selfies and express their feelings toward brands (Fox et al. 2018). My findings suggest the need to encourage consumers to look into the camera lens when taking positive brand-selfies, which can increase the effectiveness of these user-generated contents on other consumers.

LITERATURE REVIEW

SELFIES AND SELFIE TAKERS' BEHAVIORS

A selfie is defined as a self-portrait taken by oneself, with a smartphone or a digital camera, usually shared on social media (Fox and Rooney 2015). These selfies are often enhanced in appearance before being posted on social media, with the help of easy-to-use image enhancement tools (Chua and Chang 2016; Dumas et al. 2017). Previous research has uncovered gender, age, and personality differences in selfie-taking and sharing behaviors. Women post more selfies than men, and teenagers and young adults post selfies more than older adults (e.g., Dhir et al. 2016). Moreover, personality characteristics such as narcissism (Fox and Rooney 2015; Kim and Chock 2017; Sorokowski et al. 2015; Sung et al. 2018; Weiser 2015), extraversion (Baiocco et al. 2017; Kim and Chock 2017; Sorokowska et al. 2016), exhibitionism (Baiocco et al. 2017; Sorokowska et al. 2016), conscientiousness (Baiocco et al. 2017), and self-objectification (Lamp et al. 2019; Wang et al. 2019) have all been associated with a tendency to take and share selfies.

Research in psychology has also examined the relationships between “selfie activities” (i.e., posting, viewing, and commenting on selfies) and self-image. This stream of research argues that selfies can be considered as a tool for managing and constructing one’s self-presentation (Chua and Chang 2016; Pounders et al. 2016) driven by a desire to gain attention and recognition. Recent studies have also found engagement in selfie activities to result in greater body dissatisfaction, drive for thinness, thin-ideal internalization, and self-objectification (Bell et al. 2018; Cohen et al. 2018; Fox and Rooney 2015; Lamp et al. 2019; Niu et al. 2020; Veldhuis et al. 2020; Wang et al. 2019; Zheng et al. 2019).

BRAND-SELFIES

Sometimes a selfie portrays not only the consumer but also a brand or product as focal or peripheral features of the selfie. Such selfies are called brand-selfies and have become a powerful and unique tool that enables consumers to engage in brand-related electronic word-of-mouth on social media. Such an information exchange involves a high level of voluntary social communication about brands and self-disclosure (Lee et al. 2008). Some brands have jumped onto the selfie movement for the potential benefits of including brand-selfies in their overall branding strategies (Sung et al. 2018). One of the most popular examples is Ellen DeGeneres's 2014 celebrity-packed Oscar selfie, which was sponsored by the Samsung Galaxy smartphone (Vranica 2014). Discussing the use of brand-selfies as a marketing tool, Uzunboylu et al. (2020) suggest that companies should view consumers who post brand-selfies not only as passive receivers of messages but also as potential generators and cocreators of brand meanings and messages.

Why would consumers voluntarily help brands by displaying brand logos or actual products in their selfies? Existing research suggests that consumers do so for numerous reasons, such as the expression of the true or ideal self, social status, or wealth. For example, Sung et al. (2018) find that consumers with more narcissism, materialism, and stronger beliefs in social networking sites as sources of brand information are relatively more likely to post brand-selfies. Presi et al. (2016) further suggest that consumers extend their brand experiences to their social media pages through brand-selfies and add expressive meanings and value to the narratives that consumers communicate to their audiences. Analyzing different types of brand selfie assemblages, they find that when consumers capture a brand as part of their selfies, the action extends the brand's physical territory from a marketer-controlled physical space to a consumer-defined social network. Echoing this view, Kedzior and Allen (2016) describe selfie activities as a source of empowerment

and as the embodiment of societal control and expression of existing power relations. Zhu and Chen (2015) also suggest that a selfie helps people to tell a story and express something about themselves or about the brands they used.

In another research stream on selfies, marketing scholars investigated how bloggers and influencers promote products to their audiences through brand-selfies. Gannon and Prothero (2016) studied the use of beauty blogging selfies to convey authenticity. Results of their qualitative study revealed that taking and circulating selfies do not necessarily carry narcissistic meanings. They show that an active community of bloggers is testing products and sharing their experiences through authentic selfies and in ways that invoke expressive authenticity. In the context of Instagram influencer marketing, Jin and Ryu (2020) show that narcissistic selfies induce strong envy into consumers, especially when males are exposed to same-sex others' narcissistic self-centric selfies. In a similar vein, Chae (2018) shows that social media influencers' posting of selfies exhibiting their luxurious lifestyle induces followers' upward social comparison, materialistic envy, and obsessive-compulsive buying for hedonic motivations. In another study, Jin et al. (2018) demonstrate the moderating effect of Instagram photo type (selfies vs. photos taken by others) on consumers' behavioral intentions such as purchase likelihood and post engagement.

Although marketing scholars have started to investigate the selfie phenomenon and the role it may play in brand communications, much more research is needed to understand this phenomenon. Selfies are centered on human faces, and one of the most important facial components that affect interpersonal communications is gaze direction (Hu et al. 2017). The next section will review previous research on eye gaze direction and how it affects interpersonal communications.

EYE GAZE DIRECTION

Eye gaze direction is defined as the direction in which the eyes look. Two typical types of gaze direction are direct gaze, where a model looks at viewers directly, and averted gaze, where a model looks not at viewers but in a different direction (Frischen et al. 2007). Eye gaze direction plays an important role in face processing and social communication (Hu et al. 2017) and has been considered as one of the most important facial cues in communicating with consumers (Verbeke et al. 2016). There is substantial research showing that eye gaze direction is a powerful social cue and plays a prominent role in human communication (Becchio et al. 2008) by increasing individuals' ability to decode others' mental states (Baron-Cohen 1995) and influencing people's information processing (Wang et al. 2019). Indeed, the ecological theory of social perception suggests that the eyes can provide information regarding an individual's attitude and behaviors (Kleisner et al. 2013; McArthur and Baron 1983). Moreover, a growing number of studies show that eye gaze direction and emotional expression are not independent and can interact with each other to influence a person's perception (Wang et al. 2018). In the following sections, I will review how eye gaze direction 1) helps individuals to process facial information, 2) is used as a social cue to infer others' attention and intention, and 3) affects viewers' perception, evaluation and recognition of emotions of the looked-at person.

EYE GAZE AS A CUE TO PROCESS FACIAL INFORMATION

Previous research examining the role of eye gaze direction suggests that direct eye gaze facilitates the processing of facial information. For example, Macrae et al. (2002) show that a direct eye gaze compared to an averted eye gaze facilitates the categorization of faces. Faces with a direct gaze were more quickly categorized as male or female than faces with averted gaze. Furthermore, existing studies suggest that trait judgments and trust are influenced by the eye gaze direction of

the target (DePaulo et al. 1985; Wyland and Forgas 2010). For example, gaze direction has been found to be an important and relevant cue in determining if someone is lying (Zuckerman et al. 1981).

Even when other parts of a face are ignored, gaze direction serves as a signal of trustworthiness such that people who look away are judged as less trustworthy (Strachan et al. 2017). Confirming the validity of eye gaze direction in determining dishonesty, previous research shows that people are less likely to make eye contact when lying than when they are telling the truth (DePaulo and Morris 2004). A meta-analysis by Sporer and Schwandt (2007) shows that eye contact is deemed as the most important cue in determining if someone is lying. However, different cultures have varying eye contact norms such that people from Eastern cultures might not have the same perception of direct eye gaze as those from Western cultures (e.g., Knapp et al. 2013). People in Western cultures judge direct eye gaze more positively than those in Eastern cultures (Argyle et al. 1986). Furthermore, it has been found that direct eye gaze enhances the processing of other facial signals and attributes such as emotional expressions and attractiveness (Ewing et al. 2010; Graham and LaBar 2012).

EYE GAZE DIRECTION AS A SOCIAL CUE TO UNDERSTAND OTHERS' ATTENTION AND INTENTION

The current body of research on eye gaze effects suggests that gaze direction signals the location of someone's attentional focus (Driver et al. 1999; Friesen and Kingstone 1998). For example, in the sales context, researchers show that averted gaze signals less attention from a salesperson to customers than direct eye gaze (Andersson 2016). This attentional signaling capability of eye gaze direction can lead to observers instinctively orienting their attention in the direction of another's gaze (Carlson 2016; Friesen and Tipper 2004; Friesen et al. 2004). For

example, while fearful faces signal the existence of a potential threat in the environment, the direction of a fearful eye gaze can capture observers' attention and enable them to quickly identify and respond to the danger (Carlson and Mujica-Parodi 2015; Carlson and Reinke 2008). Eye gaze direction can also be used to reflexively redirect another's attention toward or away from a particular object or location (Frischen and Tipper 2004). For example, when people see another person make a gaze shift, their attention orient to that same location within a few hundred milliseconds (Friesen and Kingstone 1998).

The direction of eye gaze can also signal one's intention to act. Observing eye-gaze shifts can elicit motor brain activities in a similar way as observing an action directed towards an object, suggesting that eye gaze direction may be a valid cue for predicting others' intention to act (Pierno et al. 2006; Pierno et al. 2008). Adams and Kleck (2005) further assert that an individual infers another individual's behavioral intention to approach or avoid others based on their eye gaze direction, such that direct gaze is likely to be associated with an approach intention, whereas averted gaze direction is usually associated with an avoidance intention. More broadly, psychology research shows that the use of another person's gaze direction to infer intentions and interests has implications for higher-level cognitive processes such as language acquisition (e.g., Morales et al. 2000), social functioning (e.g., Baron-Cohen 1995) and emotional response to the looked-at objects (Bayliss et al. 2006).

EYE GAZE DIRECTION AND EMOTION

Previous studies assert that emotion and eye gaze direction are intertwined and that the direction of eye gaze influences how particular emotions are perceived and decoded (Jackson 2018). Schulze et al. (2013) demonstrate that self-reported social anxiety is positively related to self-direct perception of others' eye gaze directions, particularly for negative (e.g., angry, fearful)

and neutral emotional expressions. Such findings suggest that eye gaze direction and facial expression interact meaningfully in the perceptual processing of emotionally relevant facial information. Moreover, the direction of eye gaze is thought to interact with one's facial expression such that the perceived intensity of approach-oriented emotions (i.e., anger and happiness) is enhanced for faces displaying direct eye gaze, whereas avoidance-oriented emotions (i.e., sadness and fear) are perceived as more intense and are categorized more efficiently when combined with averted eye gaze (Adams and Kleck 2003). Similarly, Willis et al. (2011) show that the direction of eye gaze moderates the degree to which positive, negative, and neutral expressions influence social judgments.

In another study, Bindemann et al. (2008) suggest that eye gaze is analyzed faster than facial expressions, and its direction influences the allocation of visual attention to the target face. They argue that when viewing a face with an averted gaze, the observer's attention will be shifted in the direction of the gaze, resulting in a slower response time for emotion recognition. Moreover, psychology studies using physiological measurements (Helminen et al. 2011; Kleinke and Pohlen 1971) and subjective ratings of arousal (Akechi et al. 2013) show that faces displaying a direct gaze increase an observer's arousal more than faces displaying an averted gaze.

In addition to influencing observers' perception of the expressed emotion, eye gaze direction can act as a signal of attraction between people. For example, Ewing et al. (2010) and Akechi et al. (2013) found that humans tend to rate a person who makes eye contact as more likable, pleasant, and attractive than a person exhibiting an averted gaze. However, other studies such as Mason et al. (2005) did not find such an effect. Finally, others' eye gaze direction may influence our affective evaluation of surrounding objects. People like objects that are looked at by others more than objects that are not looked at (e.g., Bayliss et al. 2006).

THE CURRENT RESEARCH

The discussion above suggests rich knowledge about the role of gaze direction (1) as a cue in interpersonal communication through cognitive mechanisms, (2) a cue helping the viewers to understand others' attention and intention, and (3) as a cue in observers' evaluation, recognition and perception of the emotions expressed by the looked-at person. In the context of brand communications, although gaze direction received relatively less attention from the field of consumer research (To and Patrcik 2021), we also know that averted (vs. direct) gaze is known to enhance the effectiveness of advertisements portraying a human face. For example, ads depicting a model looking at the advertised product instead of the viewer inspire the viewer to pay greater attention to the advertised products (Hutton and Nolte 2011) and enhance consumers' narrative transportation (To and Patrcik 2021). Viewers also remember the ads featuring averted (vs. direct) gaze better (Adil et al. 2018). However, we do not know much about the effects of gaze direction on viewer through primitive subconscious mechanisms such as emotional contagion and when such mechanisms play a role. This research fills this gap by investigating the role of eye gaze direction in facilitating emotional contagion, an automatic affective process beyond cognitive mechanisms. I will elaborate more on the emotional contagion mechanism and how eye gaze direction may influence this mechanism in the next sect

HYPOTHESIS DEVELOPMENT

EMOTIONAL CONTAGION

Emotional contagion theory proposes that a person's emotional expressions can flow to a recipient and have a contagious effect on the recipient (Hatfield et al. 1993). The recipient in essence “catches” the expressed emotions and develops feelings similar to those of the sender (Fehrenbacher 2017). Emotional contagion is an autonomous, mostly subconscious process that occurs within the recipient (Hatfield et al. 1993). It can occur both during in-person conversations and, as in our case, in a virtual context (Small and Verrochi 2009). For example, Fox et al. (2011) examined the effect of emotional contagion in a user-generated content setting and demonstrated that emotional contagion can occur when consumers read such content, even if they have not personally experienced the events being described. In another study, Smith and Rose (2020) presented evidence of a consumer’s positive conscious and unconscious (through emotional contagion) affective response to smiley-face emojis in text messages. Similarly, Lohmann et al. (2017) showed that emotions expressed by smileys affect receivers’ emotions through the process of emotional contagion.

This subconscious, automatic transfer of emotion from one person to another is the result of a two-step process. First, human beings tend to mimic the facial expressions and behaviors of others (Fehrenbacher 2017). Previous research has found such mimicry behavior in both face-to-face interactions and in response to expressive faces in a virtual setting (Hatfield et al. 1993; Wild et al. 2001). Researchers have attributed this mimicry to the “mirror neurons” located in the human motor cortex. Mirror neurons are activated both when individuals watch an action and when they initiate the same action themselves (Rizzolatti and Craighero 2004). As a result, when people observe someone smiling and happy, they tend to imitate that behavior and smile as well.

In the second step, once having imitated the other person's emotional expression, people begin to feel the emotions that they are mirroring. Consequently, observing a smiling person can induce a similar emotional state in the observer, and the observer's emotional state eventually becomes consistent with that of the looked-at person (Hatfield et al. 1993).

EYE GAZE DIRECTION AND EMOTIONAL CONTAGION

Eye gaze direction can facilitate emotional contagion in several ways. First, direct eye gaze can enhance emotional contagion because of the faster and more visual attention associated with eye gaze. Langton et al. (2000) show that eyes provide us with a powerful signal to the direction in which someone is looking. As a result, gaze direction is analyzed faster than facial expressions and averted (vs. direct) gaze shifts the observer's visual attention from the looked-at person to the direction of the seen gaze. Other studies have shown that direct eye gaze can also intensify the attention paid to the target person during interactions (e.g. Freeth et al. 2013). Together, these findings suggest that the presence of direct eye gaze can facilitate the transfer of emotions from the sender to the viewer, since it helps the viewer focus on the sender's face and the expressed emotion rather than directing the attention elsewhere.

Second, the direction of eye gaze has been shown to influence how particular emotions are perceived and decoded (Jackson 2018). In an early study, Kimble and Olszewski (1980) found that gaze direction communicates the intensity of expressed emotions, with more sustained (less) direct gaze often known to be a sign of strong (weak) emotions. Later research made more nuanced differentiations, showing that the presence of direct gaze enhances the perceived intensity of approach-oriented emotions such as happiness, while averted gaze enhances the intensity of avoidance-oriented emotions such as sadness (Adams and Kleck 2003). This intensity of perceived emotions is an important consideration in emotional contagion. As emotional contagion results

from the mimicry of another's emotional expression (Hatfield et al. 1993), more intense emotions are likely to trigger more expressive manifestations of the emotion in the observer, which subsequently trigger stronger emotions being experienced by the observer.

In summary, direct (vs. averted) eye gaze should enhance the ability of faces with positive emotions to trigger emotional contagion, as direct eye gaze enhances the perceived intensity of emotions expressed and facilitates attention to those emotions. This emotional contagion should subsequently enhance the viewer's emotional valence.

Hypothesis 1: *The presence of direct (vs. averted) eye gaze in positive brand selfies will enhance the emotional valence of the receiver through emotional contagion.*

The enhanced emotional valence due to eye gaze direction in brand-selfies can have downstream consequences on consumer attitude and post engagement. Previous research identifies users' emotionality as a factor influencing consumer engagement (Hughes et al. 2019). It is well-established that one's aroused emotional state can influence the individual's attitude and behavior (Hatfield et al. 2014; Van Kleef et al. 2015). For example, Prentice (2019) shows that the emotion transferred from a looked-at person to a viewer through emotional contagion affects the viewer's attitudes and behaviors. In another study, Kulczynski et al. (2016) find that consumers exposed to an advertisement depicting a celebrity smiling (vs. resting face) generate more favorable advertisement attitude, brand attitude, and behavioral response due to the transfer of positive emotion through emotional contagion from the celebrity to the consumers.

The discussion above suggests that the more positive emotions as a result of emotional contagion from brand selfies should lead to higher post engagement and more positive attitude towards the featured product. That is, to the extent that direct (vs. averted) eye gaze facilitates the viewer "catching" the positive emotions expressed by an individual in a brand-selfie, it should

enhance the viewer's post engagement and attitude. In addition, I argue that the positive influence of direct (vs. averted) eye gaze on consumers' behavioral responses will be mediated by consumers' enhanced emotional valence (H3).

Hypothesis 2a: *The presence of direct (vs. averted) eye gaze in positive brand selfies increases viewers' post engagement.*

Hypothesis 2b: *The presence of direct (vs. averted) eye gaze in positive brand selfies increases the viewers' attitude towards the featured product.*

Hypothesis 3: *The effects of direct (vs. averted) eye gaze on consumers' responses as hypothesized in H2a and H2b are mediated by the increase in valence-consistent emotions.*

BOUNDARY CONDITIONS TO THE EYE GAZE EFFECT ON EMOTIONAL CONTAGION

As discussed in the previous sections, gaze direction serves as a strong social cue and may affect the viewers' behavioral response through a cognitive mechanism. For example, faces holding direct gaze (vs. averted) are perceived as more trustworthy, engendering more positive emotions through an effortful appraisal-based mechanism. Therefore, any observed effect of direct (vs. averted) gaze on viewers' emotional and behavioral responses may be due to this cognitive mechanism rather than due to emotional contagion, a subconscious affective mechanism. In this section, I explore two boundary conditions to the relationship between gaze direction and emotional valence to help verify whether emotional contagion indeed serves as an underlying mechanism of the proposed gaze direction effect.

Research on emotional contagion suggests that the likelihood of emotional contagion and its intensity differ based on the receiver's susceptibility to emotional contagion (Hatfield et al. 1993), which refers to an individual's innate "likelihood of catching the emotions of others"

(Doherty 1997, P. 132). For example, Lohmann et al. (2017) found that smileys' impact on receiver emotions depends on the receivers' susceptibility to emotional contagion. In another study, Du et al. (2011) showed that consumers' susceptibility to emotional contagion increases the effect of employees' emotional expressions on customers' emotions during service encounters. Therefore, if emotional contagion is the underlying mechanism of the gaze direction's effect on viewers' emotional valence, this effect should be strengthened by some viewers' higher susceptibility to emotional contagion.

Hypothesis 4: *Higher susceptibility to emotional contagion enhances the effects of eye gaze direction on the receiver's a) emotions, b) post engagement, and c) attitude towards the featured product.*

Although emotional contagion can happen between two strangers (Pugh 2001), the outcome of the emotional contagion process varies across social contexts. Particularly, existing research suggests that the nature of the sender-receiver relationship can affect the extent of emotional contagion (Hatfield 2014). Individuals are more likely to catch the emotions of others if they have something in common or if they like each other. That is, emotions from individuals that we have close relationships with seem to be more contagious than those from strangers (Raab et al. 2020).

More broadly, pre-existing connections, a desire to affiliate, similarity, and group membership have been found to have a profound impact on catching others' emotions through emotional contagion (Aylward 2008; Bailenson and Yee 2005; Chartrand and Lakin 2013; Hess and Fischer 2013; Van Der Schalk et al. 2011; Van Swol and Drury 2006). One type of group membership defined by social identity theory is in-group vs. out-group. An in-group is a social group that an individual psychologically identifies him or herself as a member of. In comparison,

an out-group is a social group that a person does not identify with (Tajfel 1974). Yabar et al. (2006) suggest that individuals mimic an in-group member more than they do an out-group member. Similarly, Likowski et al. (2008) show that individuals are more likely to mimic their friends' emotions than strangers' emotions. Gueguen and Martin (2009) find that even incidental similarities such as sharing the same first name may enhance emotional contagion between two individuals. Following these research findings, I expect that the proposed eye gaze effect on viewers' emotional valence through emotional contagion will be strengthened by the perceived similarity between the viewer and the selfie-taker.

Hypothesis 5: *The effect of eye gaze direction on the receiver's a) emotions, b) post engagement, and c) attitude towards the featured product will be stronger when the individual in the selfie is considered an in-group member by the receiver than when the individual in the selfie is considered an out-group member by the receiver.*

OVERVIEW OF THE STUDIES

I conducted five online and one lab experiments to test the research hypotheses. Study 1 and Study 2 examined the main effect of eye gaze direction on viewer emotions using both self-reported and physiological measures. Study 3 manipulated participants' cognitive load to inhibit more effortful cognitive mechanisms, thereby testing whether a more automatic emotional contagion process is responsible for the observed gaze direction effect in the first two studies. Studies 4 provided further evidence for emotional contagion as the underlying mechanism by showing that the effect of direct eye gaze diminished when the selfie-taker's face expresses sad emotions. Finally, Studies 5 and 6 tested the two boundary conditions of the emotional contagion effect: susceptibility to emotional contagion and the selfie taker's social identity as an in-group (vs. out-group) member.

STUDY 1: THE MAIN EFFECT OF EYE GAZE DIRECTION

Study 1 examines the main effect of eye gaze direction on 1) the transfer of positive emotions expressed in brand-selfie posts to the receiver (emotional valence), and 2) the subsequent outcomes as hypothesized in H1, H2a, and H2b. The study featured a one-factor (eye gaze direction: direct vs. averted) between-subjects experimental design. After removing individuals who failed attention checks, the final sample consisted of 100 participants (Mean $_{Age}$ = 51.44, 65% female) recruited through Qualtrics. The participants were randomly assigned to one of the experimental conditions.

STIMULI AND PRETEST

To manipulate eye gaze direction, I created two similar mock Instagram selfie-posts showing a traveler in a hotel lobby. The selfie-taker held a direct gaze towards the viewer in the direct-gaze selfie, while looking away from the viewer in the averted-gaze version (figure 4).

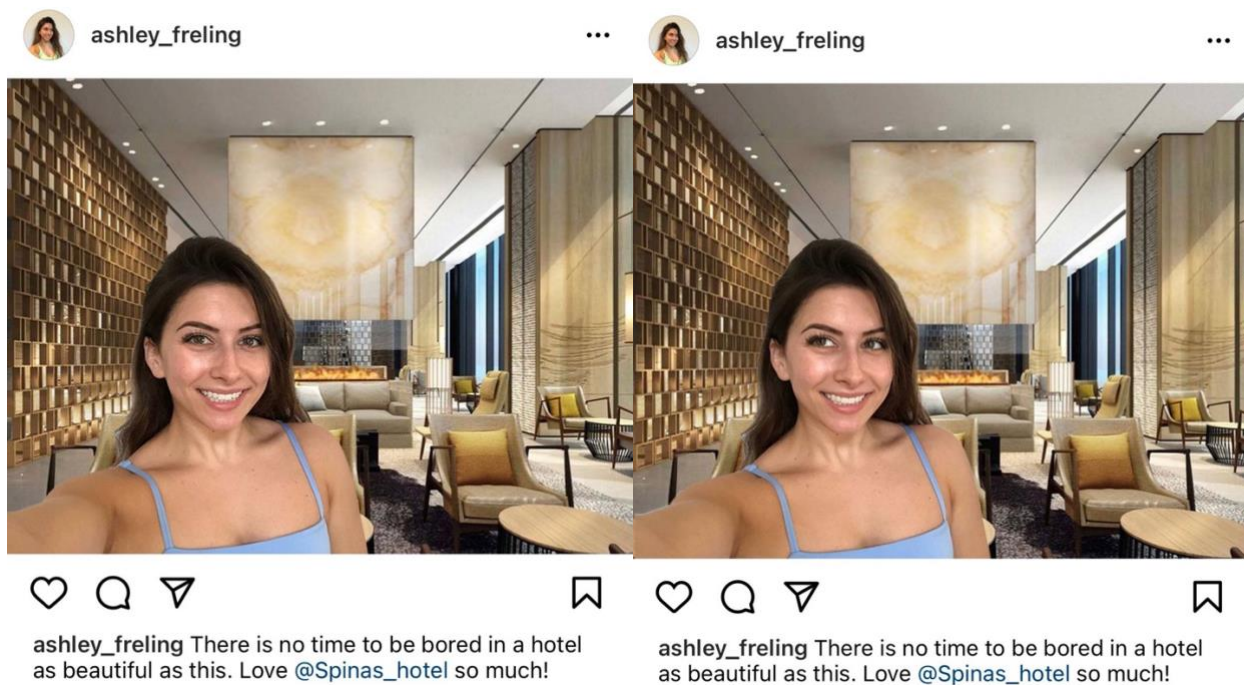


Figure 4.a Selfie with Direct Gaze, **b.** Selfie with Averted Gaze

The following caption was used for both Instagram posts: “There is no time to be bored in a hotel as beautiful as this. Love @Spinás_hotel so much!”. The caption was adapted from a real social media post.

I ran a pretest to ensure that (1) the brand-selfie posts expressed positive emotions, (2) the pictures looked like real Instagram selfie-posts and (3) the manipulation of the gaze direction was effective. The pretest featured a one-factor (eye gaze direction: direct vs. averted) between-subjects experimental design. After removing individuals who failed the attention checks, the final sample consisted of 40 respondents (Mean Age = 28.82, 67% female) recruited from Prolific.co. Each participant was randomly shown one of the two selfies and was asked to rate the selfie-taker’s emotion using two items (good, happy) developed by Elliot and Devine (1994) on a 7-point scale (e.g., 1= not happy/good at all, 7= very happy/good). I created a selfie-taker emotion score ($r = 0.74$) by averaging each participant’s responses to the two emotion items. Results of two one-sample t-tests on the selfie-taker emotion score indicated that respondents in both direct (Mean_{direct} = 5.16, $t = 3.45$, $p < 0.01$) and averted (Mean_{averted} = 5.05, $t = 4.80$, $p < 0.001$) conditions rated the selfie-taker’s emotion significantly higher than the mid-point of the scale. Additionally, a t-test of the selfie-taker’s emotion ratings showed that there was no significant difference between the two gaze direction conditions (Mean_{direct} = 5.15, Mean_{averted} = 5.05, $t = 0.27$, $p > 0.05$). To examine how realistic the selfies were, I asked all respondents (1) whether it was realistic to see a selfie like this from a user on Instagram and (2) whether the picture was a selfie, both on a seven-point scale. I created a realism score ($r = 0.67$) by averaging each participant’s responses to the two questions. The results from one-sample t-tests showed that participants perceived both selfies in the direct gaze (Mean_{direct} = 6.00, $t = 5.51$, $p < 0.01$) and averted gaze (Mean_{averted} = 5.76, $t = 5.72$, $p < 0.01$) conditions as realistic selfies posted on Instagram. Moreover, a t-test of realism score between the

two conditions showed that there was no significant difference between the two gaze direction conditions (Mean_{direct} = 6.00, Mean_{averted} = 5.76, $t = 0.50$, $p > 0.05$).

Finally, to test the effectiveness of gaze manipulation, I asked participants to answer the following question adapted from Arndt et al. (2020) on a 7-point scale: The selfie-taker appeared to be looking ____: with the anchors as 1 = somewhere else (not me), 7 = directly at me. A t-test of this perceived gaze direction between the two gaze direction conditions confirmed the effectiveness of the manipulation (Mean_{direct} = 5.79, Mean_{averted} = 1.48, $t = 36.21$, $p < 0.001$).

STUDY DESIGN AND PROCEDURE

Participants were asked to imagine that they were scrolling down their Instagram timeline and came across a selfie posted by a hotel customer expressing her feelings about the hotel. After reading the scenario, half of the respondents were shown the direct-gaze post discussed earlier, while the other half saw the averted gaze post. They were then asked to rate their emotional valence, attitude toward the hotel, and engagement intention. I used the same two items (good, happy) used in the pretest but this time to measure participants' own emotional valence. Attitude toward the featured hotel was assessed using the following three seven-point semantic differential scales anchored at "good-bad", "positive-negative", and "favorable-non-favorable" (Stevenson 2000). Finally, I measured post engagement intention using the following items adapted from Mirbagheri and Najmi (2019): 1) how likely is it that you would comment on this post? 2) how likely is it that you would share this post? 3) how likely is it that you would "Like" this post? and 4) how likely is it that you would follow the posts related to this hotel? These items were measured on a 7-point scale anchored at 1 = very unlikely and 7 = very likely. At the end of the study, participants also completed the same gaze manipulation check question as in the pretest and answered several demographic questions.

RESULTS

To test the effectiveness of the manipulation, I conducted a t-test of perceived eye gaze direction between the two experimental conditions. The results confirmed that participants in the direct eye gaze condition perceived the eye gaze to be more direct than those in the averted eye gaze condition (Mean_{direct} = 6.11, Mean_{averted} = 1.28, $t = 30.20$, $p < 0.001$).

To test the first hypothesis, I conducted a t-test of emotional valence between the two eye gaze direction conditions. Each participant's emotional valence score was calculated as the mean of the participant's responses to the two self-reported affect questions ($r = 0.98$). The results suggested that participants under the direct condition felt significantly more positive emotions than those in the averted condition (Mean_{direct} = 5.58, Mean_{averted} = 4.87, $t = 2.35$, $p = 0.02$). These results confirmed H1.

To test H2a, I first calculated each participant's post engagement score as the mean of the participant's responses to the four engagement questions (Cronbach's $\alpha = 0.90$). A t-test of this post engagement score between the eye gaze conditions supported H2a and showed that post engagement was significantly higher for participants in the direct eye gaze condition than those in the averted eye gaze condition (Mean_{direct} = 3.85, Mean_{averted} = 2.99, $t = 2.48$, $p = 0.01$).

To test H2b, I conducted a similar t-test of participants' attitude scores. Each participant's attitude score was calculated as the mean of the participant's responses to the three attitude questions (Cronbach's $\alpha = 0.97$). The results suggested that participants' attitude towards the hotel was significantly higher under the direct eye gaze condition than under the averted eye gaze condition (Mean_{direct} = 5.58, Mean_{averted} = 4.87, $t = 2.35$, $p = 0.02$). Figure 5 displays the three dependent variables across the two conditions.

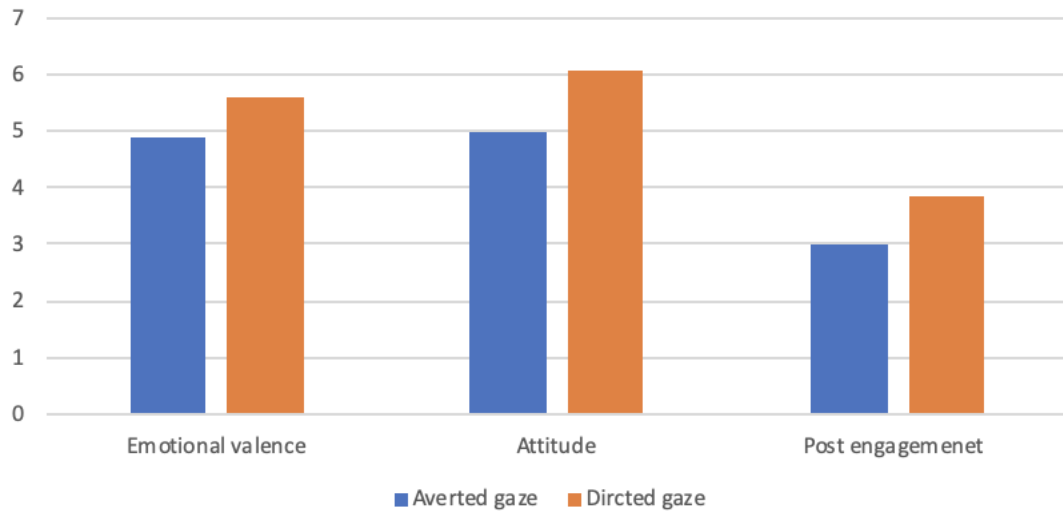


Figure 5. Emotional Valence, Attitude, and Post Engagement As a Function of Eye Gaze Direction

Mediation test. To test the mediating role of emotional valence in the effect of eye gaze direction on 1) attitude and 2) post engagement (H3), I followed the procedure recommended by Hayes and Preacher (2014) using PROCESS Model 4 with 5000 iterations (figure 6). The results revealed a significant indirect effect of gaze direction condition on attitude towards the hotel ($b = 0.48$, $SE = 0.20$; $CI_{95\%} = [0.11, 0.89]$) and on post engagement ($b = 0.4$, $SE = 0.17$; $CI_{95\%} = [0.07, 0.74]$) through emotional contagion. The results showed that the direct effect of eye-gaze direction was still significant on attitude ($b = 0.56$, $SE = 0.19$; $CI_{95\%} = [0.17, 0.95]$) but not on post engagement ($b = 0.45$, $SE = 0.31$; $CI_{95\%} = [-0.13, 1.10]$). Therefore, emotional contagion partially mediated the gaze direction effect on attitude, while the effect on post engagement was indirect-only through emotional contagion.

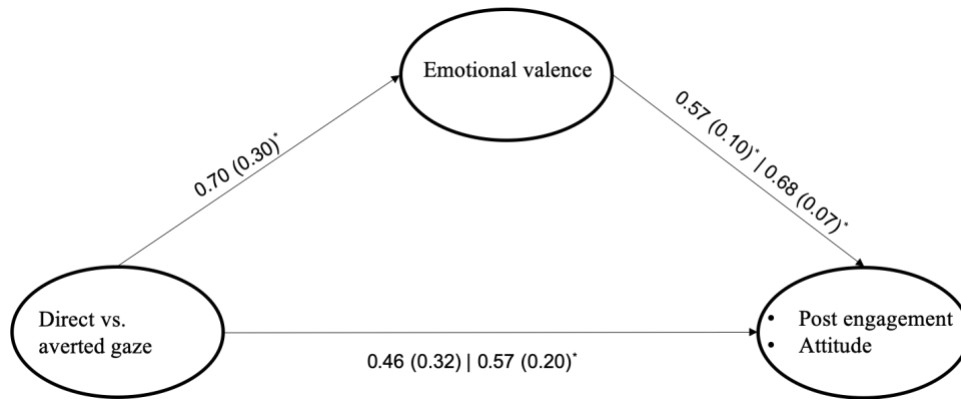


Figure 6. Study 1 Mediation Model (Post Engagement | Attitude)

DISCUSSION

The findings from Study 1 support the argument that the mere presence of direct (vs. averted) gaze in a brand-selfie portraying a happy consumer increases the viewers' emotional valence and, in turn, post engagement and attitude toward the brand. This experiment used a self-reported scale to measure participants' emotions. To test the robustness of the findings, Study 2 captured and analyzed participants' actual facial expressions.

STUDY 2: MEASURING EMOTIONAL CONTAGION THROUGH ACTUAL FACIAL EXPRESSIONS

STUDY DESIGN AND PROCEDURE

Previous research on emotional contagion has used facial expressions as a key indicator of emotions (Smith and Rose 2020). In Study 2, I derived selfie viewers' emotions through their facial expressions rather than through self-reported measures. The study featured a one-factor (gaze direction: direct vs. averted) between-subjects experimental design. 82 undergraduate students (Mean age = 22.6, 52% females) participated in the study in person (Figure 7) and were randomly assigned to one of the experimental conditions. The scenario and the experimental stimuli were the same as those in the first study. The participants' facial expressions while looking at the selfie were recorded by a video camera and were analyzed by the Affectiva algorithm in the iMotions software. The Affective algorithm uses the well-established Facial Action Coding System (FACS) (Ekman and Friesen 1978) to derive individuals' emotions based on specific combinations of facial muscle positions. It has been used successfully in previous research to study facial mimicry of subjects in response to images portraying different emotions displayed on a computer screen (Kovalchuk et al. 2022). Given the current research's focus on positive emotional contagion, I used each participant's emotional valence scores extracted at the default 33-millisecond time intervals. This score ranged from -100 to +100, with a higher score representing more positive emotions. Following the selfie exposure, participants also answered the same manipulation check question as in Study 1 and a few demographic questions.

RESULTS

To test the eye gaze manipulation, I conducted a t-test of perceived eye gaze direction between the two experimental conditions. The results showed the effectiveness of the

manipulation, with participants in the direct gaze condition perceiving the gaze as significantly more direct than those in the averted gaze condition ($\text{Mean}_{\text{direct}} = 5.77$, $\text{Mean}_{\text{averted}} = 2.06$, $t = 13.72$, $p < 0.001$).

To test the first hypothesis, I regressed the participants' emotional valence² scores on eye gaze direction condition (baseline = averted), time elapsed (in milliseconds) since the start of the selfie display, and their interaction. The time elapsed measure was included to account for possible time dynamics and was standardized before entering the regression. Since the emotional valence score was generated repeatedly for each participant at 33-millisecond time frame during selfie exposure, cluster robust standard errors were used to account for correlated observations within the same individual. The results showed a significant positive effect of direct eye gaze ($b = 7.76$, $t = 22.02$, $p < 0.001$) and a significant positive interaction between eye gaze direction and time elapsed ($b = 13.80$, $t = 18.92$, $p < .001$). That is, direct eye gaze elicited significantly more positive emotions from participants, and this eye gaze effect strengthened as exposure to the selfie lengthened. In contrast, the negative slope of time elapsed in the regression ($b = -13.97$, $t = -19.20$, $p < .001$) suggests that participants' emotional valence became less positive over time under the averted gaze condition (the baseline). As a whole, the average emotional valence was significantly more positive under the direct gaze condition than under the averted gaze condition ($\text{Mean}_{\text{averted}} = -2.32$, $\text{Mean}_{\text{direct}} = 0.10$; $t = 18.63$, $p < .001$). These results provided support for H1 and replicated the findings from Study 1, showing the robustness of the emotional contagion effect.

² I also ran a similar regression of the specific emotion of joy as coded by Affectiva on the same set of variables. The regression produced similar results as the main analysis using overall emotional valence."

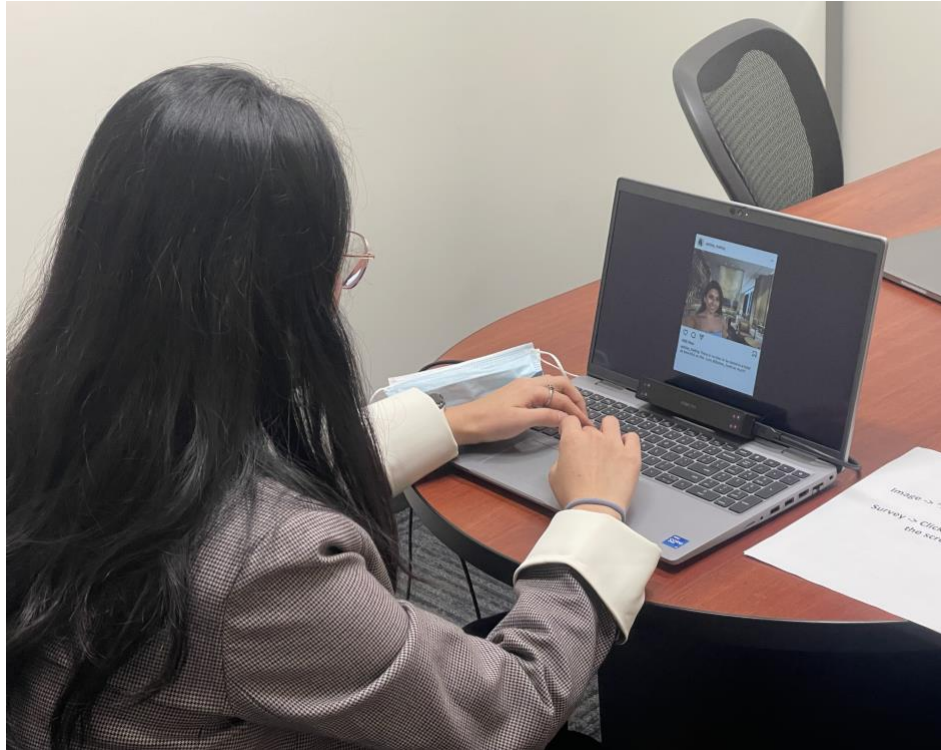


Figure 7. Study 2 Lab Setting

STUDY 3: THE MODERATING ROLE OF COGNITIVE LOAD

STUDY DESIGN AND PROCEDURE

Previous research provides evidence showing that gaze direction affects the cognitive processing of facial expression (Wang et al. 2017). Willis et al. (2011) found that happy faces with direct gaze are perceived as more trustworthy than happy faces with averted gaze. Therefore, one might argue that the observed eye gaze effect in the first two studies occurred through a cognitive mechanism instead of emotional contagion, because observers trusted the happy face with direct gaze more than the one with averted gaze. The purpose of Study 3 is to demonstrate that the eye gaze effect on emotional contagion happens beyond this cognitive process. After removing individuals who failed attention checks, the final sample consisted of 242 participants (Mean age = 42.66, 72% female), recruited from Qualtrics. They were randomly assigned to one of the experimental conditions.

In order to manipulate cognitive load, I followed the procedure from Bonnefon and Hopfensitz (2013). Before participants read the scenario, a dot pattern in a 3 * 3 matrix was shown for 900 ms. Participants were asked to memorize the pattern while completing the study. At the end of the study, participants were asked to pick the pattern they saw at the beginning of the study among four options. The dot pattern used in the low cognitive load was very simple with three dots lined up in a straight line, whereas the dot pattern in the high cognitive load condition had four dots and was relatively more complex (figures 8a and 8b). Participants were trained with the dot memorization task before the study with two practice trials. Training instructions emphasized that it is crucial that the participants remember the dot pattern correctly. After each of the dot training practices, participants received feedback about their memorization performance. To test the

effectiveness of this cognitive load manipulation, I asked respondents to rate the difficulty of remembering the dot pattern on a seven-point scale anchored at 1 = extremely easy and 7 = extremely difficult (Jae 2011).

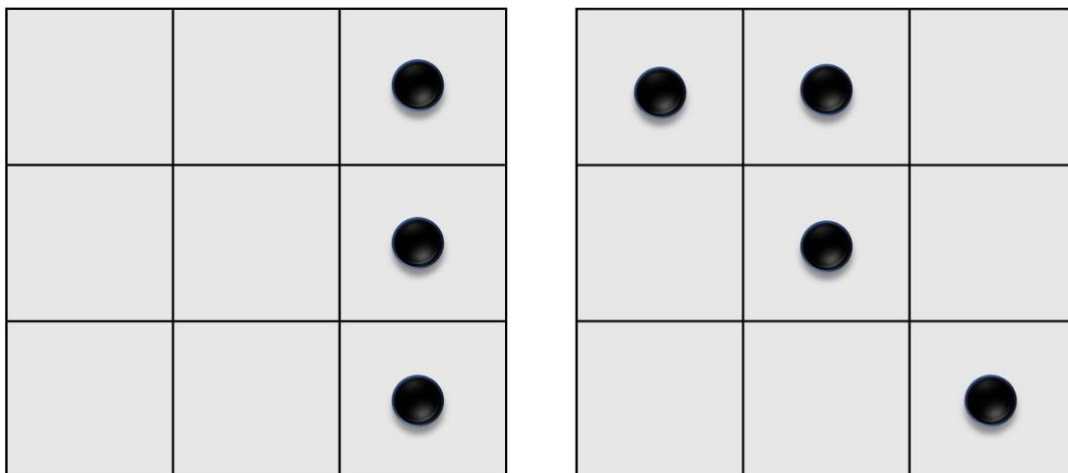


Figure 8a. Simple Dot Pattern, **b.** Complex Dot Pattern

RESULTS

To test the eye gaze manipulation, I ran a two-way ANOVA using the eye gaze direction manipulation check question as the dependent variable and eye gaze condition, cognitive load condition, and their interaction as the independent variables. The results acknowledged the effectiveness of the gaze manipulation as participants in the direct gaze condition reported higher perception of direct eye gaze than those in the averted eye gaze condition (Mean_{direct} = 6.49, Mean_{averted} = 1.56, $F = 1671.64$, $p < 0.001$). No other effect in the ANOVA was significant.

To test the cognitive load manipulation, I ran a two-way ANOVA using the respondents' responses to the information load manipulation check question as the dependent variable and cognitive load condition, gaze direction condition, and their interaction as the independent variables. The results suggested that the cognitive load manipulation was successful. Participants in the high cognitive load condition rated the dot pattern memorization task as significantly more difficult than those in the low cognitive load condition (Mean_{high} = 3.38, Mean_{low} = 2.66, $F = 9.33$, $p < 0.01$). No other effect in the ANOVA was significant.

To derive each participant's emotional valence ($r = 0.98$), post engagement (Cronbach's $\alpha = 0.89$), and attitude scores (Cronbach's $\alpha = 0.94$), I followed the same procedure as Study 1. To test hypotheses 1, 2a, and 2b, I ran three two-way ANOVA with the participants' emotional valence score, post engagement score, and attitude score as the dependent variables and eye gaze direction condition, cognitive load condition, and their interaction as the independent variables. The results showed a significant main effect of eye gaze direction (Mean_{direct} = 5.55 vs. Mean_{averted} = 4.60; $F = 24.92$, $p < 0.001$) and a marginal significant interaction between eye gaze direction and cognitive load ($F = 3.01$, $p = 0.08$) on emotional valence. Under low cognitive load conditions, direct eye gaze led to significantly more positive emotion (Mean_{direct} = 5.34 vs. Mean

averted = 4.72; $t = 2.36$, $p = 0.02$), higher post engagement (Mean_{direct} = 3.43 vs. Mean_{averted} = 2.63; $t = 2.61$, $p < 0.01$), and more favorable attitude towards the featured hotel (Mean_{direct} = 5.61 vs. Mean_{averted} = 4.87; $t = 2.98$, $p < 0.001$) than averted eye gaze. In comparison, under high cognitive load condition, the effects of eye gaze direction on emotion (Mean_{direct} = 5.73 vs. Mean_{averted} = 4.44; $t = 4.67$, $p < 0.001$), post engagement (Mean_{direct} = 3.33 vs. Mean_{averted} = 2.56; $t = 2.40$, $p = 0.02$) and attitude (Mean_{direct} = 5.96 vs. Mean_{averted} = 4.72; $t = 4.77$, $p < 0.001$) were also positive and significant. The direct gaze effect was actually stronger under the high cognitive load condition than under the low cognitive load condition, suggesting that individuals may have relied more on the emotional contagion mechanism when they have diminished capacity for cognitive processing. The results also showed a main effect of gaze direction on post engagement (Mean_{direct} = 3.38 vs. Mean_{averted} = 2.60; $F = 12.47$, $p < 0.001$), and attitude (Mean_{direct} = 5.79 vs. Mean_{averted} = 4.80; $F = 30.62$, $p < 0.001$).

Moderated mediation test. Following Hayes and Preacher (2014), I conducted two moderated mediation tests using PROCESS Model 7 with 5000 iterations. The first analysis included eye gaze direction condition as the independent variable, cognitive load condition as the moderator, emotional valence as the mediator, and post engagement as the dependent variable. The second analysis had the same set of independent variables and mediator but with attitude as the dependent variable.

The post engagement analysis showed that the direct (vs. averted) gaze's effect on post engagement was mediated by participants' more positive emotional valence under both high ($b = 0.60$, $SE = 0.16$; $CI_{95\%} = [0.32, 0.95]$) and low ($b = 0.29$, $SE = 0.14$; $CI_{95\%} = [0.04, 0.59]$) cognitive load conditions. The attitude analysis showed that the direct (vs. averted) gaze's effect on attitude towards the featured hotel was also mediated by the participants' emotional valence under both

high ($b = 0.71$, $SE = 0.18$; $CI_{95\%} = [0.38, 1.09]$) and low ($b = 0.34$, $SE = 0.15$; $CI_{95\%} = [0.04, 0.65]$) cognitive load conditions. Table 6 shows the effect of eye gaze direction on attitude and post engagement through experienced emotion as a mediator on different values of moderator.

Table 6. Study 3 Moderated Mediation Results

	Direct effect	Indirect effect	Total effect
Outcome: Attitude (Y)			
Cognitive load = low	0.47 (0.16) *	0.34 (0.15) *	0.81 (0.20) *
Cognitive load = high	0.47 (0.16) *	0.71 (0.18) *	1.18 (0.22) *
Outcome: Post engagement (Y)			
Cognitive load = low	0.33 (0.21)	0.29 (0.14) *	0.62 (0.24) *
Cognitive load = high	0.33 (0.21)	0.60(0.16) *	0.94(0.24) *

DISCUSSION

The effect of direct (vs. averted) gaze on emotional valence, post engagement and attitude towards the brand under both high and low cognitive load conditions provides evidence that the observed eye gaze effect occurred at least partly through an automatic emotional contagion mechanism, rather than only through a cognitive mechanism. In the next study, I test this emotional contagion mechanism through a different approach, by varying the valence of the emotions expressed in the selfie.

STUDY 4: DIMINISH OF THE EYE GAZE EFFECT FOR THE SORROWFUL EYES

STUDY DESIGN AND PROCEDURE

Study 4 aims at further verifying the emotional contagion mechanism under the direct eye gaze effect by creating conditions inconducive to emotional transfer. Previous research suggests that people tend not to have direct eye gaze with sorrowful eyes since sadness is an avoidance-oriented emotion (Adams and Kleck 2005). Moreover, past studies find that negative emotion is less likely to transfer through emotional contagion (Hess and Fischer 2013). Therefore, if emotional contagion is indeed responsible for the observed eye gaze effect, I expect not to see a significant effect from direct eye gaze on emotional valence when eyes are expressing sad emotions.

Study 4 used a 2 (gaze direction: direct vs. averted) * 2 (facial expression: happy vs. sad) between-subjects experimental design. After removing individuals who failed attention checks, the final sample consisted of 586 participants (Mean_{age} = 43.85, 77% women) recruited from Qualtrics. The participants were randomly assigned into one of the experimental conditions. I created four mock Instagram posts for this study. All Instagram posts featured a disadvantaged woman who cannot afford a college education and is waiting for a scholarship to pursue her dreams (Figure 9). The study procedure was similar to Study 1. To test the sad pictures' facial expression manipulation, I used two items (miserable, unhappy) from Russell (1980) on a 7-point scale (1 = very slightly or not all, 7 = Extremely).

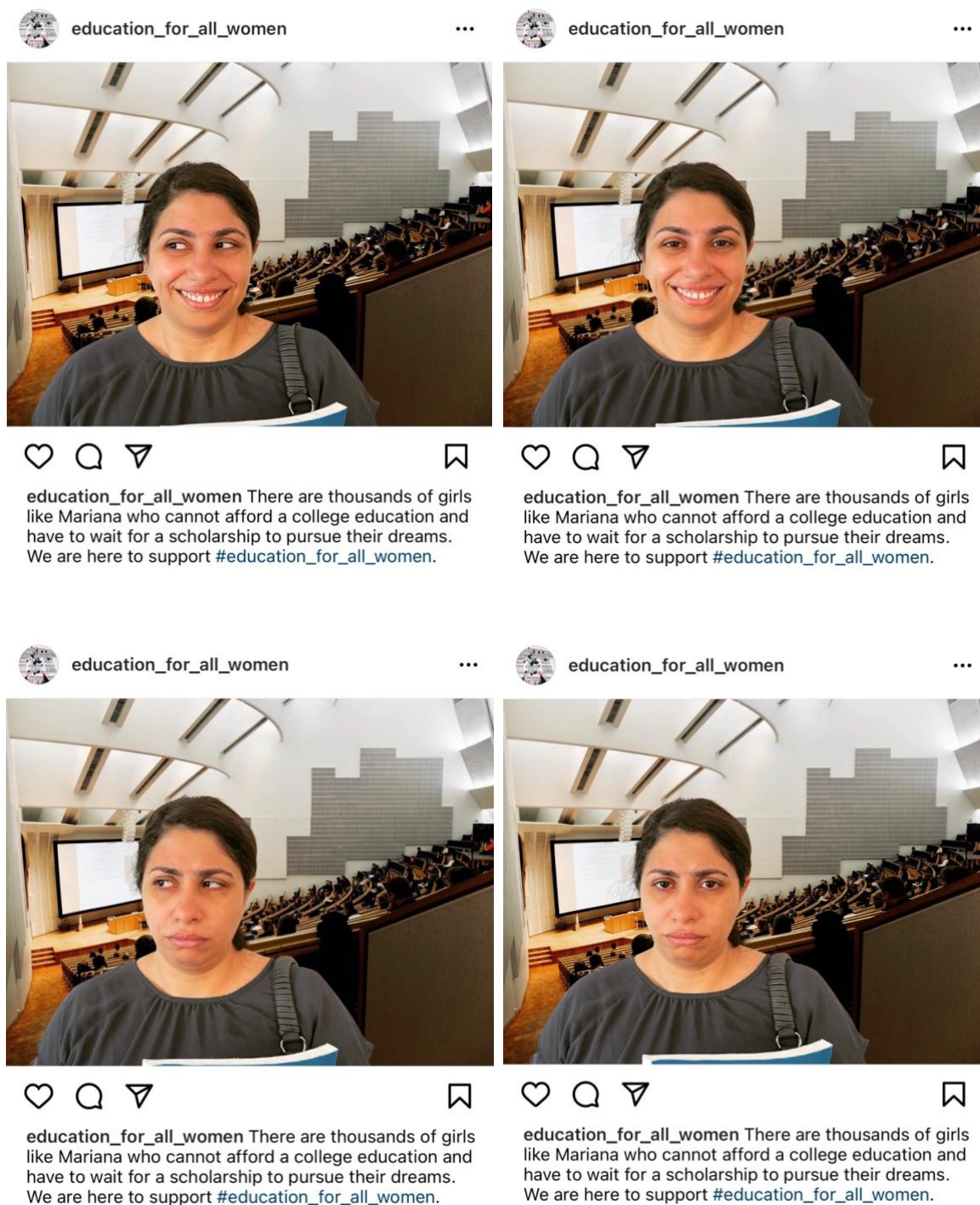


Figure 9a. Happy Face with Averted Gaze, **b.** Happy Face with Directed Gaze, **c.** Sad Face with Averted Gaze, **d.** Sad Face with Directed Gaze

PRETEST

To ensure the effectiveness of the stimuli, I conducted a 2 (gaze direction: direct vs. averted) * 2 (facial expression: happy vs. sad) between-subjects pretest. After removing individuals who failed attention checks, the final sample consisted of 60 participants recruited through Prolific (Mean age = 31.15, 67% female) that were randomly assigned into one of the 4 experimental conditions. After seeing the post, I asked participants to answer similar questions as the pretest conducted for Study 1. Besides, I used two items (miserable, unhappy) from Russell (1980) on a 7-point scale (1 = very slightly or not all, 7 = Extremely) to measure how sad the girl in the Instagram post looks. The results acknowledged the appropriateness of the stimuli. Participants rated the realism of all stimuli at or higher than the mid-point of the scale. However, the two sad-face images were considered less realistic than the happy-face images (Mean $_{\text{happy-face, direct-gaze}} = 5.13$, compared with the mid-point of the scale, $t = 2.52$, $p = 0.01$; Mean $_{\text{happy-face, averted-gaze}} = 5.00$, compared with the mid-point of the scale, $t = 2.88$, $p = 0.01$; Mean $_{\text{sad-face, direct-gaze}} = 4.4$, compared with the mid-point of the scale, $t = 1.10$, $p = 0.14$; Mean $_{\text{sad-face, averted-gaze}} = 4.00$; compared with the mid-point of the scale, $t = 0.00$, $p = 0.50$). Participants' responses to the question about the direction of the gaze verified the effectiveness of the gaze direction manipulation (Mean $_{\text{HD}} = 6.43$, compared with the mid-point of the scale, $t = 6.90$, $p = 0.00$; Mean $_{\text{SD}} = 6.26$, compared with the mid-point of the scale, $t = 9.93$, $p = 0.00$; Mean $_{\text{HA}} = 1.07$, compared with the mid-point of the scale, $t = -41.00$, $p = 0.00$; Mean $_{\text{SA}} = 1.13$, compared with the mid-point of the scale, $t = -31.56$, $p = 0.00$). Finally, the pretest results proved the effectiveness of facial expression manipulation. I created a selfie-taker happy emotion score ($r = 0.74$) by averaging the participants' responses to the two happy emotion questions (happy, good), and a "selfie-taker sad emotion score" ($r = 0.74$) by averaging the participants' responses to the two sad emotion questions (unhappy, miserable). Both happy faces

were rated higher than the mid-point of the happy emotion (happy, good) scale (Mean_{HD} = 6.12, compared with the mid-point of the scale, $t = 9.91$, $p = 0.00$; Mean_{HA} = 4.82, compared with the mid-point of the scale, $t = 2.55$, $p = 0.02$), and both sad faces were rated higher than the mid-point of the sad emotion (unhappy, miserable) scale (Mean_{SD} = 5.60, compared with the mid-point of the scale, $t = 4.67$, $p = 0.00$; Mean_{SA} = 5.93, compared with the mid-point of the scale, $t = 6.62$, $p = 0.00$).

RESULTS

To test the eye gaze manipulation in the main study, I ran a two-way ANOVA using the eye gaze direction question as the dependent variable and the facial expression condition, gaze direction condition, and their interaction as the independent variables. The results indicated that participants in the direct eye gaze condition expressed a higher perception of direct eye gaze than those in the averted eye gaze condition (Mean_{direct} = 6.30, Mean_{averted} = 1.40, $F = 2111.56$, $p < 0.001$). The results also suggested that participants perceived a higher level of direct gaze under the happy face condition than under the sad face condition (Mean_{happy} = 3.86, Mean_{sad} = 4.00, $F = -4.72$, $p = 0.03$). To test the facial expression manipulation, I ran a two-way ANOVA using the image model's facial emotional score as the dependent variable and facial expression condition, gaze direction condition, and their interaction as the independent variables. To create the perceived emotion score of the model in the images, I averaged each participant's responses to all four emotion items (good, happy, sad, miserable) (Cronbach's alpha = 0.79), after reverse coding the two negative emotion items. The results supported the effectiveness of the manipulation (Mean_{happy} = 1.69, Mean_{sad} = -1.78, $F = 974.15$, $p < 0.001$). The results also showed a significant effect of eye gaze direction (Mean_{direct} = -0.19, Mean_{averted} = -0.27, $F = 11.84$, $p < 0.001$). Besides, I

observed a significant interaction between gaze direction and happiness ($F = 15.32, p < 0.001$) such that the emotion difference between the happy and sad faces was smaller under the averted gaze condition ($\text{Mean}_{\text{happy}} = 1.28, \text{Mean}_{\text{sad}} = -1.77, t = 18.92, p < 0.001$) than under the direct gaze condition ($\text{Mean}_{\text{happy}} = 2.14, \text{Mean}_{\text{sad}} = -1.79, t = 25.35, p < 0.001$).

To derive each participant's emotional valence ($r = 0.86$), attitude (Cronbach's alpha = 0.97), and post engagement scores (Cronbach's alpha = 0.89), I followed the same procedure as study 1. I ran three two-way ANOVA with the participants' emotional valence score, post engagement score, and attitude score as the dependent variables and gaze direction condition, facial expression condition, and their interaction as the independent variables. The results showed significant effects of gaze direction (Emotion: $F = 100.84, p < 0.01$; post engagements: $F = 21.20, p < 0.01$; attitude: $F = 21.20, p < 0.01$) and facial expression (Emotion: $F = 13.84, p < 0.01$; post engagements: $F = 4.23, p = 0.04$; attitude: $F = 4.23, p = 0.04$) on all three dependent variables. The results also suggested a significant interaction between facial expression and eye gaze direction ($F = 13.83, p < 0.01$) on emotional valence, post engagement ($F = 4.20, p = 0.04$), and attitude ($F = 23.73, p < 0.01$). Under the happy face condition, the presence of direct (vs. averted) eye gaze led to more positive emotional valence ($\text{Mean}_{\text{direct}} = 5.25$ vs. $\text{Mean}_{\text{averted}} = 4.23; t = 4.50, p < 0.01$), higher engagement with the brand post ($\text{Mean}_{\text{direct}} = 3.70$ vs. $\text{Mean}_{\text{averted}} = 2.67; t = 4.61, p < 0.01$), and more favorable attitude towards the non-profit organization promoted in the post ($\text{Mean}_{\text{direct}} = 5.86$ vs. $\text{Mean}_{\text{averted}} = 4.82; t = 6.01, p < 0.01$). Consistent with my expectation, the gaze direction's effect on emotional valence and attitude were no longer significant (Emotion: $\text{Mean}_{\text{direct}} = 3.25, \text{Mean}_{\text{averted}} = 3.13, t = 0.58, p = 0.56$, Attitude: $\text{Mean}_{\text{direct}} = 4.38, \text{Mean}_{\text{averted}} = 4.50, t = 0.62, p = 0.54$). However, post engagement remained significantly higher under the direct (vs. averted) gaze condition ($\text{Mean}_{\text{direct}} = 3.03$ vs. $\text{Mean}_{\text{averted}} = 2.62; t = 2.03, p = 0.04$). A potential explanation for

the observed significant effect of gaze direction on post engagement even under the sad face conditions is that direct gaze has been shown to be associated with honesty and social media users are more likely to show their support through engaging with more authentic posts.

Moderated mediation test. I ran two moderated mediation tests following the Hayes and Preacher (2014) using PROCESS Model 7 with 5000 iterations (Hayes 2013). The first analysis included eye gaze direction condition as the independent variable, facial expression condition as the moderator, emotional valence as the mediator, and post engagement as the dependent variable. The second analysis used the same set of independent variables and mediator but with attitude as the dependent variable. The results showed that under the happy face condition, the effects of gaze direction on post engagement ($b = 0.29$, $SE = 0.07$; $CI_{95\%} = [0.16, 0.44]$) and attitude ($b = 0.43$, $SE = 0.10$; $CI_{95\%} = [0.23, 0.64]$) were mediated by emotional valence. In contrast, these indirect effects through emotional valence were not significant under the sad face condition (table 7).

Table 7. The Effect of Eye Gaze Direction on Attitude and Post Engagement through Experienced Emotion As a Mediator on Different Values of Moderator

	Direct effect	Indirect effect	Total effect
Outcome: Attitude (Y)			
Facial expression = Happy	0.36 (0.14) *	0.43 (0.10) *	0.79 (0.18) *
Facial expression = Sad	0.36 (0.14) *	- 0.05 (0.09)	0.31 (0.16)
Outcome: Post engagement (Y)			
Facial expression = Happy	0.59 (0.14) *	0.29 (0.07) *	0.88 (0.16) *
Facial expression = Sad	0.59 (0.14) *	- 0.03 (0.06)	0.55 (0.15) *

DISCUSSION

The findings of this study provide additional evidence for emotional contagion as the underlying mechanism of the observed gaze direction effect on emotional valence. As individuals are less likely to mimic and transfer sad emotions from others, participants' emotional valence no longer differed between the direct and averted eye gaze conditions.

STUDY 5: THE MODERATING ROLE OF SUSCEPTIBILITY TO EMOTIONAL CONTAGION

STUDY DESIGN AND PROCEDURE

If emotional contagion is indeed the reason behind the observed eye gaze effect on emotional valence, the observed eye gaze effect should be stronger for people with higher susceptibility to emotional contagion than those with lower susceptibility to emotional contagion, as hypothesized in H4. This was tested in Study 5. This study featured a one-factor (eye gaze direction: direct vs. averted) between-subjects experimental design. After removing individuals who failed attention checks, the final sample consisted of 107 (Mean_{age} = 44.68, 64% female) participants recruited from Qualtrics. The participants were randomly assigned into one of the experimental conditions. The procedure was similar to Study 1, with the exception of an additional scale to measure individuals' susceptibility to emotional contagion. The scale consisted of 5 items adapted from Wieseke et al. (2012), measured on a 7-point scale, where 1 = Totally disagree and 7 = Totally agree.

RESULTS

To check the eye gaze manipulation, I conducted a t-test of perceived eye gaze direction between the two eye gaze conditions. The manipulation was successful, with participants in the direct gaze condition expressing a higher perception of direct eye gaze than those in the averted eye gaze condition (Mean_{direct} = 6.39, Mean_{averted} = 1.70, $t = 19.95$, $p < 0.001$).

To derive each participant's susceptibility to emotional contagion score, I calculated the mean of the participant's responses to the 5 susceptibility items (Cronbach's alpha = 0.74). This variable was mean-centered before entering into the later analysis. To derive each participant's

emotional valence ($r = 0.87$), engagement (Cronbach's $\alpha = 0.89$), and attitude score (Cronbach's $\alpha = 0.97$), I followed the same procedure as Study 1.

To test H5, I regressed emotional valence on gaze direction condition, susceptibility to emotional contagion and their interaction. The results showed a significant positive coefficient for gaze direction ($b = 0.60$, $SE = 0.24$, $t = 2.42$, $p = 0.020$), a significant negative coefficient for susceptibility to emotional contagion ($b = -0.44$, $SE = 0.21$, $t = -2.11$, $p = 0.04$), and a significant positive coefficient for the interaction between gaze direction and susceptibility to emotional contagion ($b = 0.52$, $SE = 0.27$, $t = 1.97$, $p = 0.05$). To better interpret the interaction, I derived the simple slope (figure 10) for gaze direction under low ($=1$) vs. high ($=7$) susceptibility to emotional contagion scores. The results suggest that while the conditional effect of gaze direction on emotion was strong for participants with high ($b = 2.37$, $SE = 0.94$, $t = 2.51$, $p = 0.01$) susceptibility to emotional contagion, this effect was not significant for individuals low in susceptibility to emotional contagion ($b = -0.80$, $SE = 0.74$, $t = -1.08$, $p = 0.28$).

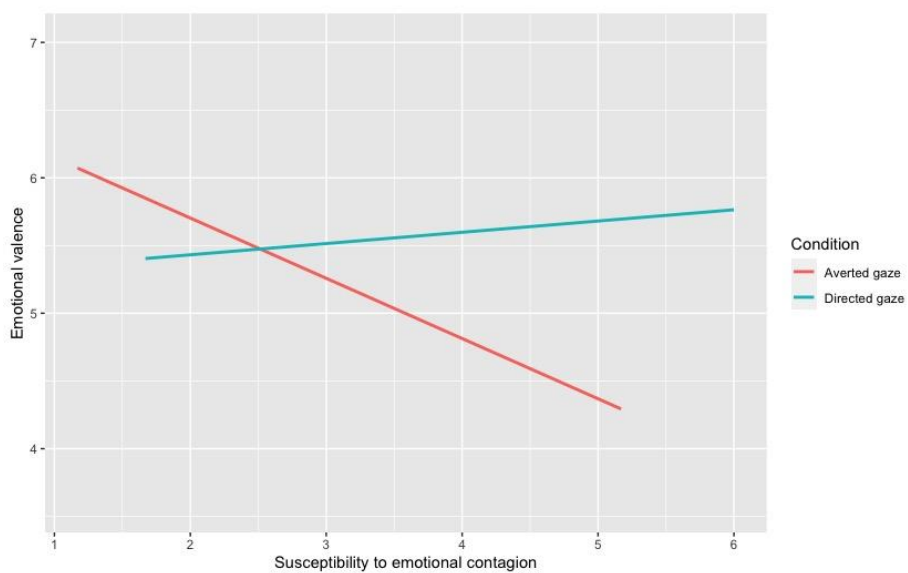


Figure 10. Emotional Valence As the Outcome of Gaze Direction and Susceptibility to Emotional Contagion

Moderated mediation test. Following Hayes and Preacher (2014), I conducted two moderated mediation tests using PROCESS Model 7 with 5000 iterations. Both analyses included eye gaze direction condition as the independent variable, susceptibility to emotional contagion condition as the moderator, and emotional valence as the mediator. The dependent variables were post engagement for the first analysis and attitude for the second analysis.

The two analyses showed that susceptibility to emotional contagion positively moderated the indirect effect of gaze direction on post engagement ($b = 0.40$, $SE = 0.21$; $CI_{95\%} = [0.02, 0.82]$) and attitude ($b = 0.32$, $SE = 0.19$; $CI_{95\%} = [0.00, 0.75]$). The indirect effects of gaze direction on consumer responses was significant for participants with high ($=7$) susceptibility to emotional contagion score but not for those with low ($=1$) susceptibility to emotional contagion (see table 8). The direct effects of gaze direction on attitude ($b = 0.24$, $SE = 0.25$; $CI_{95\%} = [-0.26, 0.71]$) and post engagement ($b = 0.47$, $SE = 0.28$; $CI_{95\%} = [-0.08, 1.01]$) were not significant regardless of the level of susceptibility to emotional contagion.

Table 8. The Effect of Eye Gaze Direction on Attitude and Engagement through Experienced Emotion As a Mediator on Different Values of the Moderator

	Direct effect	Indirect effect	Total effect
Outcome: Attitude (Y)			
susceptibility to emotional contagion = low (=1)	0.24 (0.24)	-0.48 (0.46)	-0.23 (0.54)
susceptibility to emotional contagion = high (=7)	0.24 (0.25)	1.42 (0.75) *	1.66 (0.73) *
Outcome: Post engagement (Y)			
susceptibility to emotional contagion = low (=1)	0.47 (0.28)	- 0.61 (0.53)	- 0.13 (0.61)
susceptibility to emotional contagion = high (=7)	0.47 (0.28)	1.81 (0.77) *	2.28 (0.79) *

DISCUSSION

The findings from this study support the moderating role of susceptibility to emotional contagion in the observed eye gaze direction effect on viewers' emotional valence (H4). These findings provide evidence that the observed eye gaze effect did occur through emotional contagion rather than occurring only through a cognitive mechanism.

STUDY 6: THE MODERATING ROLE OF SOCIAL IDENTIFICATION

STUDY DESIGN AND PROCEDURE

This study investigates the moderating role of social identification in the observed eye gaze direction effect on emotional valence, post engagement and attitude towards the brand (H5). Study 6 used a 2 (eye gaze direction: direct vs. averted) * 2 (social identification: in-group vs. out-group) between-subjects experimental design. After removing individuals who failed attention checks, the final sample consisted of 339 (Mean_{age} = 46.47, 75% female) participants recruited through Qualtrics that were randomly assigned into one of the experimental conditions. To facilitate the manipulation of social identification, I restricted the participants of this study to Pennsylvania residents that are the same race as the traveler in the selfie. Adapting the Instagram posts used in Study 1, the post description now mentioned the selfie-taker as traveling from Pennsylvania in the in-group conditions and as from Lebanon in the out-group conditions. In addition, I modified the selfie image by adding traditional clothing from Lebanon to the selfie-taker for the out-group conditions (figure 11).



shalin.insata There is no time to be bored in a hotel as beautiful as this. Love @Spinas_hotel so much. Totally worth traveling from Pennsylvania.



shalin.insata There is no time to be bored in a hotel as beautiful as this. Love @Spinas_hotel so much. Totally worth traveling from Pennsylvania.



shalin.insata There is no time to be bored in a hotel as beautiful as this. Love @Spinas_hotel so much. Totally worth traveling from Lebanon.



shalin.insata There is no time to be bored in a hotel as beautiful as this. Love @Spinas_hotel so much. Totally worth traveling from Lebanon.

Figure 11. **a.** In-group with Averted Gaze, **b.** In-group with Directed Gaze, **c.** Out-group with Averted Gaze, **d.** Out-group with Directed Gaze

The eye gaze manipulation question, scenario, and measurement procedure were similar to Study 1. In addition, participants reported their perceived similarity to the selfie taker, using the following item adapted from (Swartz 1984): The traveler in the selfie looks similar to me where 1 = Strongly disagree and 7 = Strongly agree. This served as a manipulation check question for the social identification manipulation.

RESULTS

To test the social identification manipulation, I ran a two-way ANOVA on perceived similarity as the dependent variable and social identification, gaze direction, and their interaction as the independent variables. Supporting successful manipulation, the results showed that respondents in the in-group condition perceived a higher level of similarity between themselves and the traveler in the selfie than those in the out-group condition (Mean_{in-group} = 3.12, Mean_{out-group} = 2.74, $F = 4.45$, $p = 0.04$). Gaze direction also significantly affected the perception of similarity (Mean_{direct} = 3.36, Mean_{averted} = 2.52, $F = 22.18$, $p < 0.001$). To check the eye gaze direction manipulation, I conducted a two-way ANOVA using perceived eye gaze direction as the dependent variable and social identification condition, gaze direction condition, and their interaction as the independent variables. The results verified the effectiveness of the manipulation as participants in the direct eye gaze condition expressed a higher perception of direct eye gaze than those in the averted eye gaze condition (Mean_{direct} = 6.31, Mean_{averted} = 1.50, $F = 1946.70$, $p < 0.001$). No other effect in the ANOVA was significant.

To derive each participant's emotional valence ($r = 0.85$), engagement (Cronbach's alpha = 0.90), and attitude score (Cronbach's alpha = 0.90), I followed the same procedure as Study 1. To test H5, I ran three two-way ANOVAs with emotional valence score, post engagement score, and attitude score as the dependent variables, and eye gaze, social identification, and their

interaction as the independent variables. Similar to the previous studies, I found a significant main effect of gaze direction on emotional valence ($F = 38.87, p < 0.001$), post engagement ($F = 18.83, p < 0.001$) and attitude ($F = 34.00, p < 0.001$). The results also supported the fifth hypothesis by showing a significant interaction between eye gaze direction and social identification ($F = 3.99, p < 0.05$). The subsequent planned contrast analysis showed that the observed eye gaze effect on emotional valence was stronger under in-group condition ($\text{Mean}_{\text{direct}} = 5.43, \text{Mean}_{\text{averted}} = 4.16, t = 5.76, p < 0.001$) than under out-group ($\text{Mean}_{\text{direct}} = 5.26, \text{Mean}_{\text{averted}} = 4.62, t = 2.81, p < 0.01$) condition.

Moderated mediation test. Following the procedure recommended by Hayes and Preacher (2014), I ran two moderated mediation tests using PROCESS Model 7 with 5000 iterations. Both tests included gaze direction condition as the independent variable, social identification condition as the moderator, and emotional valence as the mediator. The dependent variables were post engagement for the first test and attitude towards the featured hotel for the second test. Under both in-group and out-group conditions, the results showed that the gaze direction effect on post engagement and attitude was significantly mediated by emotional valence (table 9). However, social identification did not moderate the observed mediation effect of gaze direction on post engagement ($b = 0.29, SE = 0.19; CI_{95\%} = [-0.09, 0.66]$) and attitude ($b = 0.29, SE = 0.19; CI_{95\%} = [-0.10, 0.80]$).

Table 9. The Effect of Eye Gaze Direction on Attitude and Post Engagement through Experienced Emotion As a Mediator on Different Values of Moderator

	Direct effect	Indirect effect	Total effect
Outcome: Attitude (Y)			
Social identification = In-group	0.31 (0.14) *	0.89 (0.16) *	1.19 (0.19) *
Social identification = Out-group	0.31 (0.14) *	0.44 (0.17) *	0.75 (0.21) *
Outcome: Post engagement (Y)			
Social identification = In-group	0.22 (0.17)	0.76 (0.15) *	0.98 (0.20) *
Social identification = Out-group	0.22 (0.17)	0.38 (0.15) *	0.60(0.21) *

DISCUSSION

This study demonstrated that the positive effect of direct eye gaze on emotional valence was even stronger under the in-group condition than under the out-group condition. As emotional contagion tends to be stronger for in-groups, these findings provide additional support for emotional contagion as the underlying mechanism of this phenomenon. Interestingly, besides geographic origin playing a role in social identification, I found that the presence of direct (vs. averted) gaze also led to the participants perceiving a higher level of similarity with the selfie-taker. This offers an interesting avenue for future research that I will discuss in the next section.

GENERAL DISCUSSION AND THEORETICAL CONTRIBUTION

The British writer, Arthur Conan Doyle (1859-1930), in his novel *The Hound of the Baskervilles* remarked that there's a light in a woman's eyes that speaks louder than words. What Arthur Conan Doyle wrote in this novel more than one hundred years ago about the power of eyes in communication is now considered a well-accepted notion among social science researchers. As To and Patrick (2021) state, “the eyes are a central aspect of non-verbal communication amongst humans” (p. 137).

The current research extends our knowledge about the role of the eyes in non-verbal communication by introducing the ability of gaze direction to transfer positive emotions from the looked-at-person to the viewer through emotional contagion. Research on gaze direction in marketing mostly emphasized the persuasive power of the averted (vs. direct) gaze through cognitive mechanisms such as enhancing perceived authenticity (Strachan et al. 2017) and consumer narrative transportation. Advertisers are known to believe that advertisements depicting averted gazes are more effective and persuasive (To and Patrick 2021). This research shed light on the other side of the story by revealing the power of direct (vs. averted) gaze through an affective, automatic mechanism. To the best of my knowledge, this research is among the first to investigate the role of gaze direction in enhancing the effectiveness of specific emotions portrayed in a picture (To and Patrick 2021). Across six experiments (online studies and a lab study), I provided evidence that the mere presence of a direct (vs. averted) gaze enhances the effectiveness of a social media post with a happy face by enhancing the mood of the viewer and increasing post engagement and favorable attitude towards the brand featured in the post.

My research showed that the incremental effect of direct (vs. averted) gaze only worked for happy faces and disappeared when the picture portrayed a sad face. This is an important finding

that contributes to marketing research by highlighting the interaction between gaze direction and expressed facial emotions in affecting consumer response. In other words, the effect of gaze direction should not be studied as an independent element of the human face, because the same gaze direction may have different effects on consumer responses when associated with different facial emotions. Therefore, we should be conservative in generalizing the results from studies of gaze direction through cognitive mechanisms without taking into consideration the facial expression of the model in the stimuli.

My research also contributes to the theory of emotional contagion by introducing gaze direction as a factor that facilitates this process. Study 2 detected stronger positive emotion from direct eye gaze after more time spent smiling, and Study 3 further showed that the gaze direction effect on emotional valence was just as strong under the high cognitive load condition. These findings provide robust evidence for emotional contagion as the underlying mechanism through which gaze direction affects emotional valence. Therefore, research on the intersection between consumer-to-employee interactions and gaze direction should consider the potential subconscious affective influence that eyes may exert on consumers and the impact on subsequent behavioral responses.

MANAGERIAL IMPLICATION

My research offers valuable insights to marketing practitioners. It's a common practice among brands to encourage consumers to share their experiences with the brand or participate in a marketing campaign by posting selfies on social media. My results suggest that marketers should encourage consumers to smile and look directly into the lens in order to boost other consumers' engagement with the post and their attitude towards the promoted brand. This suggestion is also applicable to advertisers and salespeople, who should make sure that the model/salesperson is looking directly into the consumers' eyes when smiling. Previous research discovered some benefits of averted gaze in advertisements through different cognitive mechanisms. My research suggests that direct eye gaze has its own unique use too. The observed effect of direct (vs. averted) gaze on emotional valence in this research happens through an affective subconscious mechanism, and it is present even when participants' cognitive capacity is diminished. These findings suggest an opportunity to leverage direct gaze with happy faces when consumers' cognitive capacity is preoccupied, such as when they are multitasking or at the end of a long sales negotiation.

Combining the emotion-enhancing ability of direct eye gaze found in my research and previous studies' findings about the benefits of averted gaze, advertisers should determine the direction of the model's gaze based on the ad context such as ad appeal, product type, the goal of the advertisement, and the audience. For example, direct gaze with happy faces may be more effective in hedonic (vs. informative) advertisements that involve less cognitive processing, advertisements aimed at encouraging impulsive shopping (vs. increasing awareness), and advertisements targeting audiences known for being more susceptible to emotional contagion, such as fans of romantic movies or followers of emotional pages on social media.

The decision between standardization and adaptation is a well-known dilemma for international companies. My research findings suggest that the effect of direct (vs. averted) gaze on emotional valence is stronger when the looked-at person is a member of the in-group (vs. out-group). This highlights the importance of selecting a model with a high level of similarity with the audience, when a more subconscious emotional contagion mechanism is to be utilized. International companies promoting their brands on social media or in TV commercials should consider using same-country individuals with happy faces and direct gaze to maximize the transfer of positive emotion from the promoted content to the audience.

Another important managerial takeaway from this study is that consumers are receptive to emotional contagion in the online environment. The transferred positive emotion from brand posts on social media can enhance consumers' engagements with the brand post and attitude towards the brand. This suggests that brands can benefit from promoting content with happy faces as they can subconsciously affect behavioral responses. For example, this strategy may be beneficial when trying to introduce a new product or improve brand image, by creating automatic emotional ties between consumers and brands.

Finally, Study 4's findings offer valuable insights to non-profit organizations to improve their social media marketing effectiveness. Although sad faces may be able to trigger sympathy and compassion (Small and Verrochi 2009), my findings show that although social media users are similarly engaged with happy and sad faces, their attitude toward the promoted organization is more positive with the use of happy faces.”

LIMITATIONS AND FUTURE RESEARCH

This work has a few limitations that offer interesting avenues for future research. First, this work focused primarily on the role of gaze direction on emotional contagion in faces with happy emotions. Future research is needed to explore which gaze direction is more effective in transferring other more complex emotional appeals such as guilt, pride, and arousal. Also, I limited my experimental stimuli to social media posts. However, there is a wide array of media, ranging from static ads such as print advertisements and dynamic ads such as TV commercials, that needed to be examined to test the generalizability of my findings. Another limitation of my experiments is that I measured attitude towards the brand immediately after exposure to the experimental stimuli. Future research should study whether and how long the effect of direct (vs. averted) gaze on generating a more favorable attitude towards the brand can sustain over time.

Across six experimental studies, this research showed that consumers are more likely to engage with a brand post when the model holds a direct (vs. averted) gaze. Future research needs to use real-world data and analyze the actual number of likes and comments of real brand selfies posted on social media to test the generalizability of my findings. It is a common practice in social media marketing to encourage consumers to click on an ad. Future research should also explore whether the presence of a direct gaze enhances consumers' clicking behaviors.

I explored the role of gaze direction in facilitating emotional contagion in consumer-to-consumer interaction in a virtual environment. Marketing scholars are recommended to test this effect in in-person interactions such as a sale context as well. For example, if a smiling salesperson or cashier looks directly into the consumers' eyes, will the consumer be more likely to agree with the salesperson's deal or make more impulsive purchases under the influence of the transferred positive emotion from the employee?

This research identified gaze direction as a factor that affects emotional contagion. However, gaze direction is only one of the many facial cues that might affect emotional contagion. For example, the size of the pupils has been shown to affect the perceived emotions and intentions of the individual depicted (Mathôt and Van der Stigchel 2015). Marketing researchers should also investigate other facial cues such as pupil dilation that might facilitate the transfer of emotions from the looked-at person to the viewer. With respect to the emergence of AI influencers, another interesting avenue for future research is to study whether the observed gaze direction effect is still present when the human face is replaced with an artificial face.

Finally, my research involved only US consumers. Although the observed effect of direct (vs. averted) gaze on emotional valence occurs through a subconscious affective process, it is possible that this subconscious process is shaped by the cultural norm that an individual is brought up in. Previous research has shown that looking directly in the eyes is considered inappropriate in some cultures (Uono and Hietanen 2015). In such cultures, will direct eye gaze still create the same subconscious effect? Or will the viewer even look at the eyes of the person in a selfie? Marketing researchers are encouraged to conduct cross-cultural research to test the generalizability of my findings across different cultures.

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Koorank Beheshti, Mohammadali, Mahesh Gopinath, Sama Ashouri, and Saeed Zal. Does polarizing personality matter in influencer marketing? Evidence from Instagram, *Journal of Business Research*. **Being revised for the 3rd round review.**

Ford, John, Douglas C. West, **Mohammadali Koorank Beheshti**, and Vinh Luong. Methodological Approaches to Cross-Cultural/National Research in Advertising: A Review of Scholarship Published from 1995 to 2019, *Journal of Business Research*. **Under the 1st round review.**