Research Topics

Emotions as key drivers of consumer behaviors: A multidisciplinary perspective

Edited by
Debora Bettiga, Giuliano Noci and Omneya Yacout

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Emotions as key drivers of consumer behaviors: A multidisciplinary perspective

Topic editors
Debora Bettiga — Polytechnic University of Milan, Italy
Giuliano Noci — Polytechnic University of Milan, Italy
Omneya Yacout — Alexandria University, Egypt

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Steven Bellman,
University of South Australia, Australia

*CORRESPONDENCE
Debora Bettiga
✉ debora.bettiga@polimi.it

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Editorial: Emotions as key drivers of consumer behaviors: A multidisciplinary perspective

Debora Bettiga[1]*, Omneya Yacout[2] and Giuliano Noci[1]

[1]Department of Management Engineering, Polytechnic University of Milan, Milan, Italy, [2]Alexandria University, Alexandria, Egypt

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Editorial on the Research Topic
Emotions as key drivers of consumer behaviors: A multidisciplinary perspective

Consumers not only make rational decisions but also emotional ones. Research now recognizes the significance of diverse neglected factors, such as emotions, affect, arousal and pleasure in appraisal, and has identified processes and behaviors that do not fit with the traditional view of acting as a result of a purely deliberate process. Understanding consumer behaviors has long been a challenging endeavor, due to different variables affecting decision-making mechanisms and the difficulty of measuring them. It requires, indeed, a comprehension of both the cognitive, information-processing mechanisms and of the affective and experiential systems of individuals. Moreover, it demands an appreciation of the rich and deep interplay between cognitive and affective processes.

Understanding consumers' emotions can inform practitioners on how to effectively communicate with their target audience, whether internal or external, in order to elicit attention, engagement and positive emotional responses, and to build emotional connections. Human stress, engagement, cognitive and emotional responses may be taken into account in the development of products and services, by understanding consumers' responses and experience with them. This has a deep impact at the organizational level in terms of marketing strategies, putting the consumer at the center of the whole organization.

To address this important area in the literature, the editors submitted this Research Topic. We accepted 11 manuscripts that cover the broad theme of emotions with a focus on their impact on consumer behaviors. The contributions to this Research Topic provide knowledge on the role of emotions in consumer behavior throughout the purchasing process, while allowing for dialogue between disciplines such as psychology, organizational behavior, marketing, neuroscience, bioscience and design.

The article from Zhang and Zhang focuses on the consumer purchasing process, taking the emerging product "blind box" (a closed small box with built-in dolls of different styles, diffused in Asia) as the research object. The work reviews the SOR theory and hypothesizes that uncertainty increases blind box purchase intention, as its core selling point is uncertainty, and that emotional value has a mediating effect on the uncertainty connected to purchase intention. Customer consumption purpose functions as a moderator in such a relationship. Results confirm that uncertainty increases the emotional value of consumers purchasing a blind box.

The consumer purchasing process is explored as well by Bian and Yan, in the context of brand extensions. They investigate the intention to purchase a brand extension and how it is mediated by the consumer's emotional brand-relationship. Brand attribute associations, which are descriptive features used in the characterization of a brand, emerge as impactful on the intention to purchase luxury brands extensions. Consumers, when evaluating the purchase of a brand extension, rely on cognitive memories and schemas related to luxury brands plus the emotional bonds developed with them.

Doran et al. investigate whether tourist consumption motives and purchasing intentions for sustainable groceries differ on vacation vs. at home. They report that self-reported purchasing intentions were weaker for a vacation scenario than for a home scenario. Furthermore, the consumption motives were different in the two contexts. While normative motives were related to intentions to buy sustainable groceries at home and on vacation; hedonic motives (i.e., pleasure) added explanatory variance to intentions in a vacation context. The findings reflect the contextual discrepancies in environmental behavior, while noting possible implications for promoting sustainable consumption among tourists.

Liu et al. offer a new perspective on the antecedents of electronic word-of-mouth (eWOM) and the creation of eWOM. Using an experimental design, the pride state was manipulated and its effect on eWOM was examined. Findings indicate a positive effect of authentic pride on positive eWOM and constructive eWOM. Conversely, hubristic pride caused negative eWOM and destructive eWOM. This study offers insights on how different types of eWOM are created as a result of consumer emotions such as pride.

Delving into marketing communication, the article from Sohail et al. focuses on the process and concept of anthropomorphism in marketing literature, being a precursor of positive marketing outcomes. They analyze the relationship between consumer psychological and dispositional motivational traits for a product advertisement displaying human body features.

The work from Luo reports a time series analysis of day-to-day emotional text related to fund investments on Weibo. The work shows that fund performance is a predictor of fear, anger, and surprise expressions on Weibo, offering insights for media emotion analysis.

From a more social perspective, Ning and Hu studies the influence of social support of online travel platform enterprises on customer citizenship behavior. The work indicates that emotions have an influence on customer citizenship behavior and play a mediating effect in the relationship between social support and customer citizenship behavior. Customer satisfaction plays a relevant role as well.

Also the article from Do et al. investigates social drivers by exploring how corporate social responsibility initiatives influence brand love, grounding on the theory of social identity complexity. Brand authenticity has been tested as a variable intervening between perceived corporate social responsibility and brand love.

On a similar perspective, Wang et al. investigate the measures that companies should take to reduce consumers' negative response to them in the case of perceiving them as hypocritical. Specifically, they conducted an experiment to explore the effect of the match between corporate hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) on consumers' negative behaviors (negative word of mouth, complaint, and boycott). Findings support the hypothesized relationships and consumer emotions were found to mediate these relationships.

From a methodological point of view, the article from Russo et al. introduces neuromarketing as a powerful tool to monitor the emotional and cognitive states of the consumer, overcoming the limitations of traditional marketing methodology. The work focuses on virtual and augmented reality (AR), being able to produce immersive and enjoyable emotions.

In their article, Balconi et al. examine how COVID-19-related contents affect hemodynamic brain correlates of the consumer approach or avoidance motivation. Using an experimental design, Italian participants were randomly assigned to two different groups. Groups either watched COVID-19-related or non-COVID-19-related commercials. The hemodynamic response within the left and right prefrontal cortices (PFC) was monitored with Functional Near-Infrared Spectroscopy (fNIRS). Their findings reveal that the COVID-19-related contents stimulated emotional processing to a higher extent. The authors concluded that these commercials propelled consumers to dedicate more attention to the processing of emotional components compared to the semantic meaning conveyed by the ad.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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BRIEF RESEARCH REPORT
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Consumers in the Face of COVID-19-Related Advertising: Threat or Boost Effect?

Michela Balconi[1,2]*, Martina Sansone*[1,2]* and Laura Angioletti*[1,2]

[1]*International Research Center for Cognitive Applied Neuroscience (IrcCAN), Università Cattolica del Sacro Cuore, Milan, Italy,* [2]*Research Unit in Affective and Social Neuroscience, Department of Psychology, Università Cattolica del Sacro Cuore, Milan, Italy*

The COVID-19 pandemic has prompted the production of a vast amount of COVID-19-themed brand commercials, in an attempt to exploit the salience of the topic to reach more effectively the consumers. However, the literature has produced conflicting findings of the effectiveness of negative emotional contents in advertisings. The present study aims at exploring the effect of COVID-19-related contents on the hemodynamic brain correlates of the consumer approach or avoidance motivation. Twenty Italian participants were randomly assigned to two different groups that watched COVID-19-related or non-COVID-19-related commercials. The hemodynamic response [oxygenated (O_2Hb) and deoxygenated hemoglobin modulations] within the left and right prefrontal cortices (PFC) was monitored with Functional Near-Infrared Spectroscopy (fNIRS) while brand commercials were presented, as the prefrontal lateralization was shown to be indicative of the attitude toward the brand and of the approach-avoidance motivation. First, the findings showed that the COVID-19-related contents were able to prompt emotional processing within the PFC to a higher extent compared to contents non-related to COVID-19. Moreover, the single-channel analysis revealed increased O_2Hb activity of the left dorsolateral PFC compared to the left pars triangularis Broca's area in the group of participants that watched the COVID-19-related commercials, suggesting that the commercials may have driven participants to dedicate more attention toward the processing of the emotional components compared to the semantic meaning conveyed by the ad. To conclude, despite expressing unpleasant emotions, commercials referring to the highly emotional pandemic experience may benefit the advertising efficacy, increasing the capability to reach customers.

Keywords: emotional engagement, COVID-19, advertising, consumer neuroscience, neuromarketing, fNIRS

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Edited by:
Omneya Yacout,
Alexandria University, Egypt

Reviewed by:
Antonio Aquino,
University of Studies G. d'Annunzio Chieti and Pescara, Italy
Fares Al-Shargie,
American University of Sharjah, United Arab Emirates

****Correspondence:***
Martina Sansone
martina.sansone@unicatt.it

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INTRODUCTION

Two years ago, the outbreak of COVID-19 pandemic entirely subverted the world we knew. Since then, many of our private, social, and cultural habits—and our believes—have radically changed, some of which will perhaps find a stable place in our new normality (He and Harris, 2020).

Among them, consumer behavior has been much affected by the pandemic situation, partly because of the world-wide supply-chain disruption, but also because of a range of psychological and emotional processes induced by the pandemic. COVID-19 has severely impacted on mental health around the world, increasing rates of depressive and anxiety symptoms, distress, and psychological diseases (Brooks et al., 2020; Casagrande et al., 2020; Huang and Zhao, 2020). The spreading of COVID-19 has disrupted in several ways the individuals' perception of ontological security, jeopardizing the sense of order, and continuity about one's own life and leading individuals to experience lack of control (Campbell et al., 2020).

Recent research has highlighted consumers may respond to the health and economic threats introduced by COVID-19 by strategically modifying their consumer behavior to reduce the perceived uncertainty. For instance, when exposed to contagion-related cues, people show a clear preference toward more authentic (i.e., perceived as traditional and genuine, such as a pizza based on the traditional Italian recipes passed on in a family restaurant compared to a foreign interpretation of the Italian pizza recipes; Park et al., 2021) or more familiar products (Galoni et al., 2020) because their outcomes are more predictable, which satisfies the consumers' psychological need for security. Also, infection-related threats may lead consumers to variety-seeking behavior (Kim, 2020) and preference for atypical products (Huang and Sengupta, 2020) because of the motivation to restore control, freedom, and to reduce contagion probability. In addition, threat perception, uncertainty, and fear may also trigger panic buying behaviors (Campbell et al., 2020; Wang et al., 2020), such as hoarding and stockpiling of both sanitary (i.e., products that help facing the health threat, such as hand-sanitizers and masks) and comforting products (such as comfort food), which have been suggested to help consumers to recover the perception of control (Galoni et al., 2020).

Beyond modifications in consumers' preferences, special attention should be paid to the way brands' communications are perceived by consumers under the heavy emotional legacy of COVID-19 threat and to how consumers' relationship with brands may be influenced by such uncertain circumstances. Indeed, a common practice among marketers is to adopt impactful emotional appeals in advertising campaigns, under the assumption that the higher the emotional impact, the more memorable and effective the appeal (Das et al., 2015; Akram et al., 2018; Wu and Wen, 2019; Yoon and Lee, 2019). The pandemic period was no exception, with many brands undertaking *expressive* and *poetic* types of campaigns, rather than adopting *informational* strategies, in the attempt to reach consumers more effectively (Jiménez-Sánchez et al., 2020). However, the profound modification of the shared emotional baggage and of psychological wellbeing brought by COVID-19 on a large part of the population should raise concerns about the use of extreme emotional appeals, especially when negative emotions are displayed. Under difficult circumstances, consumers were shown to be more responsive to affective inputs (Faraji-Rad and Pham, 2017). As a result, emotions could be perceived more intensely than usual, causing unnecessary distress to the consumers (Mensa and Vargas-Bianchi, 2020). Notably, some scholars have highlighted that emotions passively experienced though ads (i.e., *esthetic* emotions) are distinct from emotions evoked by real situations (i.e., *utilitarian* emotions) in that esthetic emotions are not strong enough to evoke the entire spectrum of emotions but rather can only elicit an appraisal in terms of hedonic pleasure or displeasure (Lajante et al., 2020). However, this distinction does not prevent appeals from eliciting significant subjective feelings that can nonetheless impact the consumer's emotional sphere as long as the ads are vivid enough, according to the *law of apparent reality* (Frijda, 1986). For this reason, a careful evaluation of emotional tones adopted in ads should play an important role in these times, also considering that the emotional content can significantly affect the formation of attitudes toward the brand and purchase intention (Heath et al., 2006; Lin, 2011; Leanza and Balconi, 2017; Lajante et al., 2020). Thus, pitfalls should not be underestimated. An example of the risks associated with emotionally framed communications can be seen in coverage of COVID-19 news by media during the emergency phase of the pandemic, which resulted in accentuating fear about contagion, anxiety, and uncertainty, causing severe concrete repercussions also on public health (Garfin et al., 2020; Ogbodo et al., 2020).

A long-standing debate divides the scientific community about the effectiveness of emotional advertisement impact on the consumers' attitudes and behaviors. While positive appeals have long been recognized as a safe strategy for gaining the consumers' attention and shaping their attitudes (Aaker and Bruzzone, 1981; Poels and Dewitte, 2008; Berger and Milkman, 2012; Wu et al., 2018; Li, 2019; Coleman et al., 2020), the attempts of using negative emotions in ads did not always result in effective outcomes. Guilt and fear often revealed to induce actual behavioral changes (Giachino et al., 2017; Coleman et al., 2020; Zheng, 2020) but, when emotions are over emphasized, the manipulative intent of the ad may become too blatant, inducing offense, annoyance, and avoidance in the consumer (Wolburg, 2006; Brennan and Binney, 2010).

Considering the conflicting findings presented by the extant literature on the use of emotional appeals, the outbreak of COVID-19 pandemic represents a unique opportunity to study the impact of highly emotional contents on brand communication and, consequently, on the eventual modification of the attitude toward the brand (Taylor, 2020). Indeed, during the pandemic, numerous COVID-19-themed audiovisual advertisements have been produced, from both governmental sources (mainly with informative purposes) and business companies (which made an extensive use of emotional contents to support StayHome and gratitude campaigns, encouraging messages or just to endorse the brand image; Jiménez-Sánchez et al., 2020). Despite a few studies have investigated how emotions were employed in advertisings during the first months of the emergency (Jiménez-Sánchez et al., 2020; Mensa and Vargas-Bianchi, 2020), to the best of the authors' knowledge, no studies have examined the actual impact of COVID-19-related brand communications on consumer perception so far.

For this reason, the present study aims at sorting out how the complex emotions elicited by the COVID-19 stimuli can modulate the attitude toward the brand. Since prior studies have demonstrated that the emotional and motivational responses toward an ad or a brand could be reflected by an asymmetrical pattern of activation within the prefrontal cortex (PFC; Ohme et al., 2010; Vecchiato et al., 2011; Maison and Oleksy, 2017; Garczarek-Bąk and Disterheft, 2018; Duan et al., 2021), in the present study, the functional Near-Infrared Spectroscopy (fNIRS) was used to assess the neurophysiological correlates of the emotional and motivational responses produced by the viewing of commercials that could display some COVID-19-themed content or not. fNIRS was chosen because it has proven to be a well-suited neuroscientific tool that allows to record with optimal spatial resolution the hemodynamic modulation within the PFC and to get an accurate estimate of the prefrontal asymmetry index (Balconi et al., 2015, 2017; Duan et al., 2021). Specifically, we expect that the COVID-19-related content may induce higher emotional responsivity compared to the content non-related to COVID-19, leading to a higher activation of the prefrontal cortex (Mondino et al., 2015). Moreover, we derived our second hypothesis from the approach-avoidance model (Davidson, 2004) and the abundant consistent evidence showing that left-lateralized prefrontal activity is a neurophysiological marker of the appetitive motivational system, whereas right-lateralized activity is a marker of the inhibition system. Such cerebral activity is thought to reflect action tendencies and to be independent from emotional valence processing (Sutton and Davidson, 1997; Vecchiato et al., 2014). Hence, we expect that commercials perceived as attractive (regardless of their emotional valence) would generate approach motivations toward the brand and that such process would result into a higher recruitment of the left hemisphere. Conversely, we expect that unappealing commercials would generate avoidance motivations toward the brand and that such process would result into a higher recruitment of the right hemisphere.

MATERIALS AND METHODS

Sample

A sample of 20 Italian healthy participants [age range 20–30 years old; Mean (*M*) age = 25.47; Standard Deviation (*SD*) = 2.25; 5 males] were recruited for this study. The presence of a neurological, psychopathological disorder, the assumption of psychopharmacological therapy, or the presence of post-traumatic stress symptomatology linked to the COVID-19 experience (assessed through the COVID-19-PTSD questionnaire; Forte et al., 2020) constituted the exclusion criteria. Also, any severe medical or chronic condition, prior record of seizures, cranial injury, or chronic pain determined the exclusion of the participant from the experiment. All the included participants had a normal-to-corrected vision, were right-handed, and did not score significantly higher level of PTSD symptomatology at the COVID-19-PTSD. All the participants were college students that spent the COVID-19 emergency in northern Italy. They were recruited within the university campus of the Catholic University of the Sacred Heart of Milan, and they all signed a written informed consent from participants to take part in the experiment. They were informed no compensation was provided for their participation in the study. Participants were randomly assigned to two different groups that watched COVID-19-related or non-COVID-19-related commercials. The groups were balanced for age: COVID-19 group ($M = 25.60$, $SD = 2.50$) and non-COVID-19 group ($M = 25.33$, $SD = 2.23$). The research protocol has been implemented under the regulations of the Declaration of Helsinki (1964) and has been approved by the ethic committee of the Department of Psychology, Catholic University of the Sacred Heart of Milan, in Italy.

Selected Advertising Stimuli

The set of stimuli consists of a total of six commercials belonging to the popular clothing brand of Nike with a strong mission toward Corporate Social Responsibility in terms of social promotion.

Three commercials were selected that refer to the COVID-19 theme: "Play for the World," "You Cannot Stop LA," and "You Cannot Stop Us." The typical communication of this brand, full of emotional and motivational elements that aim at empowering and inspiring the audience, is intertwined with the narrative of today's difficult historical period, characterized by the COVID-19 pandemic. These stimuli have been selected because they generally reflect the characteristics that have been adopted for the choice of stimuli in the work of Ohme et al. (2010); in fact, they can be distinguished in two frames: emotional frames, characterized by sequences of images with a high emotional impact; information frames, characterized by sequences of scenes in which there are mainly captions, emotional phrases, referring to the pandemic situation from COVID-19, superimposed images, and sequences where the brand logo is shown (Balconi and Lucchiari, 2005).

The storyline of the "Play for the World" commercial resumes the period of the first lockdown, in which people were forced to stay in home. Slow-motion images are taken of ordinary people and popular athletes who train inside the walls of the house, in the living room or in the corridor, and maintain social distancing. The commercial "You Cannot Stop LA" is dedicated to the Lakers basketball team, leader in the American NBA championship. The video sequences film the matches won and lost by the team which, symbolically, are accompanied by the most touching moments of the year, emphasizing the social victories and defeats associated with the pandemic. The plot of "You Cannot Stop Us" resumes the post-lockdown period from the COVID-19 pandemic. The peculiarity of the spot is the mix of images of sports team matches, followed by those of empty stadiums, canceled matches, and people training at home. The following scenes, symbolically, celebrate the end of this lockdown, emphasizing the return to sport and open-door sports competitions.

The following three non-COVID-19-related commercials, which do not make use of contents relating to the emergency healthcare from COVID-19 but are still characterized by emotional, motivational, and inspirational elements, were selected as: "What is your motivation?," "You cannot be stopped," and "Steps". The plot of "What is your motivation?" describes the story of a young basketball player reminding its viewers that victory does not come from nowhere, but it requires lots of training. The commercial "You cannot be stopped" intends to help athletes unearth and tap into the true reasons that motivate us, our whys, for the year ahead. The "Steps" commercial is a motivational and emotional story of the journey of running while using Nike's brand.

Validation of the Stimuli

The stimuli were evaluated for the following perceptual characteristics: duration, fps, size, brightness, and content. The duration of the selected spots was 60 s, with 24 fps each, and they were validated for the content. A pool of independent judges controlled for gender and age, assessed the emotional valence and arousal of the stimuli using an adapted 5-point version of the Self-Assessment Manikin (SAM) scale and the 7-point semantic differential (Bradley and Lang, 1994). At the SAM, the selected COVID-19-related ads stimuli were rated higher for emotional valence ($M = 4.17$, $SD = 0.89$) and arousal ($M = 3.83$, $SD = 1.07$) such as non-COVID-19-related videos' emotional valence ($M = 4$, $SD = 0.95$) and arousal ($M = 3.33$, $SD = 1.10$). While for the semantic differential scale, the average of the seven main characteristics are reported for the COVID-19-related videos (understandable: $M = 6.00$, $SD = 1.15$; familiar: $M = 4.17$, $SD = 1.95$; exciting: $M = 6.17$, $SD = 1.21$; engaging: $M = 5.83$, $SD = 1.34$; joyful: $M = 5.50$, $SD = 1.12$; motivating: $M = 6.17$, $SD = 0.89$; and pleasant: $M = 0.65$, $SD = 0.76$) and non-COVID-19-related videos (understandable: $M = 5.83$, $SD = 1.34$; familiar: $M = 4$, $SD = 0.58$; exciting: $M = 5.00$, $SD = 1.53$; engaging: $M = 4.83$, $SD = 1.34$; joyful: $M = 4.67$, $SD = 1.37$; motivating: $M = 5.50$, $SD = 1.12$; and pleasant: $M = 5.33$, $SD = 1.24$). No significant differences were found about these features.

Procedure

For the experimental phase, the participants were sitting in a comfortable chair in a darkened room, with the monitor screen about 80 cm in front of their eyes. The hemodynamic response at rest was recorded for an open-eyes baseline lasting 120 s at the beginning of the experiment. After the baseline, the participants assigned to the COVID-19 group watched the three COVID-19-related videos, while to the subjects assigned to the non-COVID-19 group the non-COVID-19-related advertisement was proposed. All the videos were presented in randomized order (separated by a 5 s inter-stimulus interval during which a black screen was displayed) in the center of the computer monitor during fNIRS recording. The whole experimental phase lasted less than 20 min.

fNIRS Configuration

The hemodynamic signal was recorded considering oxygenated hemoglobin (O_2Hb) and deoxygenated hemoglobin (HHb) concentration fluctuations using a 6-channel optodes matrix from a NIRScout System (NIRx Medical Technologies, LLC, Los Angeles, California). A fNIRS Cap was used to position four light sources/emitters and four detectors over the head in accordance with the standard international 10/5 system (Oostenveld and Praamstra, 2001; Balconi and Molteni, 2015).

Four emitters were placed in AF3-AF4, and F5-F6, and four detectors were installed in AFF1h-AFF2h, and F3-F4 in the device setup. The emitter-detector distance was kept constant at 30 mm for consecutive optodes, and near-infrared light with two wavelengths was used (760 and 850 nm). It was feasible to obtain a total of six channels with the following optode configuration: Ch1 (AF3-F3), Ch2 (AF3-AFF1h), Ch3 (F5-F3), Ch4 (AF4-F4), Ch5 (AF4-AFF2h), and Ch6 (F6-F4), consistent with previous studies (Balconi and Vanutelli, 2017; Balconi and Angioletti, 2021). To assign hemodynamic response alterations during the task to a specific brain region, it was adopted a probabilistic atlas implemented in the software fOLD [fNIRS Optodes' Location Decider (Zimeo Morais et al., 2018)] using the automated anatomical labeling atlas Brodmann (Rorden and Brett, 2000). The correspondence between fNIRS channels and Brodmann areas is here reported: Ch1 and Ch4 correspond to left and right DLPFC (BA 46); Ch2 and Ch5 cover the left and right frontopolar area (BA10), and a portion of left and right DLPFC (BA 46); and Ch3 and Ch6 are consistent with the left and right pars triangularis Broca's area (BA 45; **Figure 1**).

fNIRS Biosignal Analysis

By employing NIRStar Acquisition Software, the fluctuations in O_2Hb and HHb were measured continuously through the task, starting with a 120 s resting baseline. A sample rate of 6.25 Hz was used to collect the signal deriving from the channels. The biosignal was analyzed employing nirsLAB software (v2014.05; NIRx Medical Technologies LLC, 15Cherry Lane, Glen Head, NY, United States), based on their wavelength and position, yielding mmol*mm values corresponding to changes in O_2Hb and HHb concentrations per channel. A digital band-pass filter at 0.01–0.3 Hz was adopted to filter the biosignals obtained from each channel. **Figure 2** shows the plots of the time course for all channels under the two conditions: COVID-19-related (**Figure 2A**) and non-COVID-19 (**Figure 2B**). For each channel, the average O_2Hb and HHb were calculated for the task. The average concentrations in the time series for each channel and individual were used to calculate the effect size in each condition. The following formula was adopted to calculate the effect sizes (Cohen's d). They were calculated by dividing the difference between the baseline and trial means by the baseline standard deviation (SD): $D = (m1-m2)/s$, where m1 and m2 represent the baseline and trial mean concentration levels, respectively, and s represents the baseline SD. The effect sizes from the six channels were averaged to improve the signal-to-noise ratio. Unlike raw fNIRS data, which were originally relative values that could not be directly averaged across subjects or channels, normalized effect size data were averaged regardless of the unit because effect size is unaffected by differential pathlength factor (DPF).

Statistical Data Analysis

Two repeated-measures ANOVAs with independent between factor *Group* (2: COVID-19, non-COVID-19) and within factor *Channel* (6: Ch1, Ch2, Ch3, Ch4, Ch5, and Ch6) were performed on D dependent fNIRS data (O_2Hb and HHb mean values).

Pairwise comparisons were applied to check simple effects for significant interactions, and Bonferroni correction was used to eliminate potential biases in repeated comparisons. Greenhouse–Geisser epsilon was used to adjust the degrees of freedom for all ANOVA tests. In addition, the kurtosis and asymmetry indices were adopted to determine the normality of the data distribution. By estimating partial eta squared (η^2) indices, the size of statistically significant effects has been assessed.

RESULTS

The statistical analyses performed on D dependent measures for O_2Hb and HHb concentration means yielded the following evidence.

About O_2Hb, a first significant main effect for the *Group* was observed [$F(2, 18) = 6.75$, $p = -01$, $\eta^2 = 0.387$] (**Figure 3A**).

Secondly, a significant main effect was found for the *Channel* for the O_2Hb [$F(5,18) = 6.04$, $p = 0.01$, $\eta^2 = 0.311$]. In particular, as revealed by pairwise comparisons, greater neural responsiveness (increase of O_2Hb) was found in Channel 1 compared to Channel 3 [$F(1,18) = 7.98$, $p = 0.01$, $\eta^2 = 0.398$] (**Figure 3B**).

Thirdly, a significant interaction effect *Group* × *Channel* was detected for O_2Hb values [$F(5,18) = 6.09$, $p = 0.01$, $\eta^2 = 0.365$]. Specifically, pairwise comparisons showed significant higher mean values in the Channel 1 compared to Channel 3 for the COVID-19 group [$F(1,18) = 8.09$, $p = 0.01$, $\eta^2 = 0.412$] (**Figure 3C**).

For the HHb mean values, no significant effects were observed.

DISCUSSION

The present study aimed at investigating the impact of highly emotional, COVID-19-related, and brand communications on consumer attitudes toward the brand. First, the findings suggest that the COVID-19-related contents were able to prompt emotional processing within the PFC to a higher extent with respect to contents non-related to COVID-19. Indeed, overall, an increase in the levels of O_2Hb was found within the PFC for individuals who were exposed to COVID-19-related advertisings compared to advertisings unrelated to COVID-19 pandemic. This result is consistent with prior studies showing that PFC—specifically, the dorsolateral portion (DLPFC)—plays a relevant role in processing emotion information (Balconi et al., 2011; Balconi and Bortolotti, 2012; Mondino et al., 2015), orienting attention toward emotional stimuli (Steele and Lawrie, 2004; Jacob et al., 2014), and regulating the emotional valence, while ventromedial PFC is involved in emotion regulation and control of emotional arousal (Etkin et al., 2011; Nejati et al., 2021). Previous studies have also highlighted that the dorsomedial PFC is specifically engaged by the appraisal and the expression of emotions, with an abundance of evidence for negative emotions processing (Mechias et al., 2010; Etkin et al., 2011). Thus, our results suggest that a more intensive emotional processing may be triggered by the social communication conveyed by COVID-19-related advertisings and that the experiential recall of a shared emotional experience may impact on the effectiveness of the content and be successful in reaching

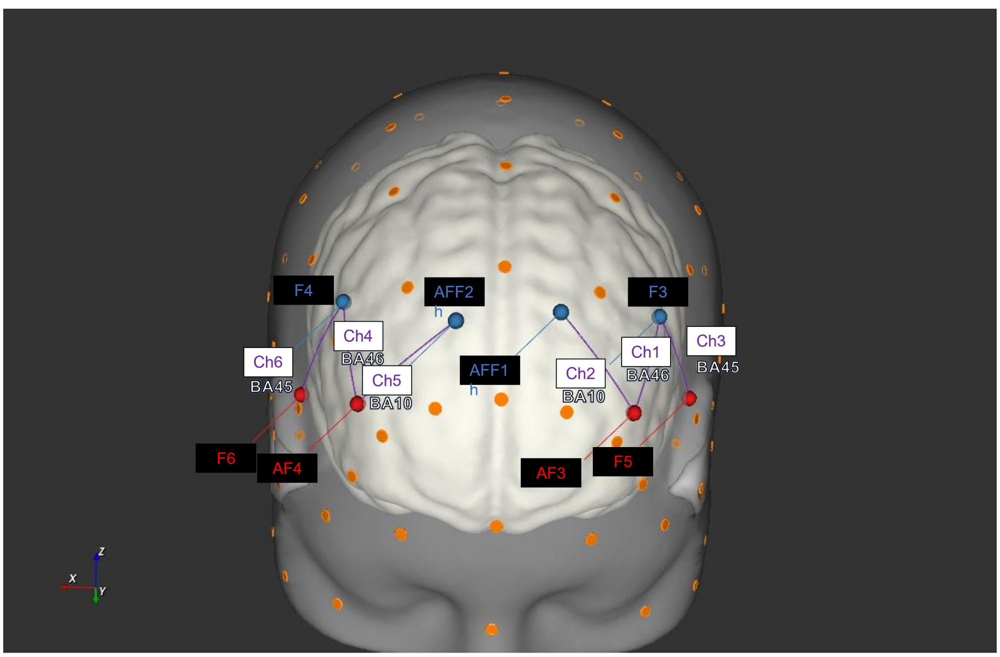

FIGURE 1 | Configuration of fNIRS probes. The head rendering displays the position of the fNIRS sources (red) and detectors (blue). It has been generated with software NIRSite (NIRx Medical Technologies LLC) and then adapted with the correspondence between the channels (violet) and Brodmann areas is indicated in the figure: Ch1 and Ch4 correspond to left and right DLPFC (BA 46); Ch2 and Ch5 cover the left and right frontopolar area (BA10), and a portion of left and right DLPFC (BA 46); and Ch3 and Ch6 are consistent with the left and right pars triangularis Broca's area (BA45).

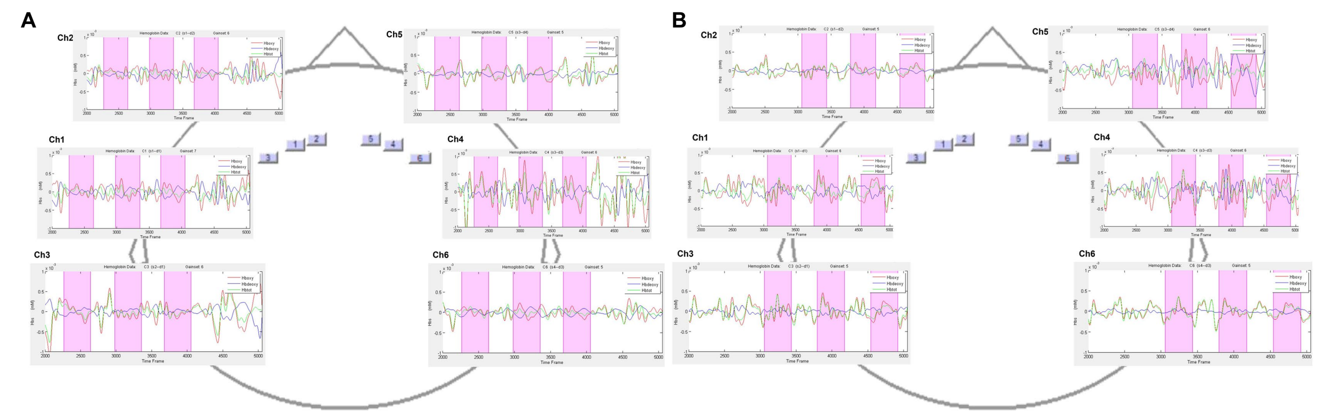

FIGURE 2 | Hemodynamic signal time course for all channels under the two conditions. The figure shows the time course plots of O_2Hb and HHb signal for each channel when watching the three commercials of the **(A)** COVID-19-related condition and **(B)** non-COVID-19-related condition.

the consumers, despite also conveying some negative emotions together with positive motivational contents.

Secondly, our results reveal that, overall, the left DLPFC was more active than the left Broca pars triangularis (BA 45) across the whole range of advertisings. However, this effect was particularly evident when participants saw the COVID-19-themed contents. The literature has provided generous evidence of the specialization of left DLPFC in the processing of pleasant emotional stimuli eliciting approach motivation, as opposed to the role of right DLPFC in the responsivity to negative emotional stimuli, eliciting avoidance motivation (Davidson, 2004; Herrington et al., 2005; Balconi and Ferrari, 2012; Mondino et al., 2015; Roesmann et al., 2019). Notably, it is possible that such imbalance between the left and right frontal activity does not reflect the valence *per se*, but rather it could reflect the approach-avoidance motivation triggered by a stimulus, irrespective to its valence (Sutton and Davidson, 1997). On the other hand, the left inferior frontal gyrus (IFG, BA 45) has been consistently associated to the processing and the selection of semantic information (Grindrod et al., 2008; Guenther et al., 2015). Taken together, the evidence from the extant literature may lead to hypothesize that the commercials used in the present study may have stressed out the expressive and emotional aspect more than the verbal content, driving our participants to dedicate more attention toward the processing of the emotional components compared to the semantic meaning conveyed by the ad, and eliciting an approach motivation. Furthermore, it is possible that COVID-19-related contents were more effective compared to COVID-19-non-related contents in orienting the consumers' attention toward emotional information rather than toward the elaboration of the semantic meaning of the claim, resulting in a deeper engagement on the emotional processing and, consequently, in a stronger recruitment of the left DLPFC. However, because the IFG was also shown to be implicated in emotional empathy and—in case of injury—alexithymia (Shamay-Tsoory et al., 2009; Hobson et al., 2018), an alternative hypothesis is that the contrasting emotional content was so much intense to make our participants struggle to recruit the emotional contagion system served by the IFG, which resulted being engaged to a lesser extent. Future studies may further explore the reason for such effect, perhaps delving more specifically into the possibility that an excessive use of emotional content may backfire, inducing undesirable outcomes on consumer response (Wolburg, 2006). Relatedly, indeed, sustained mental stress was shown to decrease oxygenated hemoglobin concentrations (i.e., to decrease activity) within the right PFC, which is considered to be consistent with an increased left-lateralized pattern of activity and related to the frontal asymmetry (Al-Shargie et al., 2016, 2017).

In addition, future research could take into consideration the role of interindividual differences in sensitivity to cognitive vs. emotional aspects in the fruition of COVID-19-related appeals. Indeed, Aquino et al. (2020) showed that commercials that match the participants' personal orientation in terms of their Need for Affects or Need for Cognition are perceived as more relevant, specifically recruiting to a higher extent the ventromedial prefrontal cortex (vmPFC). Future studies then could investigate whether people with a stronger orientation toward affect could be more persuaded by strong emotional contents referred to the pandemic scenario.

In conclusion, the present study has shed some light on the use of highly emotional contents containing references to a shared impactful negative experience (i.e., COVID-19 pandemic) presented with a positively framed, expressive, and motivational tone. The present findings suggest that, if cleverly designed, COVID-19-related commercials could elicit more intense emotional responses and modulate the perception of the ad, potentially acting as a lever to increase consumer appeal. The pandemic content, indeed, could serve as a natural source of engagement for potential customers. Moreover, these results could be generalized to other high-impact stimuli of a different nature than the pandemic scenario. However, some limitations should be considered in the present study. The study did not collect any behavioral measure to assess behavioral attitude changes nor explicit judgments following the experimental manipulation. Future research will need to further investigate

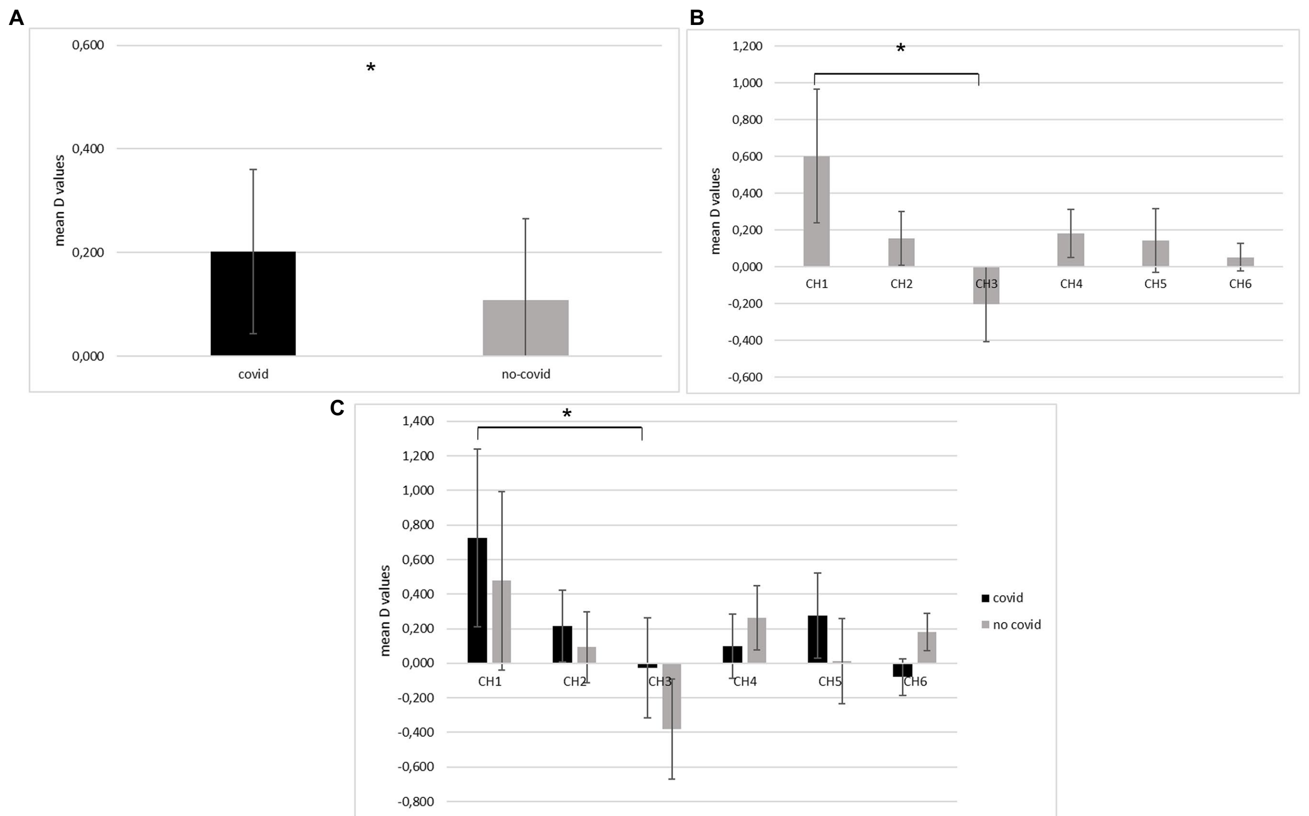

FIGURE 3 | Hemodynamic O_2Hb results. **(A)** The graph displays O2Hb modulation (D values) as a function of Group, which is significantly increased for the COVID-19 group compared to the non-COVID-19 group. **(B)** The bar chart shows significantly higher O_2Hb values in the first channel (Ch1), corresponding to left DLPFC (BA46), compared to the third channel (Ch3) consistent with the left pars triangularis Broca's area (BA45) for all participants. **(C)** As the bar graph shows, significantly greater mean O_2Hb values were found in the Ch1 (left DLPFC) than Ch3 (left pars triangularis Broca's area) in the COVID-19 group. All data are represented as mean ± SE; all *statistically significant differences, with $p \leq 0.05$.

if such commercial strategy is also capable of effectively changing the perception of the brand, enhancing the consumer attitude toward the brand and, eventually, increasing their willingness to buy products from the advertised brand. Secondly, emotional responses were only evaluated according to neurophysiological markers, whereas explicit emotional evaluations were not taken into account. Third, future research may benefit from a within-participants design so that, by exposing each participant to both COVID-19-related and non-related contents in a counterbalanced order, it would be possible to control for the effect of interindividual differences related to the pre-existing preference for the brand or the degree of previous exposure to the COVID-19 threat. Also, as emotional processing is not only subserved by the PFC, assessing the contribution of other cortical sites may prove constructive to achieve a deeper understanding. Finally, the results presented in this study should not be interpreted as conclusive, since the limited sample size may have lowered the power of the statistical tests, offering a partial appreciation of the COVID-19 communication effects. Future studies should consider recruiting a larger sample size, following the requirements suggested by a power analysis, to produce statistically stronger results.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Ethic Committee of the Department of Psychology, Catholic University of the Sacred Heart of Milan, Italy. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MB and MS contributed to the conception and design of the study. MS and LA wrote the first draft of the manuscript. MB, MS, and LA contributed to the manuscript final writing and revision, read, and approved the submitted version. All authors contributed to the article and approved the submitted version.

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Social Identity Complexity, Corporate Social Responsibility, and Brand Love of Multiple Leagues in Professional Sport

Chanwook Do, Natasha T. Brison, Juho Park and Hyun-Woo Lee*

Department of Health and Kinesiology, Texas A&M University, College Station, TX, United States

How can corporate social responsibility initiatives influence brand love? Based on the theory of social identity complexity, we examined whether greater complexity of a sport fan's multiple identifications with sport leagues led to higher multicultural tolerance and more positive perceptions of leagues' corporate social responsibility activities. Further, brand authenticity was tested as a variable intervening between perceived corporate social responsibility and brand love. We analyzed this serial mediation effect impacting sport fans' brand love for their multiple, favored and less favored, sport leagues. Participants ($N = 242$ Amazon Mechanical Turk workers) answered the scale item questionnaire for model assessment. The hypothesized model was supported as the indirect effect through all mediators was significant (43.42% of total indirect effects). Our results suggest that when sport fans acknowledge a high overlap among league fan groups (low social identity complexity), their tolerance is more likely to be higher than those who have a low overlap. Such high levels of tolerance influence how fans perceive corporate social responsibility initiatives, and these effects build up for fans to perceive the brand to be more authentic (i.e., based on their continuity, credibility, integrity, and symbolism). These antecedents affected brand love through a serial mediation. Sport league managers should consider the diverse aspects across leagues (i.e., different fan characteristics, media operations, game schedules) for harmonious coexistence with other leagues (e.g., by collaborating on promotions and reducing overlap of schedules) and maintain brand authenticity for their social initiatives to result in a greater brand love in the consumer's mind.

Keywords: social identity complexity, tolerance, corporate social responsibility, brand authenticity, brand love, sport league experience

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Giuliano Noci,
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Kenneth York,
Oakland University, United States
Eduardo Moraes Sarmento,
Lusophone University of Humanities and Technologies, Portugal

****Correspondence:***
Hyun-Woo Lee
hwlee@tamu.edu

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INTRODUCTION

Professional sport leagues compete and collaborate to retain existing and acquire new customers. While most sports fans follow multiple sports (McDonald et al., 2010), how they develop and maintain their trust and love toward the game and the league can depend on how fans perceive each league's communications and publicity efforts (Giulianotti, 2002; de Oliveira et al., 2021). As Manthiou et al. (2018) noted, brand authenticity and brand love are imperative indicators of a successful brand management as it reflects the trustworthiness and psychological connection with a brand. Considering the ongoing integrated marketing communications as branding efforts of professional leagues, therefore, it is imperative to understand how sport consumers' individual differences and preferences in professional leagues can affect how they perceive the branding activities of professional leagues. One aspect of fan characteristics can be demonstrated by their profiles in which leagues they choose to follow.

Sport consumer researchers highlight the role of psychological attachments and, in particular, the practical significance of social identification with sport organizations (Heere et al., 2011; James et al., 2019). Nonetheless, the notion that multiple identities coexist and how the overlap among group identities influence individual perception is an under-studied issue (Brewer and Pierce, 2005; Delia, 2015; Lee et al., 2020). Further, Brewer and Pierce underscored the predictive effect of identity overlap on individuals' tolerance to recognize and respect diversity. Understanding how fans follow multiple sport leagues and how it affects their perceptions of their favored or unfavored league warrants particular attention when sport fans are known to follow multiple sports (Cobbs et al., 2017). As fans would have varying degrees of identification toward multiple leagues, such identity complexity would affect individuals' ability to identify and appreciate the social values the league holds and promotes. In this study, we investigate how fans' overlapping identifications with multiple leagues are related to their tolerance, which affects their evaluation of a league's social responsibility initiatives, authenticity, and brand love.

We highlight the variables examined in the current study by reviewing the literature on social identity complexity and brand authenticity. By highlighting the serial mediation effects of tolerance, perception of social initiatives, and authenticity, we attempt to address the gap in branding and social identity research in the professional sport context by examining the role of three mediators. Direct and indirect effects are dissected further to discuss implications to scholars and brand managers.

LITERATURE REVIEW

Brand expansion for increasing market share and market growth is dependent on how many consumers are attracted to and willing to share the brand's identity. With this regard, people are more engaged with brands that demonstrate consistent and credible behaviors in responding to consumers' requests (Ahuvia, 2005), leading to demonstrating a more relatable brand identity (Manthiou et al., 2018). Likewise, sport leagues attempt to capture the attention of consumers by showing authentic behavior, not only through matches on the playing field but also via various marketing communication campaigns (Joo et al., 2019). As authentic efforts to connect with their fans, for example, leagues have led campaigns to increase ball-in-play time (e.g., penalizing long delays of play such as intervals of goal kicks in soccer and between pitches in baseball) and reduce commercial time to provide better service to the fans (e.g., improving the continuity of broadcasting). Furthermore, authentic efforts include movements aimed to better communicate the integrity of the league such as implementing community service programs to be socially responsible and improving players' safety. These efforts can address the complaints from players and fans (e.g., the league is commercialized too much), as well as enhance the psychological connections between leagues and customers (James et al., 2002; Williams et al., 2005).

While sport organizations continuously seek new marketing plans and communication tools to catch fans' attention (Tsiotsou, 2013), the use of Corporate Social Responsibility (CSR) programs—contributing to societal goals—has been actively adopted in the sport industry. For example, all four major leagues have adopted the pink breast cancer ribbon campaign and are promoting local community initiatives in their hometowns to engage and expand their fan base (Walker and Heere, 2011; Alhouti et al., 2016). Further, leagues in the United States (US) took a unified stance in protesting social discrimination and left a strong impression on their fans (Evans et al., 2020). To accomplish the goals of CSR, which is developing brand identity through societal community development, sport organizations need to view marketing initiatives through the eyes of new and existing customers to gain positive fan attitudes and brand images (Babiak and Wolfe, 2006; Walker and Kent, 2009).

Despite the fact that sport fans following multiple leagues (Cobbs et al., 2017), scholars within the field of sport management have conducted little research on sport fans' multiple identifications at the league level. Using the theory of social identity complexity (Roccas and Brewer, 2002), Brewer and Pierce (2005) assessed people's identity complexity by measuring their tolerance and emotion when accepting out-group members. Specific to sport management, Meyer (2014) studied the relationship between fans' multiple identifications and their tolerance, and Lee et al. (2020) conducted a study on the association between fans' team identification and their place identification.

However, previous studies in sport management lack an explanatory model for the relationship between social identity complexity and brand authenticity. As such, researchers have called for more research on identity complexity and brand authenticity in sport management (e.g., Heere et al., 2011; Delia, 2015; Kucharska et al., 2020). In terms of social identity complexity, Brewer and Pierce (2005) found that people who have a sport identity showed less tolerant behavior compared to those who do not. Furthermore, Meyer (2014) revealed sport fans have varying degrees of tolerance related to in-group members accepting members from an out-group. Nevertheless, many studies do not consider the evaluation of the organization when accepting out-group members. Considering social identity complexity and tolerance as dispositions of individual characteristics to embrace diversity, such disposition is likely to influence people's recognition and respect to social initiatives and their emotional connections with sport leagues.

Professional Sport League's Brand Research

Sport brands attract fans by using names, symbols, and associated meanings, and were evaluated based on the perceptions of consumers and sales or shares in the marketplace (Aaker, 1991).

In the case of brand authenticity, scholars acknowledge the enormous worth of professional sport leagues as brands, but few researchers have concentrated on the brand authenticity of the league in the field of sport management. In order to increase the market value of professional sport leagues in the US, including the National Football League (NFL), the National Basketball Association (NBA), the National Hockey League (NHL), and Major League Baseball (MLB), which are valued at over $32.23 billion (Willis, 2020), a study on how brand authenticity entices consumers is needed (Morhart et al., 2015).

The relationships among the brands of the teams and leagues can be described by the concept of sport brand architecture (Kunkel et al., 2013). Sport brand architecture is segmented into three theoretical groups: league dominant, team dominant, and codominant (Kunkel et al., 2013). A league dominant architecture is illustrated by consumers who have a primary interest in the league brand and therefore may prefer to be more involved with activities at the league level than being involved with individual teams currently in the league (Kunkel et al., 2013). In the event that a professional sport team relocated from their home field to another city, fans who supported the team usually ascribe a nostalgic characteristic to the team (Kulczycki and Hyatt, 2005). For example, fans of a relocated team (e.g., the NFL team San Diego Chargers moving to Los Angeles in 2017 to become the Los Angeles Chargers) have a high possibility of becoming a fan of a new sport team in the league (Lock et al., 2009).

Team dominance is a fan's perception that the value of a given team brand is relatively higher than the value of the league brand (Kunkel et al., 2013). Unique features (e.g., players, coaches, distinguished atmospheres) of the team can influence customers to reinforce team dominance (Kolbe and James, 2000). Team dominance is found in world-famous clubs, such as the Manchester United F.C., New York Yankees, and Los Angeles Lakers, all of which generally retain strong brand value, have a remarkable history and sell out for most games (cf. Deloitte, 2011).

In the case of a codominant architecture, consumers are equally interested in the brand of the league and a specific team (Kunkel et al., 2013). Based on such tendencies, consumers not only watch various matches within the league via media but also purchase several teams' merchandise. For instance, fans who follow their favorite NFL team also watch other teams' games on special days such as Monday Night Football (Kunkel et al., 2013). However, not many studies have focused on the evaluation of the league brand based on fans' tolerance and external factors, including CSR, brand authenticity, and brand love. In particular, to better understand sport consumers' perceptions toward sport league brands, it is imperative to investigate how identification with multiple leagues coexist in a consumer's mind and how leagues' efforts that are external to the match affects their connection with the league. We review these concepts and constructs in the following sections.

Social Identity Complexity and Tolerance

Social identity complexity (Roccas and Brewer, 2002) is relatively a newer theoretical construct. This theory assesses the perceived degree of overlap among elements of a person's multi-group membership. When the level of perceived overlap is high (i.e., low complexity), members of a group perceive other groups as being less different and follow more coherent behavioral outcomes (e.g., in-group favoritism and out-group discrimination) (Roccas and Brewer, 2002). Additionally, Brewer and Pierce (2005) conducted empirical research demonstrating that people's attitudes can be changed, depending on the degree of tolerance by out-groups and diversity. For example, people with high identity complexity tend to be more accepting and tolerant of out-group members positively.

Scholars concur that research on social identity complexity is still in its early stages (Brewer and Pierce, 2005; Heere et al., 2011). Furthermore, among studies on sport management, views of multiple identities in sport are not in agreement. Brewer and Pierce (2005) found that sport fans tend to have not only a high overlap (i.e., low complexity) but also a lack of distinctiveness, suggesting that sport fans are a relatively homogeneous group compared to people who do not identify with sport. However, Meyer (2014) demonstrated that low overlap exists when only sampling sport fans. To extend these findings, Lee et al. (2020) studied sport fans to find an interaction between team identification and place identification on attendance intention.

Although all of these studies measured complexity using various factors (e.g., personal group, team identification and national identity, and team identification and place identification), complexity between professional sport leagues have not been considered. Each league in the US has unique characteristics (e.g., season start date, rules). Furthermore, the leagues do not consider other sport leagues as barriers when devising marketing plans. For instance, the NFL and the MLB advertised their own games during the NBA play-off in 2020 (e.g., NBA, 2020). Through this method, leagues are presented with an opportunity to attract other leagues' fans and foster a multiple league identity among fans. Additionally, identity complexity can have positive effects on out-group members and fans' purchase intentions (Brewer and Pierce, 2005; Lee et al., 2020). However, there is insufficient research on the association between fans' identity complexity across leagues and perceived brand love. Therefore, the first hypothesis is:

H1. Sport fans' identity complexity positively influences their brand love of the league.

Additionally, tolerance may interact with the level of identity complexity to influence people's behavior. Brewer and Pierce (2005) found that the association between participants' identity complexity and emotion toward the out-group depended on the degree of tolerance. Although this study assessed in-group members' identity complexity in relation to emotions about out-group members, there is limited research about how in-group members evaluate their organizations when organizations accept out-group members and how levels of tolerance may affect their perceptions of a league. Therefore, the second hypothesis is:

H2. The level of fans' tolerance mediates the effect of their identity complexity on their brand love for the league.

Corporate Social Responsibility, Brand Authenticity, and Brand Love

Corporate social responsibility is the active behavior of an organization that takes responsibility for the environment and social welfare (Russo and Perrini, 2010). The importance of CSR initiatives has been emphasized due to their ability to showcase an organization's image to the public (Babiak and Wolfe, 2006). To achieve a high evaluation of a brand, the company must demonstrate both uniqueness and conformity to CSR initiatives (Johansen and Nielsen, 2012). In the case of US professional sport leagues, leagues have their own CSR programs such as the construction of new infrastructures for a local community or offering job opportunities (Ahmed, 1991). Through CSR initiatives, people who do not have a particular league identity also can develop an interest in the league (Maignan and Ferrell, 2004). Despite the widespread nature of CSR programs across leagues that contribute to developing community and expanding the fan base, scholars in sport management have mostly conducted CSR research on specific teams (e.g., Walker and Kent, 2009; Baena, 2018). Research on specific teams has demonstrated that CSR programs not only facilitate the formation of fans' identification (He and Li, 2011) but also enhance brand love for the league (Baena, 2018). CSR may mediate the effects of fans' complexity of identities within the sport league on their brand love for the league. Therefore, the third hypothesis is:

H3. Perceived league's CSR mediates the effect of fans' identity complexity on their brand love for the league.

To determine the effect of brand authenticity, several scholars in the field of marketing have developed an objective scale that includes multiple dimensions (Napoli et al., 2014; Morhart et al., 2015). For instance, Morhart et al. (2015) proposed four dimensions of brand authenticity: history, credibility, integrity, and symbolism. In the case of Napoli et al. (2014), researchers similarly contended there are three categories of brand authenticity including heritage, sincerity, and quality commitment. When measuring brand authenticity through customer perceptions, it is imperative to understand the antecedents and consequences involving the perception process. For instance, Safeer et al. (2020) argued that brands perceived with high levels of brand authenticity bring optimal opportunities for not only engaging customers into celebrating the brand identity but also to create a positive image of the organization in the consumer's mind. Through the evaluation of multidimensional brand authenticity characteristics, customers with higher levels of perceived brand authenticity may have higher love for the brand (Manthiou et al., 2018). In this, identity complexity is considered as a personal disposition affecting the perception process as an antecedent. Therefore, the fourth hypothesis is:

H4. A league's brand authenticity mediates the effect of fans' identity complexity on their brand love for the league.

Taking all of the above into account, sport fans' identity complexity with multiple leagues and their tolerance are hypothesized as individual characteristics affecting value-laden CSR initiatives. CSR conveys the image of a brand to the local community (Babiak and Wolfe, 2006). In holding an image that is consistent with CSR, a brand has to demonstrate authentic behavior (Joo et al., 2019). As fans' perceptions of CSR initiatives influence how they think of the brand's authenticity, the proposed model consists of the serial mediations involving tolerance, CSR, and brand authenticity between league identity complexity and brand love (**Figure 1**). Hence, the following hypothesis is proposed:

H5. The levels of fans' tolerance, the league's CSR, and their perceived brand authenticity sequentially mediate the effect of fans' identity complexity and their brand love for the league.

MATERIALS AND METHODS

Participants

Participants for this study were recruited through Amazon's Mechanical Turk (MTurk). As MTurk facilitates data collection from diverse participants who adequately represent the online-using population, the platform has been widely employed for research purposes (e.g., Mason and Suri, 2012; Larkin and Fink, 2016). To collect quantitative data, MTurk participants with a qualifying Human Intelligence Task (HIT) approval rate greater than 95% were included in this survey. The purpose of setting up a high HIT approval rate is to enhance research reliability (Hunt and Scheetz, 2019). On the basis of this condition, 270 respondents were recruited. After excluding 28 participants who did not pass the screening questions or had incomplete responses, 242 participants were included in the analysis.

Measure and Procedures

Participants were first presented with an informed consent form. Those who agreed to participate in the study and signed the form were re-directed to the external questionnaire via Qualtrics. Participants rated their sport identity complexity across four major leagues in the US based on Brewer and Pierce's (2005) scale (from 0 to 10 points). For example, participants were asked about the number of members overlapping across each league. Then, participants completed a series of tolerance-related questions (National Opinion Research Center, 1998) to assess their attitudes about various social issues on a seven-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). Participants also ranked their favorite US professional sport leagues from top to bottom. Based on this ranking, we measured their perceptions of favorite and least favorite leagues' CSR initiatives (Walker and Heere, 2011), brand authenticity (Morhart et al., 2015), and brand love (Carroll and Ahuvia, 2006) on a Likert scale from 1 (strongly agree) to 7 (strongly disagree). Finally, participants reported demographic information. Participants were compensated 50 cents for completing the 15-min questionnaire (see **Appendix 1**).

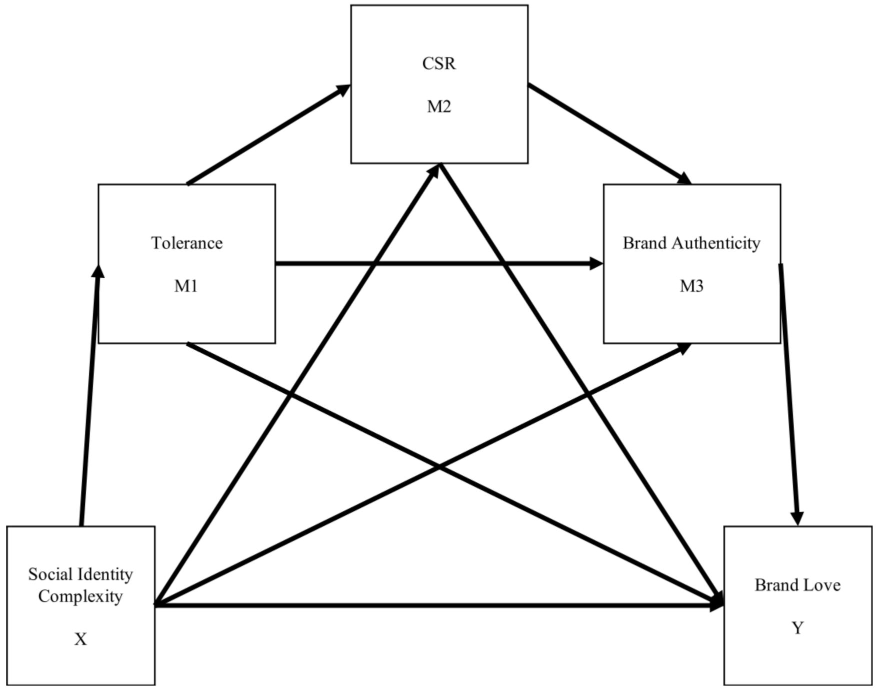

FIGURE 1 | Conceptual model for this research.

Data Analysis

Data were coded using SPSS version 25 (IBM Corp, 2017). Before running the main analyses, all measures were evaluated using Cronbach's alpha (Cronbach, 1951). In alignment with recommended values for research purposes (Nunnally, 1994), Cronbach's alphas of 0.70 or above were regarded as acceptable. However, tolerance variables showed insufficient reliability, which has been reported in previous studies (Brewer and Pierce, 2005; Meyer, 2014). While Meyer (2014) used two variables for multiculturalism, the current study employed a single item of multiculturalism asking their perception of racial and ethnic groups maintaining their distinct customs and traditions. The single item considers respecting other cultures and was deemed relevant for measuring tolerance toward different cultures.

To test the hypotheses, mediation analyses with bootstrapping using Mplus 8 (Muthén and Muthén, 2017) were employed with fans' league identity complexity as an independent variable, the evaluation of league brand love as a dependent variable, and the degree of tolerance, CSR, and brand authenticity as mediators. Two separate mediation analyses were conducted for favorite league and least favorite league.

RESULTS

Among the 242 final participants, 181 were male (74.8%) and 61 were female (25.2%). Ages ranged from 20 to 70 ($M = 32.7$, $SD = 9.14$). With respect to race and ethnicity, most participants were White ($n = 98$, 40.5%) followed by Asian ($n = 79$, 32.6%), Hispanic ($n = 25$, 10.3%), Native American ($n = 21$, 8.7%), African American ($n = 18$, 7.4%), and other ($n = 1$, 0.4%). Over a half of participants had a bachelor's degree ($n = 153$, 63.2%). The NBA was the most favored league ($n = 87$, 36.0%) followed by the NFL ($n = 76$, 31.4%), the NHL ($n = 43$, 17.8%), and MLB ($n = 36$, 14.9%), while the NHL was least favored league ($n = 78$, 32.2%) followed by MLB ($n = 73$, 30.2%), the NBA ($n = 46$, 19.0%), and the NFL ($n = 45$, 18.6%). **Tables 1**, **2** displays the demographic characteristics of the participants.

The data were considered appropriate for model estimation using mediation. The distribution of the data was reasonably normal based on skewness and kurtosis less than 2 or greater than −2, indicating symmetrical distributions for variables (Pallant, 2020). Correlations were performed to characterize the relationships among variables (Pallant, 2020). As all variables were correlated for favorite and least favorite leagues, the aforementioned validity tests and the multidimensional scales were conceptually associated (Sony and Naik, 2012; Kopcha et al., 2014). Multicollinearity was not an issue as all correlations were below 0.85 (Berry et al., 1985; Bollen and Lennox, 1991). The detailed results of correlations for favorite and least favorite leagues are reported in **Tables 3**, **4**, respectively.

The estimated R-square values for the endogenous latent variables were analyzed to determine how much each variable influenced the four factors in each model. As shown in the pattern of correlations (see **Tables 3**, **4**), the predictor and the three mediators have significant relationships with brand love. All paths for the mediation model and the corresponding coefficients, indirect effects, and bias-corrected 95% confidence intervals are displayed in **Tables 5**, **6**.

Favorite Leagues' Identity Complexity and Their Brand Love

As shown in **Table 5**, brand authenticity in favorite leagues significantly influenced brand love ($\beta = 0.715$, $p < 0.001$), and CSR showed a significant impact on brand authenticity ($\beta = 0.662$, $p < 0.001$). Additionally, the total effect of identity complexity on brand love in favorite leagues was significant ($\beta = 0.152$, $p = 0.025$), and the total indirect effect of identity complexity on brand love was also significant after controlling for the three mediators ($\beta = 0.197$, $p = 0.002$). The indirect effects of identity complexity on brand love through CSR (H3), and the indirect effects of identity complexity on brand love through all mediators (H5) were significant. Specific indirect effects via tolerance and CSR, and tolerance and brand authenticity were also significant. These results for favorite leagues suggest that higher identity complexity predicts greater tolerance, which in turn leads to higher perceptions of CSR and brand authenticity, resulting in higher levels of brand love. The bootstrapped CIs indicated that the indirect effect of identity complexity on brand love through all mediators was the largest ($\beta = 0.066$) compared to those through CSR and brand authenticity ($\beta = 0.059$), tolerance and brand authenticity ($\beta = 0.045$), tolerance and CSR ($\beta = 0.025$), and CSR ($\beta = 0.023$).

Least Favorite Leagues' Identity Complexity and Their Brand Love

Among all direct paths, shown in **Table 6**, CSR showed significant effects on brand authenticity ($\beta = 0.688$, $p < 0.001$) and brand love ($\beta = 0.626$, $p = 0.000$); both the total effect ($\beta = 0.370$, $p < 0.001$) and the total indirect effect ($\beta = 0.314$, $p < 0.001$) were significant. Furthermore, the bias-corrected 95% CI indicated that the indirect effects of identity complexity on brand love through CSR, tolerance and CSR, CSR and brand authenticity, tolerance, CSR, and

TABLE 1 | Demographic Characteristics of Sample ($n = 242$).

Variables	n	%
Gender		
Male	181	74.8
Female	61	25.2
Age (*M* = 32.4, *SD* = 9.03)		
20–29 years	99	40.9
30–39 years	109	45.0
40 years and older	34	14.0
Race		
Native American	21	8.7
Asian	79	32.6
African American	18	7.4
Hispanic	25	10.3
White	98	40.5
Other	1	0.4
Education		
High School Diploma	21	8.7
Associate Degree	19	7.9
University Degree In Progress	8	3.3
Bachelor's Degree	153	63.2
Master's Degree	39	16.1
Doctoral Degree	2	0.8

TABLE 2 | Rankings for favorite and least favorite league.

		Ranking		
Favorite league (1st)		**2nd**	**3rd**	**4th**
NBA (*n* = 87)	NFL	45 (51.7%)	22 (25.3%)	20 (23.0%)
	NHL	22 (25.3%)	31 (35.6%)	34 (39.1%)
	MLB	20 (23.0%)	34 (39.1%)	33 (37.9%)
NFL (*n* = 76)	NBA	45 (59.2%)	12 (15.8%)	19 (25.0%)
	NHL	14 (18.4%)	34 (44.7)	28 (36.8%)
	MLB	17 (22.4%)	30 (39.5%)	29 (38.2%)
NHL (*n* = 43)	NBA	23 (53.5%)	5 (11.6%)	15 (34.9%)
	NFL	10 (23.3%)	16 (37.2%)	17 (39.5%)
	MLB	10 (23.3%)	22 (51.2%)	11 (25.6%)
MLB (*n* = 36)	NBA	19 (52.8%)	5 (13.9%)	12 (33.3%)
	NFL	9 (25.0%)	19 (52.8%)	8 (22.2%)
	NHL	8 (22.2%)	12 (33.3%)	16 (44.4%)
Least favorite league (4th)		**3rd**	**2nd**	**1st**
NBA (*n* = 46)	NFL	11 (23.9%)	16 (34.8%)	19 (41.3%)
	NHL	19 (41.3%)	12 (26.1%)	15 (32.6%)
	MLB	16 (34.8%)	18 (39.1%)	12 (26.1%)
NFL (*n* = 45)	NBA	7 (15.6%)	18 (40.0%)	20 (44.4%)
	NHL	13 (28.9%)	15 (33.3%)	17 (37.8%)
	MLB	25 (55.6%)	12 (26.7%)	8 (17.8%)
NHL (*n* = 78)	NBA	7 (9.0%)	37 (47.4%)	34 (43.6%)
	NFL	26 (33.3%)	24 (30.8%)	28 (35.9%)
	MLB	45 (57.7%)	17 (21.8%)	16 (20.5%)
MLB (*n* = 73)	NBA	8 (11.0%)	32 (43.8%)	33 (45.2%)
	NFL	20 (27.4%)	24 (32.9%)	29 (39.7%)
	NHL	45 (61.6%)	17 (23.3%)	11 (15.1%)

NBA, National Basketball Association; NFL, National Football League; NHL, National Hockey League.

TABLE 3 | Rankings for favorite and least favorite league.

Variables	1	2	3	4	5
(1) FOVER	–				
(2) TOLER	0.35**	–			
(3) FCSR	0.26**	0.44**	–		
(4) FBA	0.21**	0.46**	0.73**	–	
(5) FBL	0.15*	0.40**	0.70**	0.84**	–
M	5.75	5.00	5.18	5.34	5.51
SD	1.96	1.35	1.10	0.91	0.91
Skewness	−0.24	−0.68	−0.83	−0.51	−0.97
Kurtosis	0.07	0.21	0.72	0.26	1.45
Cronbach's α	0.70	.	0.89	0.92	0.89

FOVER, favorite league overlap; TOLER, tolerance; FCSR, favorite CSR; FBA, favorite brand authenticity; FBL, favorite brand love.
In the case of tolerance, a single variable associated with multiculturalism was used since the variable does not have sufficient reliability.
$^*p < 0.05$; $^{**}p < 0.01$.

TABLE 4 | Bivariate relationships for least favorite league.

Variables	1	2	3	4	5
(1) LFOVER	–				
(2) TOLER	0.27**	–			
(3) LFCSR	0.37**	0.43**	–		
(4) LFBA	0.33**	0.45**	0.76**	–	
(5) LFBL	0.37**	0.40**	0.84**	0.75**	–
M	5.48	5.00	4.87	5.12	5.01
SD	1.98	1.35	1.27	0.89	1.15
Skewness	−0.25	−0.68	−0.99	−0.39	−0.99
Kurtosis	−0.17	0.21	0.69	0.09	1.08
Cronbach's α	0.76	.	0.92	0.93	0.92

LFOVER, least favorite league overlap; TOLER, tolerance; LFCSR, least favorite CSR; LFBA, least favorite brand authenticity; LFBL, least favorite brand love.
In the case of tolerance, a single variable associated with multiculturalism was used since the variable does not have sufficient reliability.
$^{**}p < 0.01$.

TABLE 5 | Model estimates for favorite league.

			95% CI	
Path	***β***	***SE***	**LLCI**	**ULCI**
Direct effect				
(1) FOVER → TOLER	0.348*	0.067	0.234	0.452
(2) FOVER → FCSR	0.124	0.065	0.017	0.228
(3) FOVER → FBA	−0.028	0.043	−0.099	0.041
(4) FOVER → FBL	−0.046	0.032	−0.103	0.003
(5) TOLER → FCSR	0.401*	0.072	0.276	0.512
(6) TOLER → FBA	0.180*	0.061	0.082	0.283
(7) TOLER → FBL	0.000	0.050	−0.082	0.083
(8) FCSR → FBA	0.662*	0.070	0.555	0.750
(9) FCSR → FBL	0.182*	0.071	0.070	0.309
(10) FBA → FBL	0.715*	0.070	0.587	0.822
Indirect effects from FOVER to FBL				
Total effect	0.152*	0.068	0.037	0.264
Total indirect effect	0.197*	0.063	0.092	0.298
(1) FOVER → TOLER → FBL	0.000	0.018	−0.029	0.030
(2) FOVER → FCSR → FBL	0.023*	0.015	0.005	0.055
(3) FOVER → FBA → FBL	−0.020	0.031	−0.073	0.029
(4) FOVER → TOLER → FCSR → FBL	0.025*	0.013	0.010	0.055
(5) FOVER → TOLER → FBA → FBL	0.045*	0.019	0.020	0.084
(6) FOVER → FCSR → FBA → FBL	0.059*	0.031	0.011	0.113
(7) FOVER → TOLER → FCSR → FBA → FBL	0.066*	0.019	0.041	0.107

FOVER, favorite league overlap; TOLER, tolerance; FCSR, favorite CSR; FBA, favorite brand authenticity; FBL, favorite brand love.
In the case of tolerance, a single variable associated with multiculturalism was used since the variable does not have sufficient reliability.
**Significant effect.*

brand authenticity were significant. Comparisons showed that significant differences existed in the strength of the indirect path from identity complexity to brand love through each mediator: CSR ($\beta = 0.172$); tolerance and CSR ($\beta = 0.059$); CSR and brand authenticity ($\beta = 0.047$); tolerance, CSR, and brand authenticity ($\beta = 0.016$); and tolerance and brand authenticity ($\beta = 0.009$).

DISCUSSION

In this study, we examined the relationship between fans' identity complexity and brand love via tolerance, CSR, and brand authenticity. Specifically, the mediating effects of tolerance, CSR, and brand authenticity in the association between identity complexity and brand love were investigated in relation to the degree of overlap among fans' favorite and least favorite leagues. Results demonstrated that the relationship between social identity complexity and brand love is mediated by tolerance, CSR, and brand authenticity. Whereas identity complexity showed non-significant direct effects on brand love for both favorite or least favorite leagues, multiple mediators indicated positive influences via serial mediation involving all paths. The different results across favorite and least favorite league suggests that further research of identity complexity is needed, which is in line with suggestions that research on social identity complexity should examine the interplay among multiple identities on behavior (Roccas and Brewer, 2002; Brewer and Pierce, 2005; Kwon et al., 2015; Lee et al., 2020).

The results from this study illustrate three important points. First, although all variables were significantly associated (see **Tables 3**, **4**), identity complexity based on fans' favorite or least favorite league did not directly influence their brand love for

TABLE 6 | Model estimates for least favorite league.

			95% CI	
Path	***β***	***SE***	**LLCI**	**ULCI**
Direct effect				
(1) LFOVER → TOLER	0.266*	0.064	0.160	0.370
(2) LFOVER → LFCSR	0.275*	0.063	0.172	0.380
(3) LFOVER → LFBA	0.041	0.051	−0.042	0.128
(4) LFOVER → LFBL	0.056	0.034	0.001	0.114
(5) TOLER → LFCSR	0.356*	0.077	0.221	0.477
(6) TOLER → LFBA	0.141*	0.055	0.050	0.233
(7) TOLER → LFBL	0.001	0.045	−0.70	0.080
(8) LFCSR → LFBA	0.688*	0.039	0.618	0.748
(9) LFCSR → LFBL	0.626*	0.069	0.512	0.733
(10) LFBA → LFBL	0.247*	0.076	0.125	0.369
Indirect effects from LFOVER to LFBL				
Total effect	0.370*	0.064	0.261	0.471
Total indirect effect	0.314*	0.055	0.218	0.401
(1) LFOVER → TOLER → LFBL	0.000	0.013	−0.019	0.022
(2) LFOVER → LFCSR → LFBL	0.172*	0.044	0.107	0.252
(3) LFOVER → LFBA → LFBL	0.010	0.013	−0.009	0.036
(4) LFOVER → TOLER → LFCSR → LFBL	0.059*	0.019	0.034	0.098
(5) LFOVER → TOLER → LFBA → LFBL	0.009*	0.006	0.003	0.023
(6) LFOVER → LFCSR → LFBA → LFBL	0.047*	0.018	0.023	0.082
(7) LFOVER → TOLER → LFCSR → LFBA → LFBL	0.016*	0.007	0.008	0.032

LFOVER, least favorite league overlap; TOLER, tolerance; LFCSR, least favorite CSR; LFBA, least favorite brand authenticity; LFBL, least favorite brand love.
In the case of tolerance, a single variable associated with multiculturalism was used since the variable does not have sufficient reliability.
**Significant effect.*

the league when holding other variables constant. Second, all indirect effects including CSR as a mediator were significant. This infers that CSR has an imperative role in the causal chain with other variables, regardless of fans' preferences. Third, the mediation effects showed significant results regardless of fans' league preferences. This implies that identity complexity can lead to a positive view of a league, even if the league is least favorite, and expand the professional sport market.

The results of this study contribute to the existing literature on fan identification in sport marketing as it provides evidence of social identity complexity within sport fans who follow multiple professional sport leagues. Adding to Meyer (2014) who studied the relationship between fans' multiple identifications and their tolerance, this study examined the associations of fans' identity complexity with league brand, their tolerance, and the brand's actions—CSR and brand authenticity—which influence perceptions of the league brand. This study also expands the framework of social identity complexity. Although Brewer and Pierce (2005) investigated in-group members' perception of out-group members based on identity complexity and personality, this current study examined the attitudes of in-group members across their organizations that accept out-group members. In contrast to Brewer and Pierce's findings that low overlap (high complexity) led to higher tolerance across multicultural groups based on White people's perception of nationality, our results were consistent with Meyer's study as high overlap (low complexity) led to higher tolerance across fans of different leagues.

This study contributes to the ongoing research on multiple identifications across different sport leagues. Due to perceptions of multiple identifications negatively affecting a primary identity (Putnam and Wondolleck, 2003), multiple identifications among sport fans have been largely neglected by scholars compared to studies involving single identification. However, it should be noted that scholars have started to focus on examining fans' identity complexity (Meyer, 2014; Lee et al., 2020, 2021). The current study lays a foundation for more active research on identity complexity among sport fans. In the next section, we will provide insights into practical implications based on results from the current study.

PRACTICAL IMPLICATIONS

This study provides information about developing both sport fans' spectating cultures and the market size of professional sport leagues to marketing practitioners in the sport industry. These strategies can be divided into two main aspects: favorite league and least favorite league. With respect to the former, favorite leagues can increase revenue through marketing programs used by other leagues during their games. The current study also demonstrated that when fans have multiple identities related to professional sport leagues, their favorite league's identity is not negatively influenced by other league identities. Furthermore, when the brand is associated with multicultural aspects, customers think of the brand more positively (Seo et al., 2015). For example, even though the NBA accepted advertisements that promoted other leagues' schedules such as the NFL, the NHL, or MLB during NBA games, fans of the NBA did not experience an attenuation in their NBA identity (Heere and James, 2007; NBA, 2020). By using such methods, leagues may increase revenue and build positive relationships with other leagues. Furthermore, researchers should examine the role of identity complexity when there may be conflict situations across leagues (Lee et al., 2021).

Results from this study revealed that fans' feelings about their least favorite leagues are more benevolent if fans have multiple identities. Therefore, from a long-term perspective, leagues should consider engaging in joint activities, such as initiating a CSR activity for a common cause that can overlap positive images across the leagues and deepen relationships with fans. On the other hand, in the case of least favorite league, organizations should work to eliminate negative images held by potential and current customers. As purchase intention is directly associated with brand image (Koronios et al., 2016), results from this study suggest that other leagues can adopt an effective method for changing fans' attitudes.

Marketing practitioners should keep in mind that the relationship between fans and leagues depends on how fans evaluate CSR and brand authenticity. If a fan perceives a league's CSR programs as authentic behavior, the fan's brand love for their favorite or least favorite leagues will increase whether or not fans are tolerant about accepting other leagues' cultures. Additionally, when the leagues continually share the detailed results of their CSR initiatives on a large-scale using media, fans will recognize the leagues' behavior as credible and faithful. Through such announcements, fans may more highly evaluate not only the leagues' CSR but also their brand authenticity. While these factors can affect relationships with fans, sport leagues should remember the important role of CSR and brand authenticity when developing marketing strategies.

LIMITATIONS AND FUTURE RESEARCH

Although this study contributes to developing theoretical and practical implications in the field of sport management, there are some limitations that need to be resolved in future research. First, this study focused on only professional sport leagues in the US. To test the validity of this model, future researchers should study other countries (e.g., Australia, Canada, Germany, or South Korea) that operate multiple professional leagues. Additionally, as each country has different cultural passions associated with sport, future researchers should consider the unique characteristics of the country in their research. Second, this study used only one item on the questionnaire related to tolerance for multiculturalism due to issues with scale reliability. Since similar limitations have also existed in previous studies (e.g., Brewer and Pierce, 2005; Meyer, 2014), future research should employ other tolerance scales associated with social identity complexity. Third, common to survey research, there was no test of whether brand love is related to behavior. For instance, we did not measure whether higher brand love is related to buying more tickets or more merchandise. While we provide an initial first step in finding the associations among the constructs, future researchers should measure actual behaviors, or even intentions to purchase game tickets or merchandise at the least. In addition, researchers could design experimental manipulations of brand love to see whether increasing brand love increases consumption behaviors. Lastly, this study did not provide sufficient practical and theoretical recommendations for how leagues can induce their fans to establish multiple identities in conjunction with other leagues. The purpose of this study is to understand identity complexity in the sport industry; however, current results apply specifically to fans with multiple identities. Therefore, future researchers should develop a strategy for how people develop multiple identities in professional sport leagues.

CONCLUSION

In conclusion, we looked into how fans' multiple identifications with sports leagues affect multicultural tolerance and attitudes toward CSR initiatives. Moreover, the impact of CSR perception on perceived brand authenticity and brand love was investigated. The chain of effects is underscored as the serial mediation model was supported. The current study adds to the body of research on branding by emphasizing social identity complexity, tolerance, corporate social responsibility, and brand authenticity as antecedents of brand love. The perceived overlap among sports fans who identify with multiple leagues, social identity complexity, is highlighted as a personal disposition that influences the brand love perception process. Furthermore, the perception process for fans' brand love for their favorite league against a less preferred league differed regarding the strength of indirect effects.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Texas A&M Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to this work, and approved the submitted version.

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APPENDIX

TABLE A1 | Measurement items.

Constructs and items	
Social identity complexity	NBA / NFL, NHL, and MLB NFL / NBA, NHL, and MLB NHL / NBA, NFL, and MLB MLB / NBA, NFL, and NHL
Tolerance	It is better for the country if racial and ethnic groups maintain their distinct customs and traditions
CSR	I am aware of the social programs of my favorite OOO
	I know of the good things my favorite OOO does for the community
	I believe my OOO to be a socially responsible organization
	I feel good about my favorite OOO partly because of all the things they do to benefit the community
	Part of the reason I like my favorite OOO is because of what they do for the community
	One of the reasons I speak positively about my favorite OOO is because of what they do for the community
	I buy merchandise from my favorite OOO partly because I believe they are a socially responsible organization
Brand authenticity	OOO is a brand with a history
	OOO is a timeless brand
	OOO is a brand that survives times
	OOO is a brand that survives trends
	OOO is a brand that will not betray you
	OOO is a brand that accomplishes its value promise
	OOO is a honest brand
	OOO is a brand that gives back to its consumers
	OOO is a brand with moral principles
	OOO is a brand true to a set of moral values
	OOO is a brand that cares about its consumers
	OOO is a brand that adds meaning to people's lives
	OOO is a brand that reflects important values people care about
	OOO is a brand that connects people with their real selves
	OOO is a brand that connects people with what is really important
Brand love	OOO is a wonderful brand
	OOO makes me feel good
	OOO is totally awesome
	I have positive feelings about OOO
	OOO makes me very happy
	I love OOO!
	OOO is a pure delight

OOO means participants' favorite and least favorite professional sports leagues in the US based on the rank each league.

ORIGINAL RESEARCH
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Influence Mechanism of Social Support of Online Travel Platform on Customer Citizenship Behavior

Yu-mei Ning[1,2] and Chuan Hu[1]*

[1] School of Business Administration, Zhongnan University of Economics and Law, Wuhan, China, [2] Business School, Yulin Normal University, Yulin, China

Customer citizenship behavior has attracted widespread attention from scholars due to its capacity of enabling enterprises to gain competitive advantages of low costs and high efficiency by giving full play to the initiative of customers. Based on the S-O-R Model, we have established the theoretical model to study the influence imposed by social support of online travel platform enterprises on customer citizenship behavior against the backdrop of the sharing economy. This research tests the fitting of the theoretical model and its fundamental hypotheses using 626 samples acquired from the investigation with SPSS26.0 and AMOS25.0. Results indicate that the social support has a positive influence on customer citizenship behavior. Social support could have a positive influence on positive emotions. Social support has no significant negative effect on negative emotions. Positive emotions have a positive influence on customer citizenship behavior. Negative emotions have a negative influence on customer citizenship behavior. Positive emotions play a mediating effect in the positive influence of social support on customer citizenship behavior. Social support could have a positive influence on customer satisfaction. Customer satisfaction has a positive influence on customer citizenship behavior. Customer satisfaction plays a mediating effect in the positive effect of social support on customer citizenship behavior. Positive emotions and customer satisfaction play a chain mediating effect in the positive effect of social support on customer citizenship behavior.

Keywords: customer citizenship behavior, social support, online travel platform, consumption emotion, customer satisfaction

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Alaa S. Jameel,
Cihan University, Iraq

****Correspondence:***
Yu-mei Ning
ningyumei1989@163.com

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INTRODUCTION

As the Internet technologies are increasingly popularized and applied, the travel platform enterprises can empower their full-time internal staff to cooperate with customers who have been turned into part-time *external staff* while serving customers, so as to maximize the corporate value. Customers are expected to engage in citizenship behavior in favor of enterprises like full-time internal staff. For example, customers recommend products or services of the travel platform to others in the comments of the online travel platform (e.g., Flying Pig, Qunar), and even customers who have enjoyed the platform will conduct unpaid promotions on social media (such as Douyin, Twitter) in the form of text and video, which taps more potential customers for the online travel platform, thereby expanding the consumer group of the online travel platform. There are also customers who actively provide valuable travel experience feedback to the travel platform, and actively provide information help to other customers who encounter travel problems (Shen and Liu, 2015). The citizenship behavior, which features collaborative creation of value by customers and enterprises, has attracted widespread attention from scholars due to its capacity of enabling enterprises to gain competitive advantages of low costs and high efficiency by giving full play to the initiative of customers. Groth (2005), referring to the definition of organizational citizenship behavior, defined customer citizenship behavior as the beneficial behavior exhibited by customers that are valued and appreciated by firms, and external to the role of customers.

The social support of travel platform enterprises plays an important role in the influence of customer citizenship behavior. With the increasingly popularized application of Internet technologies, the online travel platform enterprises are not only able to provide effective information for customers anytime and anywhere, but also capable of establishing interpersonal relationships with customers and provide them with emotional support such as a sense of belonging, so as to enhance the level of satisfaction and the purchase intention of customers (Chang et al., 2015; Hu et al., 2017). Some of the existing studies have explored the impact imposed by social support on customer citizenship behavior. Originated from the science of rehabilitation psychology and epidemiology, the theoretical concepts of social support have been introduced by a few scholars into their studies on consumer behavior. In such context, the social support refers to the most critical social value that the individual acquires from the enterprise as well as the individual's perception of available social resources (Chiang and Huang, 2016). Through the empirical analysis of fitness industry, Rosenbaum and Massiah (2007) found that when customers could gain more social support from other customers, they are prone to show higher level of engagement, cooperation and loyalty, and would take a more proactive part in citizenship behaviors such as spreading the word of mouth and assisting other customers. Verleye et al. (2014) argued that the social support that nursing home members receive from nursing home staff and other nursing home members could promote customer citizenship behavior through customer affection (satisfaction) and customer role preparation. Chang et al. (2015) held that the social support that electronics virtual community members receive from other members could enhance the customer citizenship behavior through the intermediary role of relationship quality. Chiu et al. (2015) argued that the social support that online community members of maternal health-related topics received from other members could promote customer citizenship behavior through subjective well-being and community identity. Zhu et al. (2016) held that the social support that electronic virtual community members receive from the community and other members affects customer citizenship behavior through customer satisfaction. Compared with offline traditional service organizations, online platforms are more social and thus provide more opportunities for users to provide social support because they can transcend time and geographical restrictions. Different from online communities, online travel platforms are official platforms established by enterprises to provide users with products or services to purchase, rather than communities established by community members. Such platforms established by enterprises are convenient for managing their social support measures. Social support comes from front-line staff and other users of online travel platform. Different sources of social support may have different influence mechanisms on customer citizenship behavior. In addition, when customers receive the service experience of online travel companies that provide users with products or services to purchase, they will inevitably trigger emotional reactions (Richins, 1997). Kim et al. (2013) also stated that the tourists' emotions may be heavily influenced by interactions with friends and others *via* social media. Moreover, studies have found that emotional state and experience are important factors affecting tourists' attitudes and behaviors (Su and Hsu, 2013; Su et al., 2016). Emotions have been identified as a key customer resource in the value creation process (Arnould et al., 2006). At present, most scholars adopt the S-O-R Model proposed by Mehrabian and Russell (1974) in their analysis of the formation mechanism of customer citizenship behavior. The S-O-R model suggests that the stimulus of environment could drive individual behavior (Mehrabian and Russell, 1974) through the intermediary role of psychological response, which includes affective and cognitive states (Kim and Lennon, 2013). Therefore, in the process of interacting with enterprises, customers will not only coordinate the relationship between individual behaviors and environmental stimuli through cognitive activities, but also incorporate complex emotional factors. What affects behavioral intention is that emotional factors even have more influence on positive word of mouth, conversion behavior, willingness to pay, and behavioral intentions than cognitive factors (Yu and Dean, 2001). However, most of the existing studies on the influence of social support on customer citizenship behavior haved focuses on the role of cognitive factors such as customer satisfaction (Verleye et al., 2014; Zhu et al., 2016) and social identity (Chiu et al., 2015), ignoring the psychological mechanism of emotional factors in the process of customer consumption experience. Therefore, integrating cognitive factors and emotional factors can more comprehensively answer customers' citizenship behaviors on online travel platforms. Taking the online travel platform that is easy to provide social support for users and easy to control the social support strategy provided as the research object, based on the S-O-R Model, we have introduced the intermediary variables of consumption emotion (emotional factor) and customer satisfaction (cognitive factor) to explore the influence mechanism of social support on customer citizenship behavior, so as to shed light on ways of enhancing the customer citizenship behavior, service support for online travel platform enterprises and service enterprises.

The potential contribution of this study is firstly from the perspective of research. On the basis of the existing research route of "social support - customer satisfaction - customer citizenship behavior," we introduce the customer's emotional factor, and emphasize the importance of emotional responses in social support promoting customer citizenship behavior. Taking the S-O-R model as the logical framework to further reveals the psychological mechanism of customer emotional response and customer cognitive evaluation that social support affects customer citizenship behavior, thereby providing a new perspective for understanding how emotional factors and cognitive factors jointly shape customer citizenship behavior after receiving social support from online travel platforms. Secondly, on the research object, based on online travel platform, this study has explored the influence mechanism of social support on customer citizenship behavior to comprehensively answer how social support from front-line employees of online travel platform and other users of online travel platforms affect customer citizenship behavior.

LITERATURE REVIEW

Customer Citizenship Behavior

Customer citizenship behavior refers to the beneficial behavior exhibited by customers that are valued and appreciated by firms, and external to the role of customers (Groth, 2005). Groth (2005) divided the dimensions of customer citizenship behavior into recommendation intention, possibility of providing feedback to the organization and willingness to help other customers. These dimensions have been widely accepted by other scholars (Anaza, 2014). These three dimensions are also used in this study. At present, the majority of scholars elaborate on the emergence of customer citizenship behavior in retail, leisure tourism, virtual brand community and other industries from the perspective of customers' perception of fairness (Yi and Gong, 2008) and support (Yin and Zhang, 2020), customer satisfaction (Assiouras et al., 2019), and customer engagement (Fan et al., 2015), among other related variables.

Social Support

Social support refers to the provision of intangible information or emotional support as well as tangible resources or material support for individuals (Cohen and Wilis, 1985). In the network environment, enterprises provide social support to customers mainly through immaterial resources. Therefore, most scholars drew inspiration from the opinions put forward by Schaeferc (1981) and divided the social support of Internet enterprises into informational and emotional value support. Informational value support refers to the information provided in the form of proposal, advice or knowledge that facilitates the problem-solving, whereas emotional value support refers to the provision of emotion-related information, including but not limited to care, understanding, or empathy. Compared with informational value support, emotional value support facilitates customers' problem-solving from the psychological perspective in an indirect manner. Most study on online social support currently focus on the area of online patient communities (Coulson, 2005).

S-O-R Model

The S-O-R model suggests that the stimulus of environment could drive individual behavior (Mehrabian and Russell, 1974) through the intermediary role of psychological response, which includes affective and cognitive states (Kim and Lennon, 2013). Therefore, the social support provided by front-line employees and other users of online travel platforms can be regarded as an environmental stimulus, which drives customer citizenship behavior through positive mediating effect on customer psychological response (including consumer emotion and customer satisfaction).

THEORETICAL MODEL AND BASIC HYPOTHESIS

Social Support and Customer Citizenship Behavior

Bettencourt (1997), Rosenbaum and Massiah (2007) confirmed that support from enterprise organizations and support from other customers would affect customer recommendation, word-of-mouth, repurchase, cooperative production, suggestion and feedback and other behaviors. Crocker and Canevello (2008) showed that the perception of support from others would lead individuals to reciprocate with similar supportive behaviors. Molinillo et al. (2020) found that social support of brand social commerce websites would affect customers' intention to create, stickiness, word-of-mouth and repurchase. According to the core principle of social exchange theory, the process of customer consumption experience can be regarded as the process of social exchange. When customers think that enterprises provide good social support in the process of consumption, they will tend to show positive behaviors that are not required to be reciprocated. Therefore, we have put forward Hypothesis $H_{1:}$ Social support can positively affect customer citizenship behavior.

The Mediating Effect of Positive Emotions and Negative Emotions in Consumption Emotion

Most studies consent to the consumption emotion defined by Mano and Oliver (1993), which refers to a series of emotional responses to the evaluation of product and service value as well as attribute evaluation during consumption experience. In the studies on customer behavior, there is no distinction among consumption emotion, sentiment and feelings. Most scholars divide consumption emotion into two dimensions: positive emotions and negative emotions. Customers may experience a variety of emotions in the process of consumption. Westbrook (1987) pointed out that positive and negative emotions are independent of each other, that is, in a service experience, customers may experience both positive emotions, such as excitement, joy and joy, and negative emotions, such as sadness, annoyance and anger.

Price et al. (1995) found that service skills, sincere attitude, extra care for customers' interests, mutual understanding between service staff and customers, and polite hospitality behavior of service staff all enhance customers' positive emotions. Social support from others would bring good emotions to the customer without negative emotions toward the product involved (Zhu et al., 2016). Oh et al. (2014) held that supportive interactions on social networking sites are positively correlated with positive emotions, but have no significant relationship with negative emotions. Chung et al. (2017) found that tourists' perception of social support on social networking sites can stimulate positive emotions. Rosenbaum (2008) advocated that adequate social support would effectively alleviate customers' negative emotions such as loneliness, solitude, stress, tension and depression.

According to the theory of emotional evaluation, emotions are generated from individuals' subjective cognitive evaluation of external environmental stimuli. Once individuals perceive the external environment, they will evaluate the external stimulus information in a meaningful direction for themselves (Arnold, 1960). When service staff provide customers with suggestions to solve the problem or to show customers care, encouragement and other emotions in dealing with problems, customers will make cognitive evaluation of external stimulus information brought by service staff. Good social support evaluation of service staff will usually make customers accompanied by excitement, surprise, happiness, relaxation and other positive emotional experience. With the continuous stimulation of external environmental information of service staff, such positive and meaningful cognitive evaluation is constantly strengthened, and the positive emotional experience of customers is constantly accumulated and enhanced. The negative social support of service staff will make customers with anger, disappointment, regret and other negative emotional experience. Therefore, we have put forward Hypothesis H_{2a}: Social support can positively affect positive emotions; H_{2b}: Social support can negatively affect negative emotions.

Suh and Kim (2002) found that in online stores, negative emotions have a negative impact on repeat purchase intention, but positive emotions have no significant impact. Zhao et al. (2018) held that positive and negative emotions have a significant impact on customer engagement behavior. Yi and Gong (2006) held that both positive and negative emotions could impose a significant impact on customer citizenship behavior. Bernard et al. (1998) found that when people experience something and have some strong emotions, such as joy, sadness, anger, etc., they tend to share the experience or the emotions with others around them, so as to experience the positive emotions for a long time or relieve the negative emotions. In the process of consumption experience, when consumers have strong positive emotions such as excitement and joy, they will carry out word-of-mouth release or cooperative production for the motivation of sharing joy more easily and rewarding merchants. And vice versa. After assuming that environmental stimuli can trigger individual emotional responses, the theory of emotional evaluation further points out that emotions can induce specific behaviors (Arnold, 1960). Therefore, customers' behavior after consumption experience is an emotional response to the social support provided by service staff. Therefore, we have put forward Hypothesis H_{3a}: Positive emotions can positively affect customer citizenship behavior; H_{3b}: Negative emotions can negatively affect customer citizenship behavior.

Jain and Jain (2005) pointed out that the establishment of an optimal relationship between enterprises and customers could facilitate the emotional input of customers, thus encouraging customers to engage in numerous sorts of positive behaviors that are either required or non-mandatory. According to the theory of emotional evaluation, customers' cognitive evaluation of the external stimulus information brought by the social support of online travel platform will bring about customers' consumption emotional experience, thus inducing the generation of specific behaviors. Therefore, combining H_{2a}, H_{2b}, H_{3a}, H_{3b}, we have put forward Hypothesis H_{4a}: Positive emotions can play a mediating effect between social support and customer citizenship behavior, that is, social support will increase customers' positive emotions so as to increase customer citizenship behavior; H_{4b}: Negative emotions can play a mediating effect between social support and customer citizenship behavior, that is, social support will reduce customers' negative emotions so as to increase customer citizenship behavior.

The Mediating Effect of Customer Satisfaction

Fornell et al. (1996) defined the customer satisfaction as the subjective assessment made by customers who compare their objective cognition of the consumption results with the expectation of the consumption subsequent to their consumption experience. It has been widely established that social support affects customer satisfaction. Kim and Tussyadiah (2013) found that receiving and perceived social support have a positive impact on travel experience satisfaction. Verleye et al. (2014); Chang et al. (2015), Chiu et al. (2015), and Zhu et al. (2016) found that customers tend to be more satisfied when they could obtain more social support. Suggestions to provide problems or psychological support for customers is part of the enterprise serving customers, and a large number of studies have proved that perceived service quality is significantly positively correlated with satisfaction (Omar et al., 2016). Perceived service quality refers to consumers' overall views on the quality of service provided by an enterprise. Omar et al. (2016) divided service quality into tangibility, reliability, responsiveness, credibility and empathy, and confirmed the important role of these five dimensions in explaining customer satisfaction. When enterprises provide customers with more reliable suggestions to solve problems, faster and more credible responses, or provide customers with psychological and spiritual support, consumers will be more satisfied with enterprises. Therefore, we have put forward Hypothesis H_5: Social support can positively affect customer satisfaction.

It has been widely verified that customer satisfaction constitutes a vital factor influencing the customer citizenship behavior (Assiouras et al., 2019). Customer satisfaction is an important quality of the relationship between variables, improve customer satisfaction to strengthen customer relationships with companies. Customers in the consumer and accept the service process, the enterprises provide satisfactory even than expected benefit of goods or services, then increase the level of enterprise relationship quality to customers tend to show is not asked to positive behavior. Therefore, we have put forward Hypothesis H_6: Customer satisfaction can positively affect customer citizenship behavior.

Jung and Yoo (2017) proposed that customer interaction in entertainment centers promotes customer citizenship behavior through customer satisfaction. Zhao et al. (2014) based on the service context, and examined the influence of social support on customer participation behavior and customer citizenship behavior through relationship commitment. Verleye et al. (2014); Chang et al. (2015), and Zhu et al. (2016) verified that social support promotes customer citizenship behavior through customer satisfaction. According to the S-O-R model, as an external stimulus, social support of online travel platform can effectively improve customer satisfaction and drive customer citizenship behavior through positive mediating effects on both physical and psychological well-being of customers. Therefore, combining H_5, H_6, we have put forward Hypothesis H_7: Customer satisfaction can play a mediating effect between social support and customer citizenship behavior, that is, social support will increase customer satisfaction, thus increasing customer citizenship behavior.

The Chain Mediating Effect Between Positive Emotions and Negative Emotions and Customer Satisfaction

According to the emotion evaluation theory, when enterprises provide customers with more reliable suggestions to solve problems, faster and more credible responses, or provide customers with more psychological and spiritual support, customers are more likely to make positive cognitive evaluation, and then more likely to stimulate customers' positive emotions. With the continuous stimulation of service staff's external environmental information, customers' positive emotional experience is continuously accumulated and enhanced. The more situational positive emotions accumulated, the easier it is for consumers to form cognitive satisfaction evaluation of enterprises. When customers give high evaluation to the enterprise for providing satisfactory or even exceeding expected goods or services, the quality level of the relationship between customers and the enterprise will be improved, so that customers tend to show positive behaviors that are not required. And vice versa. Although previous literatures have not directly examined the chain mediating effect of consumption emotion and customer satisfaction on the impact of social support on customer citizenship, relevant literatures have verified the mediating effect of customer satisfaction on social support and customer citizenship behavior in the context of virtual brand community (Zhu et al., 2016). Therefore, we have put forward Hypothesis H_{8a}: Positive emotions and customer satisfaction can play a chain mediating effect between social support and customer citizenship behavior, that is, social support increases customer satisfaction by increasing customer positive emotions, thus promoting customer citizenship behavior; H_{8b}: Negative emotions and customer satisfaction can play a chain mediating effect between social support and customer citizenship behavior, that is, social support can increase customer satisfaction by reducing customer negative emotions, thus promoting customer citizenship behavior.

Therefore, the theoretical model of this study is formed based on the S-O-R model and the above research assumptions, as shown in **Figure 1**.

RESEARCH METHOD

Design of the Questionnaire

As the research context of this study is online travel platform, the scales of this study are designed with online travel platform as the carrier. China's online travel platforms include Ctrip, Flying Pig and Qunar, which are popular with the younger generation. In addition to the questions for collecting the basic information on the respondents, we have designed 28 questions in this questionnaire (as shown in **Table 1**). Based on the scale of Chang et al. (2015), the social support can be divided into informational and emotional value support, and we have correspondingly set questions X_{ss1}-X_{ss8}. Based on the scale of He and Wang (2006), the consumption emotion can be divided into positive emotions and negative emotions, and we have correspondingly set questions X_{CE1}-X_{CE6}. Based on the scale of Anderson and Fornell (1994), the customer satisfaction can be divided into general satisfaction, expected satisfaction and overall satisfaction, and we have correspondingly set questions $X_{CS1-}X_{CS3}$. Based on the scale of Markus Groth (2005), customer citizenship behavior can be divided into recommendation, assistance and feedback, and we have correspondingly set questions X_{CC1}-X_{CC11}. During the design of questions in the questionnaire, we have adopted the 7-point Likert Scale.

Distribution and Recovery of Questionnaires

In this study, we have tested the reliability and validity of the pre-survey data. Both the reliability and the structural validity of each measured variable were deemed as satisfactory, and we have formed the final formal questionnaire accordingly. The research context of this study is online tourism platform, so network survey is applicable. We adopted the non-probabilistic convenience sampling method to collect data from members who have used the online travel platform in recent year through professional online survey websites. After data collection, we conducted strict screening and deleted the questionnaires with obvious regularity and short answer time. A total of 626 valid questionnaires were collected. In terms of geographic regions of respondents (based on IP addresses of respondents), respondents came from 34 provincial administrative regions in China, indicating a large geographic coverage of the sample. In terms of the most commonly used online travel platforms, 30.8% of respondents chose Ctrip, 21.5% chose Flying Pig and 20.7% chose Qunar, indicating that the sample covers major online travel platforms.

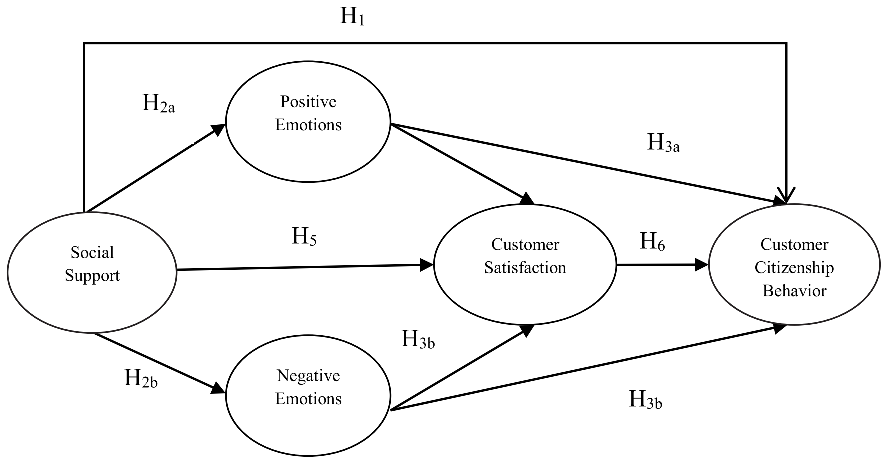

FIGURE 1 | Theoretical model on the impact of social support on customer citizenship behavior.

Common Method Deviation Analysis

In this study, two methods were used to test common method bias. First, Harman's single factor test method was adopted, and exploratory factor analysis method was used to add five variables into a total of 28 items. The results of unrotated factor showed that the total variance of explanation of the first factor was 30.99%, less than 40%, indicating that the problem of common method deviation of data was not serious (Podsakoff et al., 2003). The second method is to test the correlation coefficient between latent variables. If the correlation coefficient between latent variables is less than 0.9, it indicates that the variation degree of common method is acceptable. The correlation coefficient between the latent variables in this study is between 0.24 and 0.73, again indicating that the common method bias problem is not serious (Zhou et al., 2014).

Reliability and Validity Tests of the Questionnaire

We have calculated the value of Cronbach α of 626 valid questionnaires by using the SPSS26.0 software. The value amounted to 0.91, indicating high reliability of these questionnaires. Furthermore, we have calculated the values of Cronbach α of the five latent variables, namely, social support, positive emotions, negative emotions, customer satisfaction and customer citizenship behavior. The values amounted to 0.88, 0.81, 0.87, 0.87 and 0.82, respectively (as shown in **Table 2**), indicating good reliability.

In this study, we have adopted the AMOS25.0 software to test the convergent validity. The factor loading of all items exceeds the reference value of 0.5 (as shown in **Table 2**), the composite reliability (CR) values of the five latent variables are higher than 0.8 (as shown in **Table 2**), and AVE values of the five latent variables are all above 0.5, indicating high level of convergent validity of the aforementioned five latent variables. Meanwhile, the AVE square root value of each latent variable is compared horizontally with the correlation coefficient matrix of other latent variables. The AVE square root values of each latent variable are above their correlation coefficients with other latent variables (as shown in **Table 3**). As shown in **Table 2** and **Table 3**, the scale of this study features good convergent and discriminant validity.

Model Fitting and Hypothesis Testing

In this study, we have fitted the model by using the AMOS25.0 software, and the test results of the theoretical model fitting are specified in **Table 4**. The CMIN/DF amounted to 2.80. The RMSEA amounted to 0.06, which was deemed as good as it fell within the range between 0.05 and 0.08. With the exception of the GFI, which was slightly equal to 0.9, the CFI, IFI, and TLI all exceeded 0.9. Therefore, the fitting results of the theoretical model and the survey data were deemed as ideal.

As shown by the test results of the hypothesis of model fitting (**Table 5**), social support of online travel platform could impose a significant positively impact on customer citizenship behavior (Hypothesis $\mathbf{H_1}$). The Hypothesis $\mathbf{H_{2b}}$ is not significant at $P < 0.001$ (***) significance level, in other words, the Hypothesis $\mathbf{H_{2b}}$ failed to pass the test; social support of online travel platform could impose a significant positively impact on positive emotions (Hypothesis $\mathbf{H_{2a}}$). This conclusion is consistent with that of Oh et al. (2014). Social support of online travel platform had a significant positively impact on customer satisfaction (Hypothesis $\mathbf{H_5}$). This conclusion is consistent with that of Zhu et al. (2016). Positive emotions could impose a significant positively impact on customer citizenship behavior (Hypothesis $\mathbf{H_{3a}}$); Negative emotions could impose a significant negatively impact on customer citizenship behavior (Hypothesis $\mathbf{H_{3b}}$). This conclusion is consistent with that of Zhao et al. (2018). Customer satisfaction could impose a significant positively impact on customer citizenship behavior (Hypothesis $\mathbf{H_6}$). This conclusion is consistent with that of Zhu et al. (2016).

In order to further verify the mediating effects of positive emotions, negative emotions, customer satisfaction and the chain mediating effects of positive emotions, negative emotions and customer satisfaction, the Bootstrap method was used to

TABLE 1 | Questionnaire items.

Variable	Item
X_{SS1}	The employees or members of the travel platform offered me suggestions to solve the problem.
X_{SS2}	The employees or members of the travel platform gave me information to help me overcome the problem.
X_{SS3}	The employees or members of this travel platform helped me discover the course and provided me with suggestions to solve the problem.
X_{SS4}	The employees or members of this travel platform told me the way to solve the problem.
X_{SS5}	The employees or members of this travel platform were on my side with me to face the difficulty.
X_{SS6}	The employees or members of this travel platform comforted and encouraged me to face the difficulty.
X_{SS7}	The employees or members of this travel platform listened to me talk about my private feelings about the difficulty.
X_{SS8}	The employees or members of this travel platform expressed interest and concern in my well-being.
X_{CE1}	I feel excited about the service experience provided by this travel platform.
X_{CE2}	I feel happy about the service experience provided by this travel platform.
X_{CE3}	I feel relaxed about the service experience provided by this travel platform.
X_{CE4}	I feel angry about the service experience provided by this travel platform.
X_{CE5}	I feel disappointed about the service experience provided by this travel platform.
X_{CE6}	I feel regret about the service experience provided by this travel platform.
X_{CS1}	Overall, I am satisfied with the service provided by this travel platform.
X_{CS2}	Compared with expectations, I am satisfied with the services provided by this travel platform.
X_{CS3}	Compared with the ideal situation, I am satisfied with the services provided by this travel platform.
X_{CC1}	I would like to recommend this travel platform to my fellow students or coworkers.
X_{CC2}	I would like to recommend this travel platform to my family.
X_{CC3}	I would like to recommend this travel platform to my peers.
X_{CC4}	I would like to recommend this travel platform to people interested in the travel platform's products or services.
X_{CC5}	I would like to introduce this travel platform's products or services to others.
X_{CC6}	I am willing to be a consultant to others and help him choose the goods or services provided by this travel platform.
X_{CC7}	I am willing to tell other customers what they should pay attention to when purchasing products on this travel platform.
X_{CC8}	I am willing to fill out the customer satisfaction survey of this travel platform.
X_{CC9}	I am willing to provide helpful feedback to customer service.
X_{CC10}	I am willing to provide information when survey by this travel platform.
X_{CC11}	I am willing to inform this travel platform about the great service received by an individual employee.

TABLE 2 | Test indicators and fitting results of the measurement model.

Latent variable	Measured variable	Cronbach α	Composite Reliability	Factor Loading
Social support →	X_{SS1}			0.56
Social support→	X_{SS2}			0.67
Social support→	X_{SS3}			0.65
Social support→	X_{SS4}			0.81
Social support→	X_{SS5}			0.68
Social support→	X_{SS6}	0.88	0.90	0.91
Social support→	X_{SS7}			0.83
Social support→	X_{SS8}			0.63
Positive emotions→	X_{CE1}			0.69
Positive emotions→	X_{CE2}	0.81	0.82	0.88
Positive emotions→	X_{CE3}			0.75
Negative emotions→	X_{CE4}			0.89
Negative emotions→	X_{CE5}	0.87	0.89	0.86
Negative emotions→	X_{CE6}			0.80
Customer satisfaction→	X_{CS1}			0.75
Customer satisfaction→	X_{CS2}	0.87	0.84	0.80
Customer satisfaction→	X_{CS3}			0.85
Customer citizenship behavior→	X_{CC1}			0.84
Customer citizenship behavior→	X_{CC2}			0.77
Customer citizenship behavior→	X_{CC3}			0.74
Customer citizenship behavior→	X_{CC4}			0.89
Customer citizenship behavior→	X_{CC5}	0.82	0.92	0.71
Customer citizenship behavior→	X_{CC6}			0.70
Customer citizenship behavior→	X_{CC7}			0.53
Customer citizenship behavior→	X_{CC8}			0.67
Customer citizenship behavior→	X_{CC9}			0.60
Customer citizenship behavior→	X_{CC10}			0.65
Customer citizenship behavior→	X_{CC11}			0.69

TABLE 3 | Differential validity test of latent variables.

	Social support	Positive emotions	Negative emotions	Customer satisfaction	Customer citizenship behavior
Social support	**0.73**				
Positive emotions	0.62	**0.78**			
Negative emotions	0.24	0.35	**0.85**		
Customer satisfaction	0.61	0.70	0.29	**0.80**	
Customer citizenship behavior	0.70	0.62	0.37	0.73	**0.71**

The data marked in bold in the diagonal line of the matrix is the AVE square root, whereas the rest of the data is the corresponding correlation coefficient.

test the mediating effects in the structural equation model. The results of Bootstrap test are shown in **Table 6**. After controlling for gender, age, education background, income and other four variables: (1) the indirect effect of social support on customer citizenship behavior through positive emotion is 0.14, and the 95% confidence interval of Bootstrap = 5000 is [0. 005,0. 271], excluding 0 and $p < 0.001$, that is, hypothesis $\mathbf{H_{4a}}$ pass the test; The indirect effect of social support on customer citizenship behavior through negative emotions is

TABLE 4 | Test of theoretical model fitting.

Fitness	X^2/df	RMSEA	GFI	CFI	IFI	TLI
Index value	2.80	0.06	0.90	0.93	0.93	0.92

0.001, and the 95% confidence interval of Bootstrap = 5000 is [−0.012, 0.161], including 0. Therefore, the indirect effect is not significant, that is, hypothesis $\mathbf{H}_{4b}$ failed the test. (2) the indirect effect of social support from customer satisfaction to customer citizenship behavior is 0.31, and the 95% confidence interval of Bootstrap = 5000 is [0. 142,0. 474], excluding 0 and $p < 0.001$, that is, hypothesis $\mathbf{H}_7$ pass the test, this conclusion is consistent with that of Zhu et al. (2016). (3) the chain mediating effect between positive emotions and customer satisfaction on social support and customer citizenship behavior is significant, and the point estimate is 0.15, and the 95% confidence interval of Bootstrap = 5000 is [0. 068,0. 238], excluding 0 and $p < 0.001$, that is, hypothesis $\mathbf{H}_{8a}$ pass the test; The chain mediating effect of negative emotions and customer satisfaction between social support and customer citizenship behavior is significant, and its point estimate value is 0.01. The 95% confidence interval of Bootstrap = 5,000 is [−0.190, 0.200], including 0. Therefore, the indirect effect is not significant, that is, hypothesis $\mathbf{H}_{8b}$ failed the test.

TABLE 5 | Test of basic hypothesis.

Hypothesis	Std. Estimate	P	Conclusion
H_1: Social support → customer citizenship behavior	0.25	***	support
H_{2a}: Social support → positive emotions	0.60	***	support
H_{2b}: Social support → negative emotions	−0.06	0.193	Non-supportive
H_{3a}: Positive emotions → customer citizenship behavior	0.23	***	support
H_{3b}: Negative emotions → customer citizenship behavior	−0.13	***	support
H_5: Social support → customer satisfaction	0.48	***	support
H_6: Customer satisfaction → customer citizenship behavior	0.65	***	support

*Significance levels: $P < 0.001$ (indicated by***), $P < 0.01$ (indicated by**), $P < 0.05$ (indicated by*).*

TABLE 6 | Mediating effect and 95% confidence interval estimated by Bootstrap method.

The serial number	Concrete indirect effect path decomposition	Indirect effect estimation (Standardization)	Bias-corrected 95%CI	
			Lower	Upper
(1)	SS → PE→ CCB	0.14	0.005	0.271
	SS → NE → CCB	0.001	−0.012	0.161
(2)	SS → CS→ CCB	0.31	0.142	0.474
(3)	SS → PE→ CS→ CCB	0.15	0.068	0.238
	SS → NE →CS → CCB	0.01	−0.190	0.200

RESEARCH CONCLUSION AND PRACTICAL IMPLICATIONS

Research Conclusion

(1) Social support could impose a significant impact on positive emotions instead of the negative emotions. The results indicated that the increased level of social support could enhance the positive emotions, though it failed to reduce negative emotions. The reason behind is that customers believe that the social support constitutes a value added provided by enterprises to them instead of a resource that must be offered. If the level of social support that the enterprises could provide or have provided is utterly high, it is rather easy to stimulate the positive emotions of customers. On the contrary, if the enterprises have provided limited or even no social support at all, customers would not generate negative emotions such as anger, disappointment and regret, etc. Therefore, the social support serves as an incentive rather than a hygiene factor for customers.

(2) The influence coefficient of positive emotions and negative emotions on customer citizenship behavior amounted to 0.23 and −0.13, respectively. The results have shown that the positive emotions are vital for promoting the customer citizenship behavior, whereas the negative emotions are harmful for restraining the customer citizenship behavior.

Theoretical Significance

(1) This research has expanded the studies on social support in the context of tourism services and enriched the studies on the influence factors of customer citizenship behavior. At present, the research on customer citizenship behavior mainly focuses on the antecedent variables, including but not limited to customer experience (Kim and Choi, 2016) and customer justice perception (Yi and Gong, 2008) in retail and virtual community. Existing studies on the impact of social support on customer citizenship behavior mainly focus on the social support of offline traditional service organizations (Verleye et al., 2014) and online communities (Chiu et al., 2015; Zhu et al., 2016). However, the prevalence of social support in online travel platforms is obvious, and every day, a large number of users of online travel platforms share their experiences of places they have recently visited and exchange travel experiences with other users on the platform (Kim and Tussyadiah, 2013). On the other hand, because the online platform can transcend the limitations of time and space, it is more convenient for users of the platform to obtain social support for tourism services, so that online platforms play an important role in providing social support to users. However, there are still few studies on the social support of online travel platforms. Based on the online travel platform, this research studies the influence mechanism of social support on customer citizenship behavior, and finds the indirect driving role of positive emotions and customer satisfaction in the impact of social support on customer citizenship behavior. These results have provided a comprehensive answer to how social support

from front-line employees and other users of online travel platforms affects customer citizenship behavior. which helps extend the existing theories on customer citizenship behavior, which thus enrich the research context of social support and the existing research on the influence factors of customer citizenship behavior.

(2) This research has deepened the internal mechanism of the influence of social support on customer citizenship behavior. Most of the existing studies on the impact of social support on customer citizenship behavior have been focused on the perspective of cognitive factors such as customer satisfaction (Verleye et al., 2014; Zhu et al., 2016), social identity (Chiu et al., 2015) and other cognitive factors, ignoring the role of emotional factors, which also exert a powerful influence on consumer behavior (Ping, 2013). This research takes the S-O-R model as the logical framework, introduces two mediating variables of customer satisfaction and consumption emotion, and comprehensively discusses the internal mechanism of social support on customer citizenship behavior from the perspectives of cognition and emotion. And thus our study has responded to the call to further explore other psychological variables of social support influencing customer citizenship behavior (Zhu et al., 2016) and improved the research on the psychological mechanism of social support influencing customer citizenship behavior.

(3) In this research, we have expanded the studies on the influence factors and influence effects of consumption emotion. At present, related studies on consumption emotion mainly focuses on outcome variables such as customer satisfaction (Lee et al., 2009; Wei and Lin, 2020), customer loyalty (Ou and Verhoef, 2017), and service quality (Lo et al., 2015), shopping environment (Hanzaee and Javanbakht, 2013) and other antecedent variables, few studies have explored the impact of social support on consumption emotion. In addition, most scholars tend to pay more attention to the influence imposed by positive emotions rather than negative emotions on customer behavior (Ma et al., 2017; Behzad et al., 2019). In this study, we have analyzed the influence imposed by social support on consumption emotion, including both positive emotions and negative emotions. Moreover, we have tested the indirect influence imposed by consumption emotion and customer satisfaction on the relationship between social support and customer citizenship behavior. These findings are useful supplements to the existing studies on the influence factors and influence effects of consumption emotion.

Practical Implications for Management

The influence imposed by the social support offered by online travel platform enterprises on customer citizenship behavior could provide critical inspirations for these firms and the related service enterprises to formulate marketing strategies.

(1) From the perspective of social resources, the enterprises ought to maximize the utility of social support for customers. In other words, it is advised that online travel platform enterprises should foster a heart-touching atmosphere of social support for customers, and proactively guide customers in transforming their role and engaging in customer citizenship behavior. First, enterprises are advised to establish a system of customer relationship management to record the characteristics and preferences of customers, so as to form customer profiles and to accurately understand and meet both informational and emotional needs of customers. Second, enterprises ought to integrate the channels of communication with customers in a multidimensional manner. On the one hand, enterprises can provide real-time chat service for customers of the platform to ensure information resources and measures for front-line services, so as to promote communication between customers and front-line employees of the platform; On the other hand, enterprises can create forums on the platform or set up question-and-answer areas in the comments section of the platform to promote the communication between customers and customers, so as to promote the establishment of good social relations between customers and other customers. In addition, the enterprise should provide customers with sufficient information support and emotional support to solve problems. Sufficient informational support includes providing customers with solutions to the problems that may be encountered during traveling in advance, and developing customized and precise schemes based on the purpose of traveling for customers, such as the schemes of traveling around or daily commuting, and traveling between different places or in the same city. Furthermore, the enterprises can offer informational support by providing timely and effective information and suggestions when customers are encountered with difficulties during and after traveling. Sufficient emotional support refers to the measures taken by the front-line employees of enterprises, which include providing warm tips prior to the traveling of customers, and showing respect, care, sense of understanding and encouragement to customers when they encounter difficulties during and after traveling. Last but not least, enterprises are advised to establish a mechanism of encouraging the front-line employees or users to provide support of both informational and emotional value to customers. For example, enterprises can encourage the users of the platform to share travel experiences or stories, to participate in forums and to interact with users of the platform, so as to maximize their utility derived from social support.

(2) From the perspective of emotional experience, the enterprises ought to provide customers with optimal experience in consumption emotion as well as stable level of customer satisfaction. In other words, to guide the positive behavior of customers, enterprises should not only meet the needs of customers for acquiring optimal social support, but also mobilize their positive consumption emotion and generate a stable level of satisfaction. Therefore, first of all, while assisting customers to cope with the problems and providing customers

with both informational and emotional support, the enterprises ought to foster positive emotional experiences for customers, such as excitement, pleasure and ease, etc. In terms of informational value support, enterprises are advised to formulate customized and specialized traveling schemes that are fun and interesting, or provide the traveling information service to customers through promotional activities, which itself may be small, but the goodwill is deep. Such moves can bring joyful surprises to customers, so as to generate positive emotions such as excitement and pleasure for customers. In terms of emotional value support, enterprises are advised to provide customers with a secure, reliable and comfortable traveling scheme, whereas the front-line employees of enterprises ought to pay attention to protecting customers' privacy while assisting them to tackle with the problems, so as to ensure that customers feel delighted and relaxed. Secondly, the forum activities created by enterprises should be interesting, so as to stimulate customers' pleasant experience. Finally, platform users are encouraged to share surprising, pleasant and satisfying travel content.

(3) The enterprises are required to focus on managing the positive emotions of customers. Compared with negative emotions, positive emotions can impose a more significant impact on customer citizenship behavior. Therefore, enterprises ought to focus on providing informational and emotional assistance for customers. Such moves will help mobilize the positive emotional experience of customers, thereby facilitating the customers' engagement in citizenship behaviors.

Research Deficiency and Prospect

If customers only require limited or no social support at all, the arbitrary provision of social support by enterprises could be counterproductive (Melrose et al., 2015). However, in this study, we have not taken into account the extent to which social support is optimal for guiding customers' citizenship behaviors. Future studies can explore the negative impact imposed by false informational support or excessive emotional support provided by enterprises on customers and their behaviors. Social support and customer citizenship behavior are second-order constructs. This study only discusses the influence of the second-order variable of social support on the second-order variable of customer citizenship behavior. In the future, the influence of each dimension of social support on each dimension of customer citizenship behavior can be further explored. In this study, self-reported questionnaire data were used, so that the causal relationship between social support and consumer sentiment, as well as consumption emotion and customer satisfaction and customer citizenship behavior, could not be accurately tested. So the longitudinal study designs or experimental methods should be used to examine these relationships in future studies. Then transient sampling technique can be used to replace improbability convenience sampling method in order to measure consumer sentiment more accurately in future studies. Lastly, the selection of respondents is targeted at Chinese people, while online tourists tend to come from all over the world. In future studies, sample selection can be expanded to facilitate the application and promotion of research conclusions.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

Y-MN wrote and revised the manuscript under the guidance of the supervisor CH. Both authors contributed to the article and approved the submitted version.

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Effect of Matching Between the Adopted Corporate Response Strategy and the Type of Hypocrisy Manifestation on Consumer Behavior: Mediating Role of Negative Emotions

Zhigang Wang[1]*, Xintao Liu[1]*, Lei Zhang[1], Chao Wang[1] and Rui Liu[2]

[1]Economics and Management School of Wuhan Sports University, Wuhan, China, [2]China Baowu Iron and Steel Group Co., Ltd., Wuhan, China

Consumers may sense hypocrisy in corporate social responsibility (CSR) if they note inconsistency in enterprises' words and deeds related to CSR. This inconsistency originates from the intentional selfish actions and unintentional actions of enterprises. Studies have revealed that consumers' perception of hypocrisy has a negative influence on enterprise operation. However, studies have not examined how corporate responses to consumers' hypocrisy perception affect consumers' attitude and behavior. Therefore, the present study attempted to determine the measures that should be undertaken by enterprises to reduce consumers' negative response to them when consumers perceive them to be hypocritical. We conducted a situational simulation experiment to explore the effect of the match between corporate hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) on consumers' negative behaviors toward an enterprise and to test the mechanism influencing this effect. The results indicated that the interaction between the type of corporate hypocrisy and the corporate response strategy has a significant effect on consumers' negative behaviors toward an enterprise. Consumers' negative emotions have a mediating influence on the aforementioned effect. This study explored the response strategies of enterprises during a corporate hypocrisy crisis, classified corporate hypocrisy crises into two types (moral hypocrisy vs. behavioral hypocrisy) according to the different manifestations of corporate hypocrisy, and introduced situational crisis communication theory (SCCT) into research on corporate hypocrisy. The present results help expand knowledge on corporate hypocrisy.

Keywords: situational crisis communication theory, corporate hypocrisy, response strategies, negative emotions, negative behaviors

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Maria Kovacova,
University of Žilina, Slovakia
Peng Huatao,
Wuhan University of Technology, China

****Correspondence:***
Zhigang Wang
wzg771102@163.com
Xintao Liu
1139832243@qq.com

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INTRODUCTION

Corporate social responsibility (CSR), which is a key concern related to corporate strategic management, has been receiving increasing attention from researchers on and practitioners of corporate governance (George, 2010). Big data not only drives the development of enterprises (Kovacova et al., 2020; Kovacova and Lewis, 2021; Malkawi and Khayrullina, 2021) but also helps consumers better understand the behavior of enterprises, enhances their perceptions of enterprises, and increases the strength of consumers' ethical consumption consciousness. CSR influences consumer behavior and is an essential component of corporate strategies; moreover, it can positively influence stakeholders, thus stimulating support for the firm (Reverte et al., 2015). CSR can thus help a firm establish a suitable image and improve its performance (Jeffrey et al., 2019). Up to 90% of the global top 500 enterprises are reported to have explicit investment in CSR (Bai and Chang, 2015). However, in practice, not all CSR activities of enterprises lead to positive consumer responses. Some CSR activities, if conducted inappropriately, have a negative effect on corporate image and cause consumers to resist the enterprise and its products (Fassin and Buelens, 2011). Consumers may respond negatively to CSR activities if they consider CSR activities to be hypocritical because they perceive inconsistency between the words and deeds of enterprises. Since Wagner et al. (2009) proposed the concept of corporate hypocrisy, the corporate hypocrisy associated with CSR has become a crucial branch of CSR research that has attracted considerable research attention (Antonetti et al., 2019; Shim and Kim, 2021). Studies have explored the meaning of corporate hypocrisy (Wagner et al., 2009), the formation of consumers' hypocrisy perception toward CSR (Wang and Zhu, 2020), the effect of corporate hypocrisy perception on consumer behavior and attitudes, and the mechanism of this effect (Wagner et al., 2009; Wang and Li, 2015; Wang et al., 2020; Wang and Zhu, 2020). However, studies have not investigated the measures that should be undertaken by firms to reduce the negative effect on firms of consumers' hypocrisy perception toward the CSR of these firms and the effects of these measures on consumer behavior. The present study attempted to fill the aforementioned research gap by examining the effects of corporate response strategies on consumer behavior when consumers perceive CSR to be hypocritical. We examined how consumers respond to corporate countermeasures in response to consumers' perceiving CSR activities as hypocritical and how firms can effectively reduce the effects of such a perception on firm performance. This study extends research on corporate hypocrisy by analyzing consumers' reactions to corporate response strategies when they perceive corporate hypocrisy.

Some examples of firms deemed to act hypocritically are provided in this section. Zhenhai Industrial—a Chinese company that manufactures men's products and is located in Shanghai—employed a former Japanese adult video actress as its spokesperson for a youth public welfare activity in 2018. Because of this inappropriate behavior, the company was fined by the Chinese administrative department and strongly criticized by the public. To eliminate the negative publicity caused by the aforementioned incident, Zhenhai Industrial issued an apology; however, this statement did not earn it the public's forgiveness. Dali Group—a Chinese food corporation—launched a public welfare campaign to donate a portion of its sales from 2017 to 2018 to the maintenance and development of intangible cultural heritage. However, this firm did not collect funds for its campaign, which was considered to be inconsistent with its messaging in relevant publicity. Therefore, the firm was fined by the Chinese market supervision department. To eliminate the negative impact of the aforementioned event, the firm admitted its mistakes in the welfare campaign and safeguarded its rights through judicial means. However, the response of the firm was not accepted by consumers. Lianjia—a Chinese real estate service platform—launched a welfare campaign to protect lost children in 2016. It claimed that lost children could visit any of its 6,000 chain stores to seek protection. However, the campaign was questioned by the police, who believed that lost children should ask the police for help first rather than visiting stores of Lianjia because Lianjia was unqualified for rescuing lost children. To address the doubts of the public, Lianjia explained why they launched the campaign in the media but did not employ further effective steps to address the problem. Most firms have uncertainties regarding appropriate handling of crises resulting from corporate hypocrisy, and even researchers have not examined this matter comprehensively.

Certain CSR activities might lead to consumers perceiving the firm to be hypocritical. If firms do not employ effective measures to eliminate the negative effects of consumers' perception of firm hypocrisy, they would be unable to achieve the aims of CSR strategies. Thus, firms might hesitate to invest in CSR activities and reduce their participation in CSR.

Studies have indicated that the implementation of a CSR communication strategy can help enterprises handle a crisis (Klein and Dawar, 2004; Luo and Bhattacharya, 2006; Chernev and Blair, 2015). However, studies have not examined whether the implementation of a CSR communication strategy can help a firm handle a crisis triggered by perceived hypocrisy in the firm's CSR. A suitable theoretical framework must be developed to examine whether a specific CSR communication strategy can be used by enterprises to mitigate the negative effects of their CSR activities being perceived as hypocritical. The success of a firm's response to its CSR activities being perceived as hypocritical affects its willingness to continue to invest in CSR activities.

CSR communication strategies can be divided into two types: proactive and reactive CSR communication strategies (Murray and Vogel, 1997; Chen et al., 2019). The proactive type refers to strategies in which enterprises undertake CSR to establish a positive image of themselves before any negative social responsibility information is exposed about them. The reactive type refers to strategies in which enterprises attempt to repair their image after a crisis by declaring their intention to engage in CSR (Murray and Vogel, 1997). On the basis of the context of corporate hypocrisy–related crises, we define a proactive CSR communication strategy as one in which firms engage in CSR activities—to establish a trustworthy and suitable social image—long before the occurrence of a hypocrisy-related crisis. A reactive CSR communication strategy is defined as one in which firms declare their intention to engage in CSR activities after the occurrence of a corporate hypocrisy–related crisis to overcome the crisis and obtain the understanding of consumers. Situational crisis communication theory (SCCT), which was proposed by Coombs, emphasizes that the nature of a crisis should be understood before selecting a crisis communication strategy (Coombs and Holladay, 2001; Coombs, 2007). The nature of a corporate crisis depends on consumers' perception of the degree of responsibility that the enterprise should bear for the crisis and the moral performance of the enterprise during the crisis (Coombs and Holladay, 2001; Coombs, 2007). During a hypocrisy-related crisis, consumers can evaluate the moral problems in enterprises from various perspectives. Consumers may perceive some mistakes by enterprises to be intentional and other mistakes by enterprises to be unintentional. On the basis of this information, Wagner et al. (2020) divided corporate hypocrisy into moral hypocrisy and behavioral hypocrisy. Moral hypocrisy is caused by the intentional deceptive behavior of an enterprise and originates from the selfish motivation of the enterprise. Behavior hypocrisy is caused by the unintentional inconsistent behavior of an enterprise, which is unrelated to morality (Wagner et al., 2020). According to SCCT, appropriate communication strategies should be selected according to the attribution category of a crisis (Coombs and Holladay, 2001). When an enterprise faces moral problems, a hypocrisy-related crisis faced by it might reveal information that is inconsistent with its CSR communication strategy, which can strengthen consumers' perception of corporate hypocrisy. When an enterprise does not face moral problems, consumers do not blame the enterprise at the moral level, and a suitable CSR communication strategy might resolve a hypocrisy-related crisis faced by the enterprise. Thus, consumers' moral evaluation of an enterprise affects their assessment of the motivation of the CSR communication strategy adopted by the enterprise and consequently their final behavior and attitude toward the enterprise.

Therefore, on the basis of SCCT and by using a scenario simulation experiment, we analyzed the effects of consumer perception of a firm on the effectiveness of various CSR communication strategies adopted by the firm in different types of hypocrisy crises. By examining firms' strategies in response to consumers' perception of hypocrisy in firms' CSR, the present study deepens the existing research on corporate hypocrisy. The results of this study provide a reference for enterprises to handle hypocrisy-related crises appropriately.

The contributions of this research are as follows. First, it deepens existing research on corporate hypocrisy by investigating how firms respond when consumers perceive the CSR activities of firms to be hypocritical and how consumers react to different response strategies adopted by firms when they consider firms' CSR activities to be hypocritical. Second, it introduces the concept of corporate hypocrisy into the field of corporate crisis management. Third, this study introduces a new theoretical perspective regarding corporate hypocrisy by applying SCCT. Finally, it expands the application scope of SCCT by applying this theory to the context of corporate hypocrisy and finding the effect of a match between a crisis situation and a firm's response strategy on consumer behavior.

The main findings of this study are as follows. Different corporate response strategies have distinct effects on consumers' negative behaviors toward a firm when consumers perceive corporate hypocrisy, and consumers' negative emotions have a mediating influence on these effects. Therefore, the response strategy adopted by a firm should match the type of corporate hypocrisy-related crisis.

The remainder of this paper is organized as follows. Literature Review and Research Hypothesis section presents the relevant literature and research hypotheses. Research Design section describes the research methodology. Data Analysis section describes the analysis of the collected data. Finally, Discussion and Conclusion section presents a discussion of the results and the conclusion of this study.

LITERATURE REVIEW AND RESEARCH HYPOTHESIS

Corporate Hypocrisy

The theoretical origin of the concept of hypocrisy can be traced back to the fields of philosophy and psychology. Researchers initially introduced the concept of personal hypocrisy, with a person being regarded as a hypocrite if their words and deeds conflicted with each other (Bloomfield, 2018). A sense of hypocrisy arises because a person's initial statement sets a standard of behavior, which is violated by subsequent behavior (Effron et al., 2018a). If the violation is considered intentional, the perceived hypocrisy is regarded as a moral transgression (Chvaja et al., 2020). The concept of hypocrisy was gradually introduced into the fields of management, organizational behavior (Carlos and Lewis, 2018), and business theory (Marín et al., 2016). Wagner et al. (2009) formally proposed the concept of corporate hypocrisy from the perspective of cognitive psychology. According to the aforementioned authors, the perception of corporate hypocrisy occurs when the CSR plan publicized by an enterprise is inconsistent with its actual action. Scholars have defined the concept of corporate hypocrisy from diverse perspectives. For example, according to Christensen et al. (2010), the perception of corporate hypocrisy occurs when an enterprise falsely projects its public behavior to be in line with its private behavior. According to Scheidler et al. (2019), corporate hypocrisy is a situation in which a firm's behavior is inconsistent with its social identity. Yin et al. (2016) considered corporate hypocrisy to be an act of "saying one thing and doing another thing" when enterprises fulfill their social responsibilities.

The perception of corporate hypocrisy involves a psychological mechanism, and studies have examined the causes and consequences of this psychological mechanism. Research has suggested various factors that can affect the formation of consumers' perception of corporate hypocrisy; for example, CSR implementation, consumer attribution (Wang et al., 2018), consumer perception of CSR (Kim et al., 2015), corporate reputation (Shim and Yang, 2016), CSR information framework (Shim et al., 2017), CSR information display (Scheidler et al., 2019), perception of CSR authenticity (Guèvremont and Grohmann, 2018), corporate information transparency (Losada-Otálora and Alkire, 2021), and information inconsistency (Shao and Liu, 2019). The perception of corporate hypocrisy by stakeholders negatively affects their evaluations of CSR belief, corporate attitude, and corporate reputation (Wagner et al., 2009; Arli et al., 2017) and deepens the perception of corporate egoism (Marín et al., 2016). Moreover, the aforementioned perception causes consumers to experience negative emotions and engage in negative behaviors toward enterprises (Wang et al., 2020; Wang and Zhu, 2020), reduces consumers' willingness to buy corporate products (Guèvremont and Grohmann, 2018), and enhances consumers' intentions to punish enterprises perceived as being hypocritical (Deng and Xu, 2017). Hypocrisy perception can also lead to employees' emotional exhaustion and increase their turnover intention (Greenbaum et al., 2015; Scheidler et al., 2019). Factors such as consumer CSR belief (Arli et al., 2017), consumer attribution (Fan and Tian, 2017), negative consumer emotions (Wang et al., 2018), and consumer suspicion (Arli et al., 2019) influence the formation of consumers' perception of corporate hypocrisy and the effects of this perception on firms.

The concept of corporate hypocrisy is vague, with the original definition being insufficiently interpretive, and several aspects related to corporate hypocrisy remain to be explored (Monin and Merritt, 2011; Laurent et al., 2014). Moreover, studies on corporate hypocrisy have not investigated the problem of intentionality, which refers to people confusing hypocrisy originating from the intentional behaviors of enterprises with hypocrisy originating from the unintentional behaviors of enterprises (Wagner et al., 2020). Therefore, Wagner et al. (2020) used contemporary social psychology theory to define the perception of corporate hypocrisy from three perspectives: moral hypocrisy, behavioral hypocrisy, and hypocrisy attribution. These perspectives originate from two conceptual routes: one driven by corporate deception and the other driven by purely inconsistent behavior (Wagner et al., 2020). The aforementioned definitions are clearer than those originally proposed by Wagner et al. (2009) and many other scholars. In addition, perceptions of corporate hypocrisy drive the cognitive, emotional, and behavioral responses of stakeholders (Wagner et al., 2020).

Moral hypocrisy refers to a scenario in which enterprises pretend to be more noble than they actually are. Such hypocrisy stems from the ulterior and selfish motives and deceptive behaviors of enterprises (Monin and Merritt, 2011; Effron et al., 2018b). A perception of moral hypocrisy occurs when an enterprise makes a statement regarding its moral essence, belief system, or values but does not engage in suitable behaviors to adhere to this statement (Lin and Miller, 2021). For example, Volkswagen claimed to value environmental protection but then cheated on emission requirements (Lyon and Montgomery, 2013), and Wells Fargo claimed to act ethically but secretly deceived its customers (Witman, 2018). Behavioral hypocrisy, which indicates that the behavior of an enterprise deviates from its public statements, reflects the lack of consistency between the words and deeds of an enterprise. The root of behavioral hypocrisy lies in the contradiction between words and deeds and is not based on any specific intention of an enterprise nor related to moral evaluation. This behavior does not indicate that the enterprise is malicious; however, it indicates to consumers or other stakeholders that the enterprise is unreliable, or at least unpredictable. Behavioral hypocrisy can take the form of an enterprise making ambitious commitments to stakeholders but then failing to meet expectations (Christensen et al., 2013). Hypocrisy attribution is different from moral hypocrisy and behavioral hypocrisy. Hypocrisy attribution is the judgment that an enterprise is hypocritical in essence; for example, stakeholders believe that an enterprise is hypocritical and two-faced (Wagner et al., 2020). Moral hypocrisy and behavioral hypocrisy lead to hypocrisy attribution, and moral hypocrisy is the leading factor of hypocrisy attribution. The perception of behavioral hypocrisy has a weaker effect on hypocrisy attribution than does that of moral hypocrisy (Wagner et al., 2020).

Studies on corporate hypocrisy have examined the formation and influencing factors of consumer perception of corporate hypocrisy caused by CSR activities. These studies have clearly defined corporate hypocrisy and have indicated that perception of corporate hypocrisy by consumers in response to CSR activities has a series of negative effects on enterprises. However, studies have not examined what measures should be adopted by enterprises to reduce the negative effect of consumers perceiving their CSR to be hypocritical. Expanding on relevant literature on corporate hypocrisy, we investigated what countermeasures should be adopted by enterprises to reduce the aforementioned negative effect and the influences of these countermeasures.

Situational Crisis Communication Theory

This study is mainly based on SCCT, which is a crisis response theory proposed by Coombs (2007). According to SCCT, firms should select appropriate crisis response strategies by evaluating the nature of a crisis and the responsibility the firm bears for it (Coombs, 2007).

Attribution theory is a crucial theory of social psychology and a vital theoretical base of SCCT (Coombs, 2007). According to attribution theory, people's attribution of responsibility to events affects their emotional reaction to these events, which can include anger or sympathy (Coombs, 2007). Moreover, people's attribution of responsibility and their emotional reactions influence their subsequent behaviors (Coombs, 2007). Depending on an individual's attribution of event responsibility, they would exhibit negative or positive behavioral reactions (Weiner, 2006). According to SCCT, the attribution of stakeholders has strong effects on their understanding of organizational crisis responsibility (Coombs and Holladay, 2001) and their emotional and behavioral responses toward an organization (Coombs and Holladay, 2005). If stakeholders believe that an organization is responsible for a crisis, they feel angry and engage in negative word of mouth toward the organization, which negatively affects the reputation of the organization (Coombs, 2007).

When a crisis event occurs, people conduct attribution analysis of the root causes of the event to assign responsibility for the event (Jeong, 2009). Whether enterprises can control the occurrence of a crisis is a crucial factor that influences consumers' responsibility attribution and moral judgment (Weiner, 2006); the enterprise's response to a crisis is determined by the company's abilities and motivation (Malle and Knobe, 1997; Heider, 2013). According to SCCT, crises can be divided into three categories depending on the results of attribution: victim, accidental, and preventable crises (Coombs, 2007). A victim crisis is a situation in which an enterprise is considered the victim of a crisis, and the degree of responsibility assigned to enterprises for such a crisis is very low. An under accidental crisis is a situation in which a crisis is considered unintentional and enterprises are regarded as being unable to control the crisis. A moderate degree of responsibility is assigned to enterprises for such a crisis. A preventable crisis is also called an intentional crisis. Such crises are considered to be intentional, purposeful, and controllable, and high responsibility is assigned to enterprises for such a crisis (Coombs and Holladay, 2001). On the basis of the aforementioned information, moral hypocrisy corresponds to preventable crises, and behavioral hypocrisy corresponds to victim and accidental crises.

According to SCCT, CSR communication is a crucial crisis response strategy (Coombs, 2007). According to the order in which crisis information and CSR communication strategy information is presented, CSR communication strategies can be divided into proactive and reactive CSR communication strategies (Murray and Vogel, 1997; Chen et al., 2019). The effectiveness of CSR communication depends on consumers' attribution and judgment of motivation. Whether the motivation of CSR communication is attributed to self-interest or altruism directly affects the influence of CSR communication (Becker-Olsen et al., 2006; Yoon et al., 2006). Therefore, an appropriate CSR communication strategy must be selected according to the relevant crisis (Coombs and Holladay, 2001).

We introduced SCCT into research on response strategies for hypocrisy crises and examined the effectiveness of different types of response strategies (reactive CSR communication vs. proactive CSR communication) under different types of hypocrisy crises (moral hypocrisy vs. behavioral hypocrisy) to determine the most effective response strategy under different types of hypocrisy crises.

Negative Emotions

Psychological research has indicated that moral transgression leads to a negative emotional response from people and that the violation of moral standards is closely related to immoral behavior (Tangney et al., 2007). A study identified three types of negative emotions, namely contempt, anger, and disgust (Haidt, 2003). When an individual clearly expresses disapproval of the behavior of a moral violator, the aforementioned negative emotions usually occur simultaneously (Gutierrez and Giner-Sorolla, 2007).

Some studies have indicated that negative emotions are generated from people's evaluations of the consequences of behaviors and events. When people believe that some behaviors and practices threaten their legitimate welfare, negative emotions emerge. Some negative emotions, such as disgust and anger, arise in situations where some events are considered to be controlled by others (Lerner et al., 2004). People experience negative emotions when facing negative events that others can control or avoid (Watson and Spence, 2007). In addition, perception of fairness (Watson and Spence, 2007), violation of norms or moral standards (Watson and Spence, 2007), and violation of human dignity (Grappi et al., 2013) lead to negative emotions.

Negative emotions have various effects. They influence factors such as evaluation judgment (Zheng and Wang, 2022), behavior preference (Khatoon and Rehman, 2021), risk assessment (Tindall et al., 2021), word-of-mouth intention (Xiao et al., 2018), complaint behavior (Hoang, 2020), and satisfaction of needs (Avilov, 2021). Negative information conveyed to a person has a stronger influence on the person when they are in a negative emotional state (Jin and Oh, 2021). According to emotion repair theory, negative emotions encourage consumers to adopt response strategies, such as seeking social support to mitigate their anger, to seek an improvement in their environment (Mahapatra and Mishra, 2021).

Negative emotions have been considered in the study of CSR. When an enterprise violates moral standards because of its misconduct, a series of specific "moral emotions" are generated (Lefebvre and Krettenauer, 2019). The negative emotions of consumers toward the CSR activities of enterprises are caused by the moral transgression behavior of enterprises (Grappi et al., 2013). If CSR activities do not meet the moral standards of consumers, they experience negative emotions (Su et al., 2014). Irresponsible corporate behavior can prompt negative emotions among consumers, which leads to consumers exhibiting adverse behavior toward enterprises (Xie et al., 2015). Consumers' negative emotions also influence their response to corporate hypocrisy. Consumers' internal attribution of CSR hypocrisy and perception of hypocrisy can lead to negative emotions among them (Wang et al., 2020; Wang and Zhu, 2020). The perception of moral hypocrisy and hypocrisy attribution is more likely than that of behavior hypocrisy to lead to negative emotional reactions, such as anger, contempt, and disgust, among stakeholders (Wagner et al., 2020).

This study introduced negative emotions into the investigation of responses to hypocrisy crises. By analyzing the distinct perceptions of consumers in response to different CSR communication strategies under various types of hypocrisy crises, we investigated the effects of these perceptions on consumers' negative behavior and the role of negative emotions in these effects.

Conceptual Model

Wagner et al. (2020) divided corporate hypocrisy into moral hypocrisy and behavioral hypocrisy. Moral hypocrisy originates from the selfish motivations of enterprises and is driven by deceptive behavior. By contrast, behavioral hypocrisy is caused by the unintentional behavior of enterprises, driven by the inconsistency between the words and deeds of enterprises, and not associated with moral problems (Wagner et al., 2020). The aforementioned division of corporate hypocrisy is consistent with the basic notion of SCCT. The perception of whether corporate hypocrisy is controllable influences people's attribution of responsibility for the hypocrisy and evaluation of moral problems associated with the hypocrisy. Reasonable countermeasures in response to people's perception of corporate hypocrisy can be developed only by obtaining a clear understanding of the nature of the relevant crisis. On the basis of the aforementioned analysis, we divided hypocrisy crises into moral and behavioral hypocrisy crises, which were considered as moderator variables in the research model.

According to SCCT, CSR communication is a crucial crisis communication strategy (Coombs, 2007). A suitable CSR communication strategy can help enterprises resolve corporate hypocrisy crisis, improve their operation, regain confidence in CSR investment, and increase their level of CSR investment. Consumers' perception of the motivation of a CSR communication strategy influences the ultimate effects of the implementation of this strategy. On the basis of consumer perceptions, the CSR communication behavior of enterprises can be divided into self-interest-driven and altruism-driven behaviors (Becker-Olsen et al., 2006). Studies have indicated that a proactive CSR communication strategy is associated with altruistic qualities (altruistic motivation), whereas a reactive CSR communication strategy is often associated with self-interest (Groza et al., 2011). In specific situations, the effect of a reactive CSR communication strategy might be superior to that of a proactive CSR communication strategy. For example, in the evaluation of an enterprise, when the CSR information of the enterprise contradicts its moral performance in subsequent crisis events, that CSR communication strategy results in people perceiving the enterprise as hypocritical (Wagner et al., 2009; Rim, 2013). The CSR communication strategy most appropriate in a given situation is determined by the corresponding scenario. For example, under different product harm crisis situations, the same CSR communication strategy can have different effects on consumers' attitudes toward enterprises (Chen et al., 2019). Similarly, in line with SCCT, the CSR communication strategy must be matched with the corresponding crisis situation to effectively resolve the crisis (Coombs and Holladay, 2001). On the basis of the aforementioned analysis, we divided response strategies to hypocrisy crises into reactive and proactive CSR communication strategies, which were considered as independent variables in the research model.

Consumers' perception of corporate hypocrisy is often affected by the motivation attributed by them to corporate behavior. When consumers perceive dishonest motivation, they experience negative emotions (Wang and Wang, 2014), which directly lead to them exhibiting irrational behavior. When consumers perceive enterprises to be hypocritical, they feel cheated, which results in negative emotions, such as hatred, anger, and contempt. In addition, this perception reduces their devotion to the enterprise and results in them engaging in adverse actions against the enterprise, such as making negative comments, making product complaints, and engaging in product boycotts. In this study, negative emotions (contempt, anger, and disgust) were selected as mediator variables, and negative behaviors (negative word of mouth, complaint, and boycott) were selected as dependent variables.

The conceptual model of this study is displayed in **Figure 1**. This study explored the effect of the match between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) on consumers' negative behaviors and the mediating influence of negative emotions on this effect.

Hypotheses

Effect of the Match Between Hypocrisy Manifestation and the Corporate Response Strategy on Consumers' Negative Behaviors

Consumers' perception of the appropriateness, motivation, and timing of CSR activities can affect their beliefs, attitudes, and purchase intentions (Becker-Olsen et al., 2006). Consumers engage in negative behaviors, including engaging in negative word of mouth, making complaints, and engaging in boycotts (Xie et al., 2015), toward enterprises that exhibit irresponsible behavior toward the environment. Corporate hypocrisy can also lead to negative consumer behaviors, such as serious resistance to enterprises (Xiao et al., 2013) and refusal to buy the products and services of enterprises (Guèvremont, 2019). If consumers perceive an enterprise to be hypocritical, they exhibit a negative reaction to the enterprise to express their dissatisfaction. Some studies have reported that high performance in CSR activities helps enterprises obtain favorable attribution from consumers and reduces enterprise condemnation by consumers (Klein and Dawar, 2004). However, consumers' evaluation of CSR behavior depends on whether this behavior is considered sincere (Yoon et al., 2006). When consumers are exposed to information related to a corporate crisis and CSR communication strategy, their perception regarding whether the enterprise is self-interested or altruistic depends on their comprehensive evaluation of this information (Rim, 2013).

When a moral hypocrisy crisis occurs, the behavior of the enterprise is regarded as intentional, and the enterprise is trusted to have the ability to control the crisis. In this scenario, the enterprise bears considerable responsibility and faces moral condemnation. SCCT emphasizes that when an organization causes a crisis because of its misconduct, it should take remedial measures and actively commit to improvement for handling the crisis appropriately (Coombs, 2007). If the enterprise adopts a reactive CSR communication strategy in the aforementioned scenario, consumers would perceive the enterprise as sincerely attempting to correct its mistakes after engaging in immoral behavior; thus, the negative behaviors of consumers would decrease. By contrast, if the enterprise adopts a proactive CSR communication strategy in the aforementioned scenario, the crisis information would contradict the CSR information. Therefore, consumers would not change their attribution of corporate moral hypocrisy, and they would consider the think that CSR communication made before the crisis to be hypocritical deception. Consequently, the negative behaviors of consumers would not decrease. On the basis of the aforementioned information, this study infers that in the case

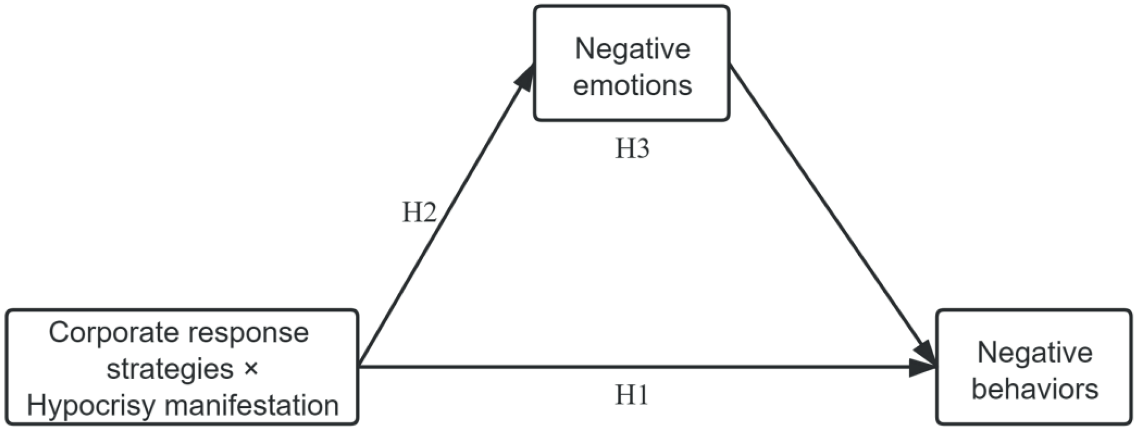

FIGURE 1 | Conceptual model of this study.

of a moral hypocrisy crisis, adopting a reactive CSR communication strategy is a superior approach to adopting a proactive CSR communication strategy for responding to the crisis.

When a behavioral hypocrisy crisis occurs, the behavior of the enterprise is regarded as being unintentional, and the enterprise is considered to not have the ability to control the crisis. In this scenario, the enterprise is attributed low responsibility for the crisis and is not condemned at the moral level. However, a behavioral crisis still generates negative emotions in consumers, and the enterprise faces the negative effect caused by the hypocrisy crisis. In the aforementioned scenario, if the enterprise adopts a reactive CSR communication strategy, consumers would consider that the enterprise is taking temporary measures to please the public in response to the pressure resulting from the crisis (Murray and Vogel, 1997). Thus, consumers would have doubts about the motivation of the enterprise, and their negative behaviors would not considerably decrease. By contrast, if the enterprise adopts a proactive CSR communication strategy in the aforementioned scenario, the enterprise can earn goodwill that can compensate for the negative effects of its subsequent unintentional hypocritical behavior. In this case, the CSR communication would likely to be attributed to sincere public interest rather than external pressure (Chen et al., 2019). The resultant positive image created for the enterprise would increase consumers' trust in it, and consumers would believe that the enterprise committed an unintentional error; thus, consumers' negative behaviors would be considerably reduced. Consequently, this study infers that in the case of a behavioral hypocrisy crisis, adopting a proactive CSR communication strategy is a better option than is adopting a reactive CSR communication strategy for responding to the crisis.

In conclusion, the interaction between hypocrisy manifestation and the corporate response strategy can affect consumers' negative behaviors. Therefore, the following hypotheses are proposed:

> *H1*: The interaction between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) would have a significant effect on consumers' negative behaviors.
>
> *H1a*: During a moral hypocrisy crisis, a reactive CSR communication strategy (compared with a proactive CSR communication strategy) would significantly reduce consumers' negative behaviors.
>
> *H1b*: During a behavioral hypocrisy crisis, a proactive CSR communication strategy (compared with a reactive CSR communication strategy) would significantly reduce consumers' negative behaviors.

Effect of the Match Between Hypocrisy Manifestation and the Corporate Response Strategy on Consumers' Negative Emotions

Negative consumer emotions refer to complex emotions caused by major inconsistencies in consumers' emotional experience (Nawijn and Biran, 2019). Marketing and consumer behavior studies have indicated that emotional response has a crucial effect on consumers' response to corporate social irresponsibility (CSI; Kang et al., 2016; Antonetti and Maklan, 2017). CSI can stimulate various complex negative emotions, such as anger (Xie et al., 2015), disgust (Xie et al., 2015), contempt (Romani et al., 2013), moral indignation (Lindenmeier et al., 2012), fear (Antonetti and Maklan, 2016), sadness (Antonetti and Maklan, 2016), and dissatisfaction (Romani et al., 2012). The stimulation of negative emotions results in consumers being eager to punish those who commit mistakes and to influence them to correct their inappropriate behaviors (Hofmann et al., 2018). Consumers' perception of corporate hypocrisy (Wang et al., 2020; Wang and Zhu, 2020) and their internal attribution of corporate hypocrisy (Wang and Zhu, 2020) prompt a negative emotional response. Whether consumers attribute the motivation of a CSR communication strategy to public interest or self-interest determines whether this strategy can improve the negative emotions generated in consumers by a hypocrisy crisis.

When a moral hypocrisy crisis occurs, the behavior of the enterprise is regarded as a moral transgression with ulterior motives, which stimulates strong negative emotions in consumers. In this scenario, if the enterprise adopts a reactive CSR communication strategy, consumers would consider that the enterprise is attempting to correct its mistakes sincerely after engaging in immoral behavior; thus, the negative emotions of consumers would reduce. By contrast, if the enterprise adopts a proactive CSR communication strategy and then faces a moral hypocrisy crisis, the crisis information contradicts the CSR information. Therefore, consumers would not change their attribution of corporate moral hypocrisy, and they would consider the CSR communication made before the crisis to be hypocritical deception. Consequently, the negative emotions of consumers would not decrease.

A behavioral hypocrisy crisis stimulates less negative emotions in consumers than does a moral hypocrisy crisis; however, a behavioral hypocrisy crisis still generates negative emotions in consumers, and the enterprise faces the adverse impact caused by these emotions. In this scenario, if the enterprise adopts a reactive CSR communication strategy, consumers would consider that the enterprise is adopting temporary measures to please the public in response to external pressure, and these measures are likely to be attributed to self-interest. Therefore, the negative emotions of consumers would not decrease markedly. By contrast, if the enterprise adopts a proactive CSR communication strategy, the enterprise would earn the goodwill of consumers. In this case, consumers would be likely to attribute the motivation of CSR communication to public interest rather than external pressure. The positive image cultivated by the enterprise would increase consumers' trust in the enterprise. Thus, consumers' negative emotions would decrease significantly.

Thus, the interaction between hypocrisy manifestation and the corporate response strategy can affect consumers' negative emotions. Therefore, the following hypotheses are proposed:

> *H2*: The interaction between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) would have a significant effect on consumers' negative emotions.
> *H2a*: During a moral hypocrisy crisis, a reactive CSR communication strategy (compared with a proactive CSR communication strategy) would significantly reduce consumers' negative emotions.
> *H2b*: During a behavioral hypocrisy crisis, a proactive CSR communication strategy (compared with a reactive CSR communication strategy) would significantly reduce consumers' negative emotions.

Mediating Role of Negative Emotions

Emotion directly affects behavior because emotion can stimulate and drive behavior (Steinhauser et al., 2018). Individual emotional responses to events can lead to corresponding behavioral responses (Steinhauser et al., 2018). Studies have indicated that consumers consider irresponsible behavior on environmental issues by enterprises as a moral transgression, which stimulates negative emotions in consumers. These emotions then trigger negative behaviors, including making negative comments, making complaints, and engaging in boycotts (Xie et al., 2015). When investigating CSI, researchers have often used emotion to explain consumer behavior (Antonetti, 2020) and have considered negative emotions as mediating variables to explain consumers' negative behaviors (Lindenmeier et al., 2012). Studies have confirmed the role of negative emotions in the perception of corporate hypocrisy. The perception of corporate hypocrisy indirectly affects consumers' negative behaviors by affecting consumers' negative emotions (Wang et al., 2020; Wang and Zhu, 2020). Therefore, firms should respond to a hypocrisy crisis by reducing consumers' negative behaviors by mitigating their negative emotions.

Specifically, when a moral hypocrisy crisis occurs, if the enterprise adopts a reactive CSR communication strategy, consumers would consider that the enterprise is attempting to correct its fault; however, if the enterprise adopts a proactive CSR communication strategy, the perception of corporate moral hypocrisy by consumers would be deepened, and consumers would have a strong perception that the corporate behavior is driven by self-interest. Therefore, under the perception of moral hypocrisy, a reactive CSR communication strategy would substantially reduce consumers' negative emotions and negative behaviors. By contrast, when a behavioral hypocrisy crisis occurs, if the enterprise adopts a reactive CSR communication strategy, consumers would consider that the enterprise is taking measures to alleviate the external pressure caused by the hypocrisy crisis, and they would consider the CSR communication behavior to be driven by self-interest. However, if the enterprise adopts a proactive CSR communication strategy when a behavioral hypocrisy crisis occurs, consumers would consider the CSR communication to be driven by public interest. Therefore, under the perception of behavioral hypocrisy, a proactive CSR communication strategy reduces consumers' negative emotions and indirectly reduces their negative behaviors.

Thus, consumers' negative emotions mediate the effect of the interaction between hypocrisy manifestation and the corporate response strategy on consumers' negative behaviors. Therefore, the following hypothesis is proposed:

> *H3*: Negative emotions would mediate the effect of the interaction between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) on consumers' negative behaviors.

RESEARCH DESIGN

A situational simulation experiment was conducted in this study. The data obtained from this experiment were analyzed using AMOS 24.0 and SPSS 22.0. We designed a questionnaire describing 12 situations ($2 \times 3 \times 2$) related to corporate behavior to measure consumers' perceptions toward hypocrisy manifestation type, negative emotion, and negative behavior. Confirmatory factor analysis was used to test the reliability and validity of the measurements. Independent-sample *t*-test and paired-sample *t*-test were used to measure the effectiveness of the manipulation. Moreover, two-way analysis of variance and independent-sample *t*-test were used to test consumers' reactions to different corporate response strategies.

Experiment Design

This study examined the effect of different response strategies on consumers' negative behaviors under various hypocrisy situations and the mediating influence of consumers' negative emotions on this effect. Therefore, a 2 (hypocrisy manifestation: moral hypocrisy vs. behavioral hypocrisy) × 3 (corporate response strategy: reactive CSR communication vs. proactive CSR communication vs. no strategy) × 2 (scenario: food safety scenario vs. environmental protection scenario) between-group experimental design was adopted in this study.

Stimulus Design

To enhance the external validity of the experiment and ensure that the research results were unaffected by the scenario type, we selected one case each focusing on "food safety" and "environmental protection" and named the investigated enterprise "enterprise A." Two types of experimental stimuli were used in this study: the type of hypocrisy manifestation (moral hypocrisy or behavioral hypocrisy) and the corporate response strategy (a reactive CSR communication strategy, a proactive CSR communication strategy, and no strategy).

The moral hypocrisy incident described in the questionnaire is caused by the intentional immoral behavior of enterprise A, whereas the behavioral hypocrisy incident described in the questionnaire is caused by an unintentional inconsistency between the words and deeds of enterprise A. The description of the "food safety" scenario is as follows: enterprise A has long claimed to prioritize food hygiene and safety, has advocated for the production of healthy food, and has stated that it would donate 10 million yuan for the production and monitoring of safe food in poor areas with substandard health and medical conditions. The moral hypocrisy is that enterprise A produces food by using low-cost waste oil that does not meet hygiene standards. The behavioral hypocrisy is that enterprise A has only donated 500,000 yuan to poor areas because the departments receiving public welfare funds in these areas are corrupt. The description of the "environmental protection" scenario is as follows: enterprise A claims that it has been implementing the "million tree planting plan" for many years, attaches importance to environmental protection, and sows tens of thousands of saplings in areas experiencing desertification every year to address desertification in China. The moral hypocrisy is that the products of enterprise A are produced using low-cost packaging materials that do not meet environmental protection standards. The behavioral hypocrisy is that the tree planting plan of enterprise A was ceased 3 years earlier because the local government announced a unified plan for the transformation of areas experiencing desertification.

The reactive and proactive CSR communication strategies, respectively, described in the questionnaire is as follows: (1) enterprise A issues a CSR statement 2 months after the hypocrisy event is exposed and (2) enterprise A issues a CSR statement 2 months before the hypocrisy event is exposed. Finally, the no strategy situation described in the questionnaire is as follows: enterprise A does not issue a CSR statement, nor does it take any other actions. The CSR communication strategy information in the "food safety" case is as follows: enterprise A announced that it would donate 10% of its annual profits to the Chinese health and medical sector. The CSR communication strategy information in the "environmental protection" case is as follows: enterprise A announced that it would donate 10 million yuan to the Chinese environmental protection sector.

Experimental Method and Procedure

In this study, the effectiveness of the manipulation of experimental materials was examined through a pretest. Both the pretest and formal experiment adopted the same scale. With regard to the hypocrisy manifestation, participants had to determine whether the corporate hypocrisy was moral hypocrisy or behavioral hypocrisy. A total of 40 individuals were randomly invited to participate in the pretest. These individuals were randomly assigned to different experimental situations for data collection.

During the formal experiment, we randomly distributed questionnaires on 12 experimental situations to individuals [2 (hypocrisy manifestation: moral hypocrisy vs. behavioral hypocrisy) × 3 (corporate response strategies: reactive CSR communication vs. proactive CSR communication vs. no strategy) × 2 (food safety scenario vs. environmental protection scenario)]. First, the purpose of this study was explained to the participants to dispel their concerns. The participants were then asked to read a paragraph of background materials, including an introduction to the considered enterprise, the CSR activities of the enterprise, the hypocrisy behavior of the enterprise, and the CSR communication strategy of the enterprise. The content related to corporate hypocrisy events was adapted from real cases to maximize credibility, and was written with a focus on readability. After reading the background materials, the participants were asked to answer questionnaire items related to moral hypocrisy and behavioral hypocrisy (the corresponding scores were used in for the manipulation test) as well as negative emotions and negative behaviors (the corresponding scores were used in the hypothesis test). Finally, the participants provided demographic information. After the participants completed the questionnaire, we thanked them and gave them small gifts.

Variable Measurement

Hypocrisy Manifestation

The scales used in this study for measuring hypocrisy manifestation were developed through two-way translation and were based on the research of Wagner et al. (2009,

2020) and Alicke et al. (2013). The scale used for measuring moral hypocrisy contains three items: "Enterprise A pretends that it is not intentional…"; "Enterprise A deliberately deceives others through…"; and "Enterprise A tries to be more socially responsible than it actually is." The scale used for measuring behavioral hypocrisy also contains three items: "What enterprise A says and does is different"; "Enterprise A's words and deeds are inconsistent"; and "Enterprise A's behavior is inconsistent with its external publicity." All the aforementioned items were measured on a seven-point Likert scale ranging from 1 for "completely disagree" to 7 for "completely agree."

Negative Emotions

The scale used in this study for measuring negative emotions was developed through two-way translation and was based on the study of Xie et al. (2015). This scale contains nine items: three items each related to contempt, anger, and disgust. The items related to contempt are as follows: "I scorn the behavior of enterprise A"; "I disdain the behavior of enterprise A"; and "I despise the behavior of enterprise A." The items related to anger are as follows: "I am unhappy with the behavior of enterprise A"; "I am indignant at the behavior of enterprise A"; and "I am furious with the behavior of enterprise A." The items related to disgust are as follows: "I am disgusted with the behavior of enterprise A"; "I dislike the behavior of enterprise A"; and "I detest the behavior of enterprise A." All the aforementioned items were measured on the seven-point Likert scale.

Negative Behaviors

The scale used in this study for measuring negative behaviors was developed through two-way translation and was based on the study of Xie et al. (2015). This scale contains nine items: three, four, and two items related to negative word of mouth, complaints, and boycotts, respectively. The items related to negative word of mouth are as follows: "I will tell my relatives, friends, and others that enterprise A is not good"; "I will advise my relatives, friends, and others not to work for enterprise A"; and "I will tell my relatives, friends, and others that enterprise A has done a lot of bad things." The items related to complaints are as follows: "I will complain directly to enterprise A"; "I will complain to the news media"; "I will complain to the government or industry authorities"; and "I will complain to the personnel of enterprise A." The items related to boycott are as follows: "I will tell other enterprises not to do business with enterprise A" and "I will tell my friends not to buy the products of enterprise A." All the aforementioned items were measured using the seven-point Likert scale.

DATA ANALYSIS

Sample Description

In this study, we conducted a random survey related to 12 experimental situations. To avoid the drawbacks of a pure student sample, we collected 420 valid questionnaires from college students and other social groups. The descriptive statistics of the respondents are presented in **Table 1**.

Reliability and Validity Test

Reliability Test

A reliability test was conducted to examine the reliability of the research data. The corrected item–total correlation was used to screen the measurement items, and the Cronbach's α coefficient was used to test the internal consistency reliability of the adopted measurement scales.

The corrected item–total correlation of each measurement item was higher than 0.5, and the deletion of any item did not significantly improve the estimated Cronbach's α coefficient; thus, all the measurement items were retained. Moreover, the estimated Cronbach's α coefficients of all the items were higher than 0.8, which indicated that the adopted scales had favorable internal consistency reliability and that the research data had high reliability. The results of reliability analysis are presented in **Table 2**.

Validity Test

The content validity and construct validity of the adopted scales were examined.

TABLE 1 | Characteristics of the survey respondents.

Classification indicator	Category	Frequency	Percentage (%)
Gender	Male	175	41.7
	Female	245	58.3
Age	10–17	6	1.4
	18–25	338	80.5
	26–33	62	14.8
	34–41	7	1.7
	>42	7	1.7
Marital status	Married	32	7.6
	Single	388	92.4
Religious	Yes	19	4.5
	No	401	95.5
Occupation	Worker	6	1.4
	Farmer	3	0.7
	Government or institution personnel	51	12.1
	Student	269	64.0
	Individual operator	7	1.7
	Enterprise staff	55	13.1
	Technician	8	1.9
	Freelancer	21	5.0
Monthly income	<500	38	9.0
	500–1,000	93	22.1
	1,000–2,000	83	19.8
	2,000–3,000	61	14.5
	3,000–5,000	67	16.0
	5,000–8,000	54	12.9
	8,000–10,000	10	2.4
	>10,000	14	3.3
Education	Junior college or undergraduate	266	63.3
	Postgraduate or higher	154	36.7

TABLE 2 | Results of reliability analysis.

Latent variable		Item	CITC	CAID	Cronbach's α
Hypocrisy manifestation	Moral hypocrisy	A1	0.644	0.861	0.876
		A2	0.705	0.851	
		A3	0.631	0.862	
	Behavioral hypocrisy	B1	0.729	0.846	
		B2	0.744	0.844	
		B3	0.630	0.863	
Negative emotions	Contempt	C1	0.835	0.971	0.972
		C2	0.851	0.970	
		C3	0.876	0.969	
	Anger	D1	0.885	0.969	
		D2	0.894	0.968	
		D3	0.877	0.969	
	Disgust	E1	0.878	0.969	
		E2	0.902	0.968	
		E3	0.907	0.968	
Negative behaviors	Negative word-of-mouth	F1	0.745	0.929	0.936
		F2	0.766	0.928	
		F3	0.782	0.927	
	Complaint	G1	0.722	0.931	
		G2	0.779	0.927	
		G3	0.750	0.929	
		G4	0.735	0.930	
	Boycott	H1	0.786	0.927	
		H2	0.763	0.928	

CITC, corrected item–total correlation and CAID, Cronbach's alpha if item deleted.

Content Validity

Content validity reflects the appropriateness and consistency of the questionnaire content. The items used to measure all the variables in this study were derived from the literature, extensively discussed with relevant experts, and appropriately modified according to the research background and research content. Therefore, the questionnaire measurement scale of this study had favorable content validity.

Construct Validity

Two types of construct validity exist: convergent validity and discriminant validity. Confirmatory factor analysis was performed using AMOS 24.0. The obtained fitting indices ($\chi^2=290.901$, $\chi^2/\mathrm{df}=1.469$, RMSEA = 0.033, GFI = 0.947, AGFI = 0.920, NFI = 0.972, RFI = 0.961, IFI = 0.991, TLI = 0.987, and CFI = 0.991) indicated that the measurement model had a high degree of fit with the research results.

According to the literature, three criteria must be met to achieve convergent validity. First, the normalized factor loading of all the measured items should be greater than 0.5 and reach the significance level. Second, the average variance extracted (AVE) should be higher than 0.5. Third, the composite reliability should be higher than 0.7. As presented in **Table 3**, all the test items fulfilled the aforementioned criteria. Thus, the adopted scales had favorable convergent validity.

If the square root of the AVE of each latent variable is higher than the correlation coefficient between the variable and the other variables, the measurement scale has favorable discriminant validity. As presented in **Table 4**, all the adopted scales met the aforementioned conditions. Therefore, these scales had favorable discriminant validity.

TABLE 3 | Normalized factor loading, average variance extracted (AVE), and composite reliability.

Latent variable		Item	Load	AVE	CR
Hypocrisy manifestation	Moral hypocrisy	A1	0.504	0.5100	0.8567
		A2	0.615		
		A3	0.559		
	Behavioral hypocrisy	B1	0.836		
		B2	0.904		
		B3	0.774		
Negative emotions	Contempt	C1	0.857	0.7790	0.9694
		C2	0.866		
		C3	0.907		
	Anger	D1	0.876		
		D2	0.882		
		D3	0.872		
	Disgust	E1	0.879		
		E2	0.894		
		E3	0.909		
Negative behaviors	Negative word-of-mouth	F1	0.837	0.5524	0.9158
		F2	0.892		
		F3	0.831		
	Complaint	G1	0.592		
		G2	0.681		
		G3	0.663		
		G4	0.575		
	Boycott	H1	0.732		
		H2	0.815		

AVE, average variance extracted and CR, composite reliability.

TABLE 4 | Square root of the AVE and correlation coefficient matrix.

	Hypocrisy manifestation	Negative emotions	Negative behaviors
Hypocrisy manifestation	(0.714)		
Negative emotions	0.623	(0.883)	
Negative behaviors	0.455	0.647	(0.743)

The diagonal data of the matrix represent the square roots of the AVE values, and the lower half of the matrix represents the correlation coefficients.

Manipulation Test

In the formal experiment, a manipulation test was conducted to test whether the participants could accurately distinguish the types of corporate hypocrisy to ensure that moral hypocrisy and behavioral hypocrisy were effectively manipulated.

The participants assigned to the moral hypocrisy and behavioral hypocrisy groups exhibited significant differences in their perceptions and judgment of whether the enterprise causing the hypocrisy event had moral problems ($M_{\text{moral hypocrisy}}=5.1320>M_{\text{behavioral hypocrisy}}=4.0595$; $t=8.885$, $p<0.01$). The aforementioned result indicates that the experiment was successful in manipulating whether the enterprise had moral problems; in addition, the participants in the moral hypocrisy and behavioral hypocrisy groups exhibited significant differences in their perception and judgment of whether inconsistency existed between the words and deeds of the enterprise ($M_{\text{moral hypocrisy}}=5.7150>M_{\text{behavioral hypocrisy}}=4.9484$; $t=6.026$, $p<0.01$). The aforementioned result indicates that the participants experienced a stronger perception of inconsistency between the words and deeds of the enterprise when they perceived the enterprise as having moral problems than when they did not have this perception.

The aforementioned finding was verified by the following results. In the moral hypocrisy group, the participants' perception and judgment of the existence of moral problems and the inconsistency between the words and deeds of the enterprise were significantly different ($M_{\text{morality (moral hypocrisy group)}} = 5.1320 < M_{\text{behavior (moral hypocrisy group)}} = 5.7150$; $t = -8.380$, $p < 0.01$). Similar results were obtained for the behavioral hypocrisy group ($M_{\text{morality (behavioral hypocrisy group)}} = 4.0595 < M_{\text{behavior (behavioral hypocrisy group)}} = 4.9484$; $t = -9.155$, $p < 0.01$).

In summary, corporate hypocrisy was successfully manipulated in the experiment.

Hypothesis Testing

Negative Behaviors

The statistical results indicated that compared with the behavioral hypocrisy crisis, the moral hypocrisy crisis produced higher scores for negative behaviors (i.e., more negative behaviors; $M_{\text{moral hypocrisy}} = 4.1911 > M_{\text{behavioral hypocrisy}} = 3.3229$; $t = 7.338$, $p < 0.01$).

The effect of the interaction between hypocrisy manifestation and the corporate response strategy on the participants' negative behaviors was significant ($F = 13.706$, $p < 0.01$); the main effect of hypocrisy manifestation on the participants' negative behaviors was significant ($F = 41.233$, $p < 0.01$); and the corporate response strategy had no significant main effect on the participants' negative behaviors ($F = 0.742$, $p > 0.05$; **Table 5**).

Under the moral hypocrisy crisis, different response strategies had significantly different effects on the participants' scores for negative behaviors. Lower scores for negative behaviors (i.e., less negative behaviors) were observed for the adoption of the reactive CSR communication strategy than for the adoption of the proactive CSR communication strategy ($M_{\text{reactive CSR communication}} = 3.9171 < M_{\text{proactive CSR communication}} = 4.3047$; $t = -2.130$, $p < 0.05$). Compared with the adoption of no CSR communication strategy, the adoption of the reactive CSR communication strategy significantly reduced the participants' scores for negative behaviors ($M_{\text{reactive CSR communication}} = 3.9171 < M_{\text{no strategy}} = 4.3619$; $t = -2.259$, $p < 0.05$). No significant difference was observed in the influences of the proactive CSR communication strategy and no CSR communication strategy on the participants' scores for negative behaviors ($M_{\text{proactive CSR communication}} = 4.3047$, $M_{\text{no strategy}} = 4.3619$; $t = -0.302$, $p > 0.05$).

Under the behavioral hypocrisy crisis, different response strategies had significantly different effects on the participants' scores for negative behaviors. Lower scores for negative behaviors were observed for the adoption of a proactive CSR communication strategy than for the adoption of a reactive CSR communication strategy ($M_{\text{proactive CSR communication}} = 2.9233 < M_{\text{reactive CSR communication}} = 3.5460$; $t = 3.072$, $p < 0.01$). Compared with the adoption of no CSR communication strategy, the adoption of the proactive CSR communication strategy significantly reduced the participants' scores for negative behaviors ($M_{\text{proactive CSR communication}} = 2.9233 < M_{\text{no strategy}} = 3.5000$; $t = -2.572$, $p < 0.05$). No significant difference was noted in the influences of the reactive CSR communication strategy and no CSR communication strategy on the participants' negative behaviors ($M_{\text{reactive CSR communication}} = 3.5460$, $M_{\text{no strategy}} = 3.5000$; $t = 0.218$, $p > 0.05$).

The aforementioned results (**Figures 2, 3**) support hypotheses H1, H1a, and H1b.

Negative Emotions

The participants exhibited higher scores for negative emotions (i.e., more negative emotions) for the moral hypocrisy crisis than for the behavioral hypocrisy crisis ($M_{\text{moral hypocrisy}} = 5.2700 > M_{\text{behavioral hypocrisy}} = 3.9468$; $t = 10.593$, $p < 0.01$).

The effect of the interaction between hypocrisy manifestation and the corporate response strategy on the participants' negative emotions was significant ($F = 11.403$, $p < 0.01$); the main effect of hypocrisy manifestation on the participants' negative emotions was significant ($F = 78.034$, $p < 0.01$); and the corporate response strategy had no significant main effect on the participants' negative emotions ($F = 0.000$, $p > 0.05$; **Table 6**).

Under the moral hypocrisy crisis, different response strategies had significantly different effects on the participants' negative emotions. Lower scores for negative emotions (i.e., less negative emotions) were observed for the adoption of the reactive CSR communication strategy than for the adoption of the proactive CSR communication strategy ($M_{\text{reactive CSR communication}} = 4.9186 < M_{\text{proactive CSR communication}} = 5.4327$; $t = -2.530$, $p < 0.05$). Compared with the adoption of no CSR communication strategy, the adoption of the reactive CSR communication strategy yielded significantly lower scores for negative emotions ($M_{\text{reactive CSR communication}} = 4.9186 < M_{\text{no strategy}} = 5.4730$; $t = -2.757$, $p < 0.01$). No significant difference was observed in the influences of the proactive CSR communication strategy and no CSR communication strategy on the participants' scores for negative emotions ($M_{\text{proactive CSR communication}} = 5.4327$, $M_{\text{no strategy}} = 5.4730$; $t = -0.208$, $p > 0.05$).

Under the behavioral hypocrisy crisis, different response strategies had significantly different effects on the participants' scores for negative emotions. Lower scores for negative emotions were observed for the adoption of a proactive CSR communication strategy than for the adoption of a reactive CSR communication strategy ($M_{\text{proactive CSR communication}} = 3.5618 < M_{\text{reactive CSR communication}} = 4.0825$; $t = 2.278$, $p < 0.05$). Compared with the adoption of no CSR communication strategy, the adoption of the proactive CSR communication strategy yielded significantly lower participant scores for negative emotions ($M_{\text{proactive CSR communication}} = 3.5618 < M_{\text{no strategy}} = 4.1944$; $t = -2.787$, $p < 0.01$). No significant difference was noted in the influences of the reactive CSR communication strategy and no CSR communication strategy on the participants' negative emotions ($M_{\text{reactive CSR communication}} = 4.0825$, $M_{\text{no strategy}} = 4.1944$; $t = -0.515$, $p > 0.05$).

The aforementioned results (**Figures 4, 5**) support hypotheses H2, H2a, and H2b.

Mediating Effect Testing

The bootstrap method was used to test the adjusted mediating effect of negative emotions on the effect of the interaction between hypocrisy manifestation and the corporate response

TABLE 5 | Results of the intersubject effect test.

Source	Square sum of type III	Degree of freedom	Mean square	*F*	Sig.
Hypocrisy manifestation	53.310	1	53.310	41.233	0.000
Corporate response strategies	0.959	1	0.959	0.742	0.390
Hypocrisy manifestation*Corporate response strategies	17.721	1	17.721	13.706	0.000
Error	354.256	274	1.293		
Total after modification	425.821	277			

Dependent variable: mean value of negative behaviors.

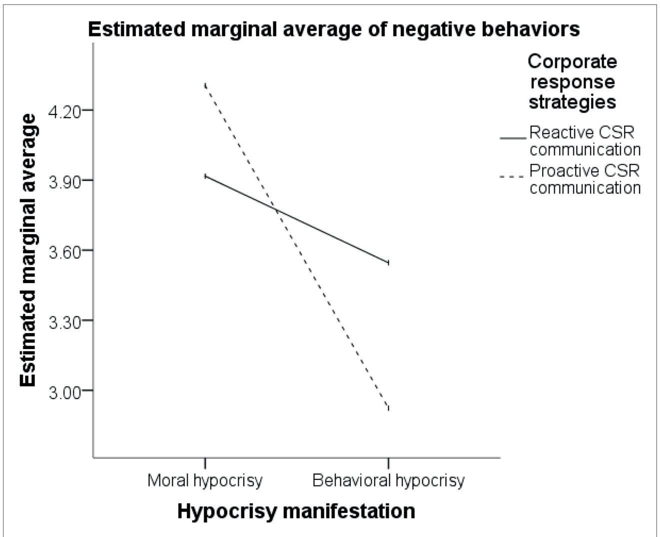

FIGURE 2 | Interaction description.

strategy on negative behaviors (Preacher and Hayes, 2004; Chen et al., 2013). The independent variable in this test was the corporate response strategy (the reactive and proactive CSR communication strategies were coded as 1 and 2, respectively); the moderator variable was hypocrisy manifestation (the moral hypocrisy was coded as 1, and the behavioral hypocrisy was coded as 2); the mediator variable was negative emotions; and the dependent variable was negative behaviors. In bootstrap sampling, the nonparametric percentile method was used for bias correction, the number of bootstrap samples was set as 5,000, and the confidence level for the CIs was set as 95%.

The results of bootstrap sampling indicated that the mediating effect of negative emotions had a value of −0.6302 and was significant (95% CI: lower-limit CI = −1.0108, upper-limit CI = −0.2605, excluding 0).

Under the moral hypocrisy crisis, the indirect effect had a value of 0.3130, with the CI being [0.0716, 0.5614] and excluding 0, thus confirming the indirect effect. The direct effect had a value of 0.0746, with the CI being [−0.2080, 0.3572] and including 0, thus confirming the direct effect. The aforementioned results indicate that consumers' negative emotions completely mediate the effect of the interaction between hypocrisy manifestation and the corporate response strategy on consumers' negative behavior during a moral hypocrisy crisis.

Under the behavioral hypocrisy crisis, the indirect effect had a value of −0.3171, with the CI being [−0.5918, −0.0422] and excluding 0, thus confirming the indirect effect. The direct effect had a value of −0.3056, with the CI being [−0.5842, −0.0270] and excluding 0, thus confirming the direct effect. The aforementioned results indicate that consumers' negative emotions partially mediate the effect of the interaction between hypocrisy manifestation and the corporate response strategy on consumers' negative behavior during a behavioral hypocrisy crisis.

The results of bootstrap sampling support hypothesis H3. The descriptive results obtained for the mediating effect are presented in **Figure 6**.

DISCUSSION AND CONCLUSION

Discussion

This study explored the effect of the match between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the adopted corporate response strategy (reactive CSR communication vs. proactive CSR communication) on consumers' negative behaviors under a hypocrisy crisis. The results of this study indicate that consumers' negative emotions mediate the aforementioned effect.

The present results reveal that the match between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the adopted corporate response strategy (reactive CSR communication vs. proactive CSR communication) has a significant effect on consumers' negative behaviors. Under different hypocrisy crisis situations, different CSR communication strategies must be adopted to reduce consumers' negative behaviors appropriately. The aforementioned findings are in line with SCCT, which indicates that the adopted crisis communication strategy must match the crisis situation to ensure that the crisis is suitably resolved (Coombs and Holladay, 2001). In contrast to SCCT, which focuses on organizational reputation (Coombs, 2007), we examined the consumer response during a hypocrisy crisis, mainly focusing on the negative behaviors of consumers against enterprises.

In this study, corporate hypocrisy crises were divided into moral and behavioral hypocrisy crises. SCCT is based on the notion of attribution. It emphasizes that the nature of a crisis should be understood before a crisis communication strategy is selected. The nature of a hypocrisy crisis mainly depends

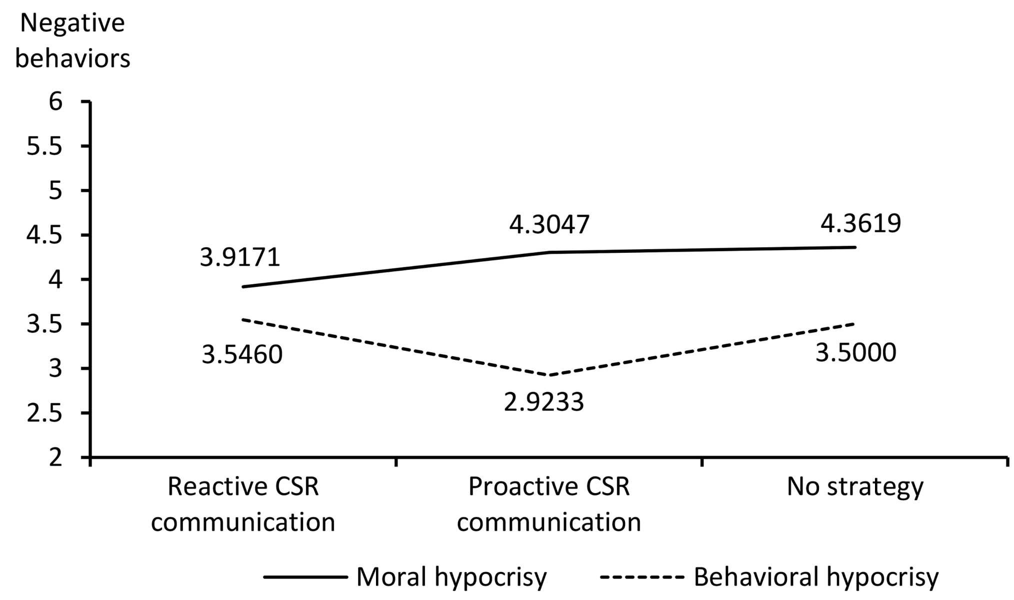

FIGURE 3 | Trend of negative behaviors.

TABLE 6 | Results of the intersubject effect test.

Source	Square sum of type III	Degree of freedom	Mean square	*F*	Sig.
Hypocrisy manifestation	127.199	1	127.199	78.034	0.000
Corporate response strategies	0.001	1	0.001	0.000	0.983
Hypocrisy manifestation*Corporate response strategies	18.587	1	18.587	11.403	0.001
Error	446.634	274	1.630		
Total after modification	591.104	277			

Dependent variable: mean value of negative emotions.

on whether consumers consider an enterprise to be intentionally or unintentionally responsible for the crisis and whether the enterprise acts according to moral standards (Coombs and Holladay, 2001; Coombs, 2007). Therefore, the division of corporate hypocrisy crises in this study is consistent with SCCT. However, on the basis of SCCT, crises are divided into three categories: victim, accidental, and preventable crises (Coombs, 2007). Enterprises bear different degrees of responsibility for these three types of crises. The crisis categories based on SCCT and the crisis categories of this study have different forms. However, considering the nature of the crises, the two crisis categories of this study can correspond to the three crises based on SCCT.

The results of this study indicate that enterprises should consider consumers' attribution of the motivation of firms' response strategies when handling a hypocrisy crisis. Studies have indicated that the effectiveness of CSR communication depends on consumers' attribution and judgment regarding firms' motivation. Whether consumers perceive the motivation of CSR communication to be selfish or altruistic directly influences the effect of CSR communication (Becker-Olsen et al., 2006; Yoon et al., 2006; Chen et al., 2019), which in turn affects corporate reputation and consumers' attitude and behavior toward enterprises. The aforementioned finding of this study is consistent with the results in the literature. In contrast to previous studies, we investigated consumers' attribution of the motivation of corporate response strategies during a hypocrisy crisis.

The results of this study reveal that enterprises can reduce consumers' negative behaviors during a hypocrisy crisis by reducing consumers' negative emotions. Research on corporate hypocrisy has indicated that consumers' negative emotions mediate the effect of hypocrisy perception on consumers' behavioral response (Wang et al., 2020; Wang and Zhu, 2020). The results of this study are consistent with those of the aforementioned research. This study also found that consumers' negative emotions exert a mediating influence on the effect of response strategies for a corporate hypocrisy crisis on consumer behavior. Thus, during a hypocrisy crisis, enterprises can adopt suitable response strategies to reduce consumers' negative emotions for mitigating their negative behaviors.

This study examined the response strategies for corporate hypocrisy crises. Studies on corporate crisis management have suggested that enterprises should adopt different response strategies in according to different corporate crisis situations. For example, research on brand crisis management has indicated that strategies of denial, rational interpretation, or behavior correction should be adopted according to the attributes of a brand crisis (Dutta and Pullig, 2011). During a flight delay crisis, airlines should select an appropriate apology mode (responsibility orientation vs. sympathy orientation) that matches the delay attribution (internal attribution vs. external attribution; Chung and Lee, 2021). In line with previous relevant studies, we found that an appropriate corporate response strategy should be selected according to the type of corporate crisis to improve the effect of the implemented strategy. This study examined the crisis response strategies of enterprises during a corporate hypocrisy crisis and thus enriches research on corporate crisis response.

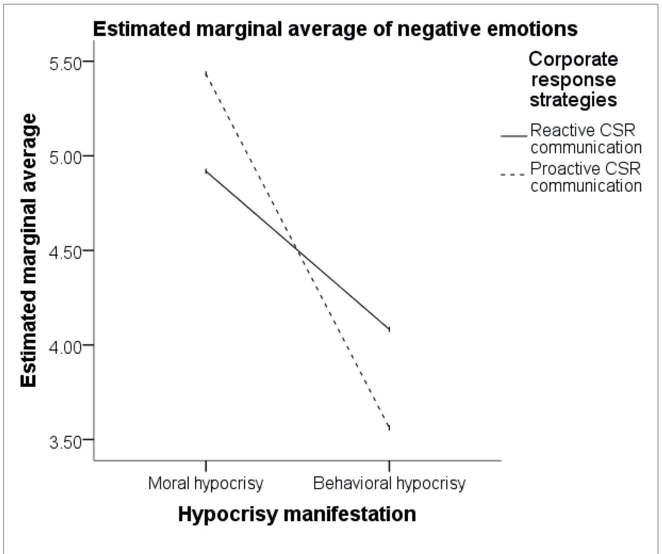

FIGURE 4 | Interaction description.

Conclusion

This study examined the effects of different corporate response strategies on consumers' negative behaviors under different hypocrisy crises. The following conclusions were obtained from the results of this study:

1. The interaction between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the adopted corporate response strategy (reactive CSR communication vs. proactive CSR communication) significantly affects consumers' negative behaviors. When a moral hypocrisy crisis occurs, different response strategies have significantly different effects on consumers' negative behaviors. Under a moral hypocrisy, enterprises can reduce consumers' negative behaviors by a significantly greater extent when adopting a reactive CSR communication strategy than when adopting a proactive CSR communication strategy. Similarly, when a behavioral hypocrisy crisis occurs, different response strategies have significantly different effects on consumers' negative behaviors. Under a behavioral hypocrisy crisis, enterprises can reduce consumers' negative behaviors by a significantly greater extent when adopting a proactive CSR communication strategy than when adopting a reactive CSR communication strategy.
2. The interaction between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) significantly affects consumers' negative emotions. When a moral hypocrisy crisis occurs, different response strategies have significantly different effects on consumers' negative emotions. Under a moral hypocrisy, enterprises can reduce consumers' negative emotions by a

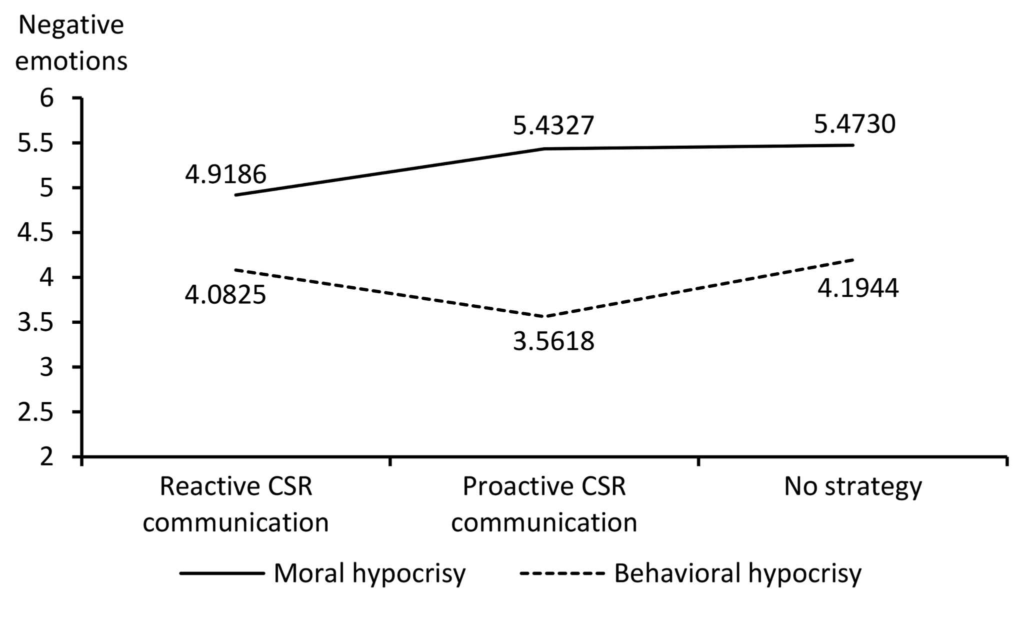

FIGURE 5 | Trend of negative emotions.

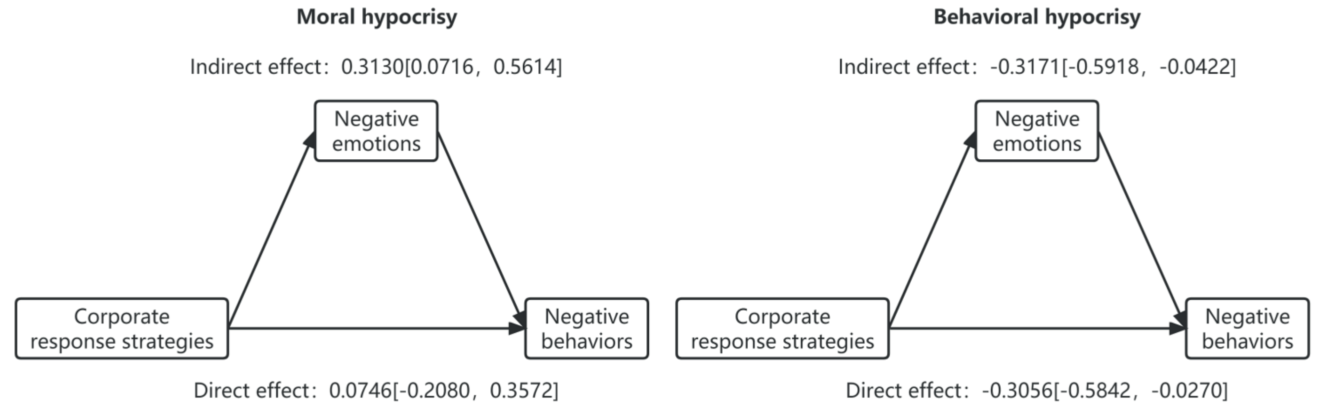

FIGURE 6 | Description of mediating effect.

significantly greater extent when adopting a reactive CSR communication strategy than when adopting a proactive CSR communication strategy. Similarly, when a behavioral hypocrisy crisis occurs, different response strategies have significantly different effects on consumers' negative emotions. Under a behavioral hypocrisy crisis, enterprises can reduce consumers' negative emotions by a significantly greater extent when adopting a proactive CSR communication strategy than when adopting a reactive CSR communication strategy.

3. Negative emotions mediate the effect of the interaction between hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and the corporate response strategy (reactive CSR communication vs. proactive CSR communication) on consumers' negative behaviors. When a moral or behavioral hypocrisy crisis occurs, the CSR communication strategies adopted by enterprises indirectly affect consumers' negative behaviors by affecting their negative emotions.
4. Different types of corporate hypocrisy crises (moral hypocrisy vs. behavioral hypocrisy) have significantly different effects on consumers' negative emotions and negative behaviors. Specifically, a moral hypocrisy crisis produces more negative customer emotions and behaviors than does a behavioral hypocrisy crisis.

Theoretical Contributions

The results of this study, which are in line with SCCT and previous research on corporate hypocrisy, indicate that enterprises should adopt a suitable CSR communication strategy according to the nature of the hypocrisy crisis. The theoretical contributions of this study are as follows:

1. This study enriches the literature on corporate hypocrisy. Studies have examined the definition of corporate hypocrisy, the effect of corporate hypocrisy on consumers, the influencing factors of consumers' perception of hypocrisy, and the response of consumers to corporate hypocrisy. However, no study has indicated the measures to be adopted to address a corporate hypocrisy crisis with the aim of reducing the negative impact of the crisis. On the basis of existing research, this study investigated in detail the measures that enterprises should adopt to reduce the negative impact of a corporate hypocrisy crisis. This study also examined the features of hypocrisy manifestation (moral hypocrisy vs. behavioral hypocrisy) and its influence on consumer behavior Wagner et al. (2020). Few studies have classified corporate hypocrisy, and the ones that did so had certain limitations. The classification of corporate hypocrisy presented in this paper provides new research directions for better understanding corporate hypocrisy and adopting effective measures to handle a corporate hypocrisy crisis.
2. This study enriches the literature on corporate crisis management by investigating how enterprises should handle a corporate hypocrisy crisis. Studies on corporate crisis response have mainly focused on product harm, brand, and public opinion crises. Considerable differences exist in the characteristics of crises caused by corporate hypocrisy and the aforementioned three types of crises. Studies on corporate hypocrisy and corporate crisis response have not indicated how an enterprise should handle a crisis caused by consumers perceiving its CSR activities to be hypocritical. Consumers' perception of hypocrisy in CSR activities might have an extremely negative effect on enterprises and cause them to experience a serious business crisis. This study suggests how enterprises should respond to a hypocrisy crisis.
3. This study introduces a new theoretical perspective based on SCCT for the examination of corporate hypocrisy. Most studies on corporate hypocrisy have examined the consumer response to corporate hypocrisy from the theoretical perspectives of attribution theory (Wang and Zhu, 2020), expectation theory (Wang et al., 2020), and identity theory (Miao and Zhou, 2020). On the basis of previous research, this study used SCCT to explore appropriate methods for handling a corporate hypocrisy crisis. On the basis of SCCT, this study proposes that different countermeasures should be adopted for different types of corporate hypocrisy to minimize the adverse impact of corporate hypocrisy. The

introduction of SCCT into corporate hypocrisy research enriches the theoretical basis of such research.

4. This study expands the application scope of SCCT and enriches this theory. SCCT has been applied for examining various types of crises, such as product harm crises (Chen et al., 2019), network public opinion crises (Tang and Lai, 2017), overseas corporate crises (Lin and Liu, 2015), and doping crises in sport (Zhou and Wan, 2020). In the theoretical model of SCCT, crisis situation, crisis response strategy, historical corporate reputation, emotional response, and behavior tendency are crucial factors influencing crisis response. This study comprehensively considered the aforementioned influencing factors. Moral and behavioral hypocrisy crises can be divided into different categories according to their features. A reactive CSR communication strategy involves engaging in CSR-related communication after a crisis, whereas a proactive CSR communication strategy involves engaging in CSR-related communication for maintaining the reputation of an enterprise before the occurrence of a crisis. Negative emotions and negative behaviors represent the emotional response and behavior tendency, respectively. This study identified some additional crucial variables for SCCT in the context of corporate hypocrisy crises, including the type of crisis situation, the type of crisis response strategy, and compatibility between the crisis situation and crisis response strategy.

Management Implications

This study explored the effects of corporate response strategies on consumers' perception of hypocrisy in CSR activities. The results of this study can serve as a reference for enterprises to cope with different hypocrisy manifestation crises when consumers perceive hypocrisy in CSR implementation. An enterprise can adopt a suitable response strategy as per the findings of this study to reduce the adverse impact of a hypocrisy crisis on it and to regain confidence in CSR investment. The management implications of this study are as follows:

1. Enterprises must adopt an appropriate CSR communication strategy according to the type of manifestation of corporate hypocrisy. Different CSR communication strategies have distinct effects in different situations. Specifically, when a hypocrisy crisis originates from the immoral behavior of an enterprise, consumers regard the enterprise as being responsible for the crisis. Consequently, the enterprise is condemned at the moral level. In the aforementioned situation, the enterprise should adopt a reactive CSR communication strategy to alleviate the external pressure on it and attempt to correct its mistake for reducing the negative impact caused by the crisis. A proactive CSR communication strategy would not reduce the negative impact of the crisis in the aforementioned situation. When a hypocrisy crisis arises from the inconsistency between the words and deeds of an enterprise, consumers consider the hypocrisy to be unintentional; thus, the enterprise is not morally condemned by the public and bears limited responsibility for the crisis. In this situation, the enterprise can reduce the negative impact of the crisis on it to a greater extent by cultivating a good image through proactive CSR communication than through reactive CSR communication.
2. Enterprises must understand the role of consumers' negative emotions in hypocrisy crisis events, and take measures to eliminate these emotions to avoid consumers' negative behaviors. When a moral hypocrisy crisis occurs, enterprises should adopt a reactive CSR communication strategy to reduce consumers' negative emotions. When a behavioral hypocrisy crisis occurs, cultivating a positive social image through proactive CSR communication would reduce consumers' negative emotions to a greater extent than would engaging in reactive CSR communication.
3. Enterprises should avoid the occurrence of moral hypocrisy. The results of this study indicate that consumers' perception of corporate moral hypocrisy produces more negative emotions among and more negative behaviors by them than does the perception of corporate behavioral hypocrisy. Enterprises should avoid immoral behavior and achieve consistency between their behavior and promised moral standards so that consumers would not perceive them to be engaged in moral hypocrisy. Consumers' response to hypocrisy events is mainly governed by their perceptions (Wry, 2009); therefore, enterprises should adopt certain measures to guide consumers' judgment and avoid consumers' awareness of moral hypocrisy. The aforementioned goals can be achieved through two approaches. First, an enterprise can indicate the uncontrollable factors of a crisis event to consumers, thereby conveying a signal that the enterprise is a victim of the crisis. Such a strategy can help enterprises win the sympathy and understanding of consumers. Second, enterprises should avoid the transmission of self-interest-driven signals to consumers and prevent potential interest-related information from becoming the focus of consumers' attention.
4. Enterprises should strive to control the occurrence of behavioral hypocrisy. Enterprises should conduct real-time evaluation and monitoring of the implementation process and effect of their CSR activities as well as predict and control factors that might affect CSR implementation. Moreover, enterprises should avoid promising CSR investment that would be difficult to accomplish. Enterprises should avoid inconsistency between their words and deeds through the aforementioned measures. Although an enterprise would not be morally condemned for the occurrence of such inconsistency, these inconsistency would result in the enterprise being considered unreliable and unpredictable. Such a perception by consumers would have a negative impact on the enterprise. In the aforementioned scenario, if the enterprise does not engage in long-term CSR investment in the relevant field, it would find it difficult to reduce the negative impact of the aforementioned perception. However, if the enterprise engages in long-term CSR investment, it may incur an extremely high cost. If CSR-related remedial behavior is conducted in the aforementioned situation, consumers would doubt the CSR motivation. In this scenario,

consumers' negative perception of the enterprise might be related to moral factors.

5. Enterprises should actively undertake social responsibility and strive to establish a positive social image of themselves in the minds of stakeholders. When a hypocrisy crisis occurs, the positive image established by an enterprise through active participation in CSR activities may prove beneficial as the company attempts to resolve the crisis. This statement is valid only when enterprises avoid immoral behavior. If enterprises engage in immoral behavior, their social image would be ruined. Therefore, actively taking social responsibility and acting according to moral standards are indispensable steps for developing a good social image for an enterprise.

Limitations and Directions for Future Research

Through a scenario simulation experiment, this study examined response strategies of enterprises for corporate hypocrisy crises. The results of this study indicate that different CSR communication strategies have different effects under different types of hypocrisy crises. The results also indicate the influence of the response strategies adopted by enterprises on consumer behavior in different scenarios. Although this study makes theoretical and practical contributions, it has certain limitations, which must be addressed by future studies.

First, this study conducted a scenario simulation experiment and collected questionnaire data. The consumer responses obtained in such a manner are susceptible to social desirability bias and might be different from consumers' true responses. Future studies can examine corporate hypocrisy by collecting consumer data in a real scene to improve the external validity of the research. Second, this study selected negative emotions as the mediator variable to analyze the influence of response strategies for corporate hypocrisy on consumer behavior. However, in addition to negative emotions, other feelings, such as trust, betrayal, identity, and doubt, have crucial influences on consumer behavior. Future studies can explore the effects of these factors on consumers' reaction to response strategies for a corporate hypocrisy crisis. Third, this study classified corporate hypocrisy from the perspective of hypocrisy manifestation. Other methods exist for classifying corporate hypocrisy, such as classification based on the causes and consequences of hypocrisy. Future studies can classify corporate hypocrisy by using different methods and determine suitable response strategies for corporate hypocrisy on the basis of these classifications.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Prestige and Dominance: How eWOM Differs Between Consumers High in Authentic and Hubristic Pride

*Jiayao Liu, Qingyun Xiong and Jianan Zhong**

Department of Psychology and Behavioral Sciences, Zhejiang University, Hangzhou, China

Electronic word-of-mouth (eWOM) influences consumers' purchase decisions, but few studies have investigated the antecedents that lead consumers to create different types of eWOM. From the perspective of social interactions, this research explored how two subtypes of pride not only compel consumers to create eWOM but also differently impact four types of eWOM and their mechanisms. Study 1 manipulated the pride state and found that authentic pride promoted positive eWOM and constructive eWOM, while hubristic pride promoted negative eWOM and destructive eWOM. Study 2 examined the effect of pride on eWOM at the trait level and tested the mediating effect of their use of social status pursuit strategy. Overall, this study increases the understanding of different types of eWOM and broadens the literature of the effect of pride and social status pursuit strategy in the context of consumption.

Keywords: electronic word-of-mouth (eWOM), authentic pride, hubristic pride, prestige, dominance

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***Correspondence:**
Jianan Zhong
jiananzhong@zju.edu.cn

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INTRODUCTION

Electronic word-of-mouth (eWOM) refers to statements about a product or company that are made by potential, actual or former customers and available via the internet to many individuals and institutions (Hennig-Thurau et al., 2004; Antonetti et al., 2020), and it is well-established that eWOM often influences consumer purchasing choices. Given its importance, researchers have studied various aspects of eWOM, including factors that drive consumers' eWOM behaviors (Taylor et al., 2012; Hayes and King, 2014; Anggraeni and Diandra, 2017; Nikolinakou and King, 2018b; Chu et al., 2019; Zhou et al., 2020), eWOM's impact on consumers (Godes and Mayzlin, 2004; Chevalier and Mayzlin, 2006; Moe and Trusov, 2011), and how businesses manage and respond to eWOM (Li, 2018; Gössling et al., 2019). However, research on drivers has focused on both general eWOM and positive eWOM, but few studies have explored the factors that lead to different types of eWOM (Hu and Kim, 2018; Nam et al., 2020; Sohaib et al., 2020; Kim and Hwang, 2022). Because different types of eWOM have different impacts on consumers (Lis and Fischer, 2020), clarifying the factors that influence specific types of eWOM will help better manage the business. Previous studies have explored when consumers are more likely to engage in positive eWOM behavior and when they are more likely to engage in negative eWOM behavior, in terms of motivation (Hu and Kim, 2018; Nam et al., 2020), individual differences (Sohaib et al., 2020) and product attributes (Kim and Hwang, 2022). However, there has been no research on what type of eWOM consumers are more likely to post from an emotional perspective. eWOM can be regarded as a specific type of social interaction, and different types of eWOM can help consumers achieve different goals, such as revenge, comfort search, and social engagement-seeking (Wetzer et al., 2007; Dolan et al., 2019). These different eWOM behaviors will leave different impressions on third-party observers (e.g., other consumers), which in turn will have an impact on their influence and social status (Yin and Smith, 2021). Therefore, considering that pride is the emotion most relevant to the acquisition of social status (Cheng et al., 2010; Sznycer et al., 2017), this research explores the influence of pride on different types of eWOM behaviors.

eWOM can be divided into different types. Based on its valence, eWOM can be divided into positive eWOM or negative eWOM (Berger, 2014; Nam et al., 2020). Based on its purpose, eWOM can be divided into venting, revenge taking, entertaining, helping companies, solution seeking, support seeking, and social engagement seeking (Dolan et al., 2019; Weitzl, 2019). These divisions can be further classified into constructive eWOM or destructive eWOM (Wetzer et al., 2007). Given the different impacts of different types of eWOM on consumers and merchants, we believe that it is very important to identify which consumers are more likely to post the types of eWOM that negatively impact merchants.

Several studies have shown that emotions greatly influence individual behaviors (Griskevicius et al., 2010; Campos et al., 2013; Shiota et al., 2014; Nikolinakou and King, 2018a) and eWOM (Berger and Milkman, 2012; Nikolinakou and King, 2018a). Compared with general positive and negative emotions, discrete emotions may better explain why consumers post different types of eWOM, because each discrete emotion may correspond to a unique adaptation mechanism to solve a specific problem faced by early humans (Xu et al., 2021), and overgeneralizing emotions would mislead both researchers and practitioners (Griskevicius et al., 2010). Thus, we focus on the discrete positive emotion of pride, which is important in individual pursuits of social status (Cheng et al., 2010) and drives individuals to send signals that help increase their status (e.g., consumers can become opinion leaders by publishing eWOM; Dalman et al., 2020).

Based on the dominance-prestige model of status (Henrich and Gil-White, 2001), we attempt to explore the impact of different types of pride (authentic pride vs. hubristic pride) on their intentions to create different types of eWOM and the mediating role of social status pursuit strategies. The dominance–prestige model suggests that the pursuit of social status includes prestige strategies, which entails obtaining an increased social status by being recognized and respected due to personal skills or knowledge (Henrich and Gil-White, 2001), and dominance strategies, which entails obtaining an increased social status by possessing resources and controlling profits (Anderson and Kilduff, 2009). Previous research has demonstrated that authentic pride leads to prestige strategies and hubristic pride leads to dominance strategies (Cheng et al., 2010; Tracy et al., 2020). Furthermore, the use of different social status pursuit strategies leads to different behaviors (Conlon, 2019; Panchal and Gill, 2020; Ketterman and Maner, 2021; King and Auschaitrakul, 2021). In summary, we believe that consumers with a high level of authentic pride should be more inclined to adopt prestige strategies, and then engage in positive eWOM and constructive eWOM, because these are value-cocreation behaviors that can also bring benefits to businesses. On the contrary, consumers with a high level of hubristic pride are more inclined to adopt dominance strategies, and then carry out negative eWOM and destructive eWOM, because these are value-codestruction behaviors that will harm the merchants.

In this study, we make several theoretical contributions to the literature. First, our work identifies the types of eWOM created by consumers with different emotions, thereby improving the extant understanding of eWOM. Previous studies have focused on the factors that promote overall eWOM but have not paid attention to the specific types of eWOM that consumers post (Nam et al., 2020; Miranda and Duarte, 2022). Second, we enrich the existing research on emotions in eWOM contexts, specifically, on discrete emotions, pride. Our results show that different subtypes of pride can determine different eWOM behaviors. Finally, we regard eWOM as an act of building and maintaining social status in shopping-related fields and find that use of social status pursuit strategy influences which types of eWOM consumers want to write, thereby expanding the knowledge of eWOM behaviors.

LITERATURE REVIEW AND THEORETICAL DEVELOPMENT

Different Types of eWOM

Word-of-mouth (WOM) refers to informal communications between consumers about products or services (Anderson, 1998). Due to the rapid development of the internet, consumers can share their opinions on products and services with many other consumers through social network platforms and websites, that is, through eWOM (Hennig-Thurau et al., 2004). The unprecedented speed of eWOM propagation allows multidirectional information exchanges between communicators and receivers (Cheung and Thadani, 2012). It is therefore easier to access eWOM than traditional WOM, and the former method is also more effective. Notably, there are multiple types of eWOM, and different types of eWOM have different effects (Weitzl, 2019).

According to its valence, eWOM can be divided into positive or negative eWOM. Generally, the valence of eWOM shared by consumers is consistent with their experience (Berger, 2014). A satisfactory consumption experience leads to positive eWOM, and an unsatisfactory consumption experience leads to negative eWOM (Nam et al., 2020). However, there are also factors that make some consumers more likely to create positive eWOM (Miranda and Duarte, 2022) and others more likely to write negative eWOM after a similar consumption experience. For example, Zhang et al. (2014) have found that women have strong relationships with others are more likely to spread negative eWOM, even at risk of damaging their self-image. Their research has also found that interdependent self-construction consumers are more likely to spread negative WOM at risk of being deemed unwise. In addition, consumers with a maximization strategy may share positive reviews of an unsatisfactory consumption experience with close others to obtain better results through comparisons (Olson and Ahluwalia, 2021).

According to the purpose for its creation, eWOM can be divided into constructive or destructive eWOM. Wetzer et al. (2007) first proposed the constructive-destructive dimension based on the belief that there is a specific link between the emotions that are aroused by a product or service failure and consumers' reasons for writing eWOM (constructive eWOM vs. destructive eWOM). For example, angry consumers try to vent or take revenge, while disappointed and regretful consumers hope to warn others or strengthen social ties. When consumers experience a service failure, they may communicate with companies in different ways on social media. Some consumers will use a "good response," such as directly contacting a company and then sharing how well the company resolved their complaint(s). In contrast, some consumers will use a "bad response," such as spreading negative eWOM without contacting a company, complaining to others, or sharing how the company was unable to resolve their complaint(s) (Grégoire et al., 2015). According to their purpose, such responses can thus be identified as constructive eWOM when consumers seek solutions to problems or to rebuild relationships between customers and brands, or as destructive eWOM when consumers tell others to avoid certain brands' goods or services, thereby harming these companies (Weitzl, 2019). That is, constructive eWOM is an act of value-cocreation, while destructive eWOM is an act of value-codestruction (Dolan et al., 2019).

Previous research has investigated several factors that promote eWOM from the perspective of consumer interaction, such as affiliation, altruism and self-enhancement (Schutz, 1958). Social connections (strengthening existing relationships and creating new relationships) are also an important motivation for people to convey eWOM through social media (Hayes and King, 2014). Consumers will recommend brands and write online reviews to guide others' purchase decisions (Lovett et al., 2013) by sharing content that expresses their concerns about, appreciation for, or encouragement to purchase a good or service from others (Phelps et al., 2004). eWOM also articulates and strengthens a consumer's personality when he or she shares advertisements that are consistent with his or her personality (Taylor et al., 2012). However, few studies have demonstrated what factors compel consumers to create different types of eWOM (Hu and Kim, 2018; Nam et al., 2020; Sohaib et al., 2020; Kim and Hwang, 2022). Hu and Kim (2018) have found that there are different motivations behind positive eWOM and negative eWOM. Nam et al. (2020) have found that whether expectations are confirmed determines whether consumers will write positive eWOM or negative eWOM. Sohaib et al. (2020) have found that promotion-focused customers are more likely to spread positive eWOM, while prevention-focused customers are more likely to spread negative eWOM. Kim and Hwang (2022) have found that authenticity is influential for positive eWOM only, and value is influential for negative eWOM only. However, no research has been conducted to explore the emotional factors that lead to different types of eWOM.

Pride and the Different Types of eWOM

Many studies have shed light on the impacts of emotion on cognition and behavior in the field of consumption. For example, positive emotions can promote individuals' variety seeking (Kahn and Isen, 1993) and impulsive buying behaviors (Weinberg and Gottwald, 1982). Anxiety can cause individuals to delay their decision-making (Hafner et al., 2016). Awe can compel consumers to share video advertisements (Nikolinakou and King, 2018a), while anger will promote consumers' retaliation (Antonetti et al., 2020). In the present work, we extend this literature by examining how pride can influence eWOM. Because eWOM can be regarded as a way to obtain social status in the shopping field (Dalman et al., 2020), and pride is the emotion most relevant to obtaining social status (Cheng et al., 2010; Sznycer et al., 2017).

Pride is a kind of positive, self-conscious emotion. One feels pride when he or she achieves success and attributes it to himself or herself (Weiner, 1985). Pride can moderate individuals' behaviors and help them achieve long-term goals. It can help individuals establish lasting personal resources and attain greater achievements (Fredrickson, 2001). From an evolutionary perspective, pride is an adaptive psychological mechanism that is produced when individuals compete with other group members for social status (Cheng et al., 2013; Sznycer et al., 2017). Pride motivates people to work harder to obtain and maintain social status. For example, activating individuals' pride will increase their desire to receive attention from others (Griskevicius et al., 2010), and individuals who experience pride are more likely to successfully perform tasks (Williams and DeSteno, 2008).

Pride also prompts individuals to send signals of their high social status through a set of spontaneous non-verbal expressions, including a small smile, a slight backward tilt of the head, an expanded posture, or having one's arms akimbo with the hands on the hips (Tracy and Robins, 2004, 2008). These clues can imply an improvement in social status, and even blind athletes have these tendencies (Tracy and Matsumoto, 2008). An additional study has also shown that the performance of pride is linked to high status (Shariff et al., 2012). Accordingly, we believe that pride drives consumers to engage in eWOM, a specific form of social interaction, to pursue increased social status.

Previous research has shown that pride has a positive impact on eWOM creation (Wen et al., 2018), but the current research aims to test whether different subtypes of pride will drive consumers to create different types of eWOM. Based on previous studies, Tracy and Robins (2007) distinguished prosocial, achievement-oriented pride from the self-aggrandizing, hubristic form of this emotion to develop its two subtypes: authentic pride and hubristic pride. When individuals attribute success to unstable and controllable factors, they will show greater authentic pride; when individuals attribute success to stable and uncontrollable factors, they will show greater hubristic pride. Previous research has shown that authentic pride and hubristic pride have a unique relationship with various personality variables and status variables (Dickens and Robins, 2020). In terms of personality, authentic pride is positively correlated with agreeableness, conscientiousness, extraversion, openness, self-esteem, proactive coping and self-efficacy, whereas it is negatively correlated with neuroticism, anxiety and loneliness, which indicates a healthy function. However, hubristic pride is negatively correlated with agreeableness, conscientiousness and self-esteem, whereas it is positively correlated with depression and loneliness. In terms of the acquisition of social status, both authentic pride and hubristic pride are associated with higher perceived social status, but with different social status pursuit strategies: authentic pride is more strongly associated with prestige, while hubristic pride is more strongly associated with dominance (Cheng et al., 2010).

Based on the relevant literature on pride, we believe that different types of pride can lead to different types of eWOM behaviors. First, authentic pride and hubristic pride are differently related to personality variables, and consumers with distinct personality patterns may create different types of eWOM. For example, authentic pride has a positive correlation with agreeableness, which makes people more likely to forgive (McCullough and Hoyt, 2002; Neto, 2007), mitigates their negative feelings, judgments, and behaviors toward a business (Enright et al., 1992), reduces their motivation to take revenge and avoid the business, and enhances their motivation to be kind to offenders (McCullough, 2000). Therefore, we believe that authentic pride leads to consumers being more likely to post positive eWOM and constructive eWOM as a friendly signal. However, individuals who are higher in hubristic pride are more impulsive (Carver et al., 2010), which is highly correlated with aggressive behavior (García-Forero et al., 2009). Therefore, we believe that consumers with high hubristic pride are more likely to write negative eWOM and destructive eWOM as an act of aggression.

Second and more importantly, authentic pride and hubristic pride can lead individuals to adopt different strategies for acquiring social status, which in turn lead them to engage in different types of eWOM behaviors (we will elaborate on this as a mediation mechanism in the next section). Briefly, individuals high in authentic pride are more likely to adopt a prestige strategy (Cheng et al., 2010), which leads consumers to demonstrate their friendliness and potential benefits by posting positive eWOM and constructive eWOM, while individuals high in hubristic pride are more likely to adopt a dominance strategy (Cheng et al., 2010), which leads consumers to intimidate merchants and others who see the reviews by posting negative eWOM and destructive eWOM.

Accordingly, we believe that authentic pride will promote positive and constructive eWOM behaviors and that hubristic pride will promote negative and destructive eWOM behaviors. Hence, we posit the following:

H1a: Authentic pride positively predicts the intention to write positive eWOM.
H1b: Hubristic pride positively predicts the intention to write negative eWOM.
H2a: Authentic pride positively predicts the intention to write constructive eWOM.
H2b: Hubristic pride positively predicts the intention to write destructive eWOM.

The Mediating Effect of Social Status Pursuit Strategies

Considering that eWOM behavior can be regarded as an act of gaining and maintaining social status in the shopping world, we propose the mediating effect of the use of social status pursuit strategies based on the dominance-prestige model of status (Henrich and Gil-White, 2001). The dominance–prestige model suggests that the pursuit of social status includes dominance strategies, which are common in primates, and prestige strategies, which are unique to humans. Dominance entails obtaining an increased social status by possessing resources and controlling profits (Anderson and Kilduff, 2009). Such status is acquired and maintained through the use of power, fear, intimidation and coercion (de Waal-Andrews et al., 2015). Prestige, on the other hand, entails obtaining an increased social status by being recognized and respected due to personal skills or knowledge (Henrich and Gil-White, 2001). In general, dominance is a strategy of pursuing social status by increasing costs for others, while prestige is a strategy of pursuing social status by providing benefits to others (Henrich and Gil-White, 2001; von Rueden et al., 2011).

Previous research has suggested that many factors influence which social status pursuit strategies people use, such as physical size, skills and the situation (Tracy et al., 2020). However, pride, as an automatic affect program that allows individuals to cope most effectively with opportunities for rank attainment, directly guides individuals' use of status strategies. Authentic pride will increase the likelihood of wielding prestige strategies, while hubristic pride will increase the likelihood of wielding dominance strategies (Cheng et al., 2010; Tracy et al., 2010, 2020). Some studies have provided direct evidence for the correlation between pride and social status pursuit strategy: authentic pride is positively correlated with prestige, and hubristic pride is positively correlated with dominance (Cheng et al., 2010; Bolló et al., 2018). In addition, some studies have indirectly supported that authentic pride facilitates the attainment of prestige and hubristic pride facilitates the attainment of dominance. For example, long-distance runners and students with high levels of authentic pride are more likely to change their behaviors to achieve socially valued success (Weidman et al., 2016), which is closer to prestige strategies. However, people with high levels of hubristic pride are more likely to develop prejudices against stigmatized others (Ashton-James and Tracy, 2012) and engage in dishonest behavior (Mercadante and Tracy, 2021), which are closer to dominance strategies.

Furthermore, individuals who adopt different social status strategies have differences in behavior. People who use prestige strategies are more likely to use a specific social influence tactic, relationship building, and less likely to use specific social influence tactics, such as silent treatment, coercion, regression and authority (Ketterman and Maner, 2021). Prestige-oriented individuals may buy their mates an expensive gift to retain them, while dominance-oriented individuals may derogate their mate or behave violently toward sexual rivals (Conlon, 2019). In the field of consumption, previous studies have shown that dominance-oriented male consumers send status signals by consuming large sized products/brands (Panchal and Gill, 2020) and a signal threat to rivals and elicit behavioral avoidance by consuming negative branding (King and Auschaitrakul, 2021).

In the current study, we posit that the social status pursuit strategy used by consumers affects their eWOM behaviors. Positive eWOM can convey positive information to other consumers and help companies increase their reputation among other consumers as well as their profits. Constructive eWOM can better demonstrate the skills and knowledge of consumers because they need to propose problems and solutions that benefit the relevant company. Therefore, prestigious consumers tend to write positive eWOM and constructive eWOM because they typically acquire social status by giving benefits to others (von Rueden et al., 2011). However, dominant consumers tend to write negative eWOM and destructive eWOM because both negative eWOM and destructive eWOM display a threatening image to other consumers and compel a company to pay more to acquire customers by damaging the company's reputation. That is:

H3a: Prestige mediates the relationship between authentic pride and the intention to write positive eWOM.
H3b: Dominance mediates the relationship between hubristic pride and the intention to write negative eWOM.
H4a: Prestige mediates the relationship between authentic pride and the intention to write constructive eWOM.
H4b: Dominance mediates the relationship between hubristic pride and the intention to write destructive eWOM.

To test these predictions, we conducted two studies to test our hypotheses regarding the impact of pride on eWOM behavior. Study 1 manipulated pride states through a recall task and examined the impact of each pride state on different types of eWOM behaviors. Study 2 examined the impact of different types of pride on different types of eWOM behaviors at the trait level and tested whether the social status pursuit strategy mediates these effects.

STUDY 1

In Study 1, we manipulated authentic and hubristic pride with a recall task and compared the impact of each pride state on eWOM behavior in a simulated situation. We hypothesized that in a mixed consumption experience (including both positive and negative experiences), participants experiencing authentic pride are more likely to write positive eWOM and constructive eWOM, while participants experiencing hubristic pride are more likely to write negative eWOM and destructive eWOM.

Method

Two hundred eighty-nine participants from Credamo completed this study. Seventeen participants were excluded because the content they recalled in the recall task did not meet the inclusion requirements (e.g., the participants did not recall his or her own experience, the recalled experience could not be regarded as success, and the participant attributed his or her success to effort in the hubristic pride group). Ultimately, 272 participants remained (67% female; $M_{age} = 29$).

First, the participants completed the state version of the Authentic and Hubristic Pride Scales as a pretest (Ashton-James and Tracy, 2012). These scales ask participants to rate the extent to which they currently feel each of the 14 affective states as the Trait version of these scales (Tracy and Robins, 2007; e.g., "currently, I feel successful," 1 = not at all, 5 = very much).

Then, the participants were randomly assigned to one of three conditions (authentic pride vs. hubristic pride vs. control) and completed a recall task [adapted from Ashton-James and Tracy (2012)] that was designed to induce either authentic pride, hubristic pride, or a neutral emotional state. We induced different pride states by directly manipulating participants' attributions for success. Specifically, the participants in the authentic pride condition were asked to recall a time when they were doing truly well in their courses or work because of their efforts (unstable, controllable, and specific attribute). The participants in the hubristic pride condition were asked to recall a time when they were doing truly well in their courses or work because of their talents (stable, uncontrolled, and global attribute). The participants in the control condition were simply asked to recall everything that they had done that day. In addition, the participants completed the state version of the Authentic and Hubristic Pride Scales again as a manipulation check (Ashton-James and Tracy, 2012).

Then, we measured the participants' intention to engage in eWOM behavior based on a simulated hotel stay experience (Yen and Tang, 2019). To motivate the participants to write various eWOM in the scenario, we set up a scenario that contained both positive and negative experiences. Considering sensitivity to negative information, all core attributes were positive, while the facilitating attributes were negative:

You approached the front desk to check-in. The front desk employee helped you check in and gave you the room card in a few seconds. Then the clerk asked if you needed any assistance and guided you to your room. You thought the staff were very friendly.

Walking through the lobby, you found that the lobby and other public areas were beautifully designed and well maintained. Entering your room, you noticed the room door had a security latch. The room smelled fresh, the carpet was vacuumed, and there was no dust on the furniture. Everything in the room was nicely arranged. You felt very relaxed.

On the table in your room, you noticed some free snacks: a bottle of water, a piece of chocolate and some baked biscuits. These snacks were well packed and the biscuits tasted delicious. You also found a complimentary relaxation CD on the side table. However, when you tried to play the CD, you found that the CD player made some noise. The next morning when you went to have breakfast, you found that the food you wanted to eat had been taken by others and you had to wait 15 minutes.

We measured the participants' intention to write four types of eWOM by using a seven-point Likert scale, including "I will write positive comments about this hotel," "I will write negative comments about this hotel," "I will write comments about this hotel to help them improve," and "I will write comments about this hotel to punish them for their bad work" (1 = strongly impossible, 7 = strongly possible).

Results and Discussion

Manipulation Checks

Before the recall task, there was no significant difference among the three groups in both authentic pride and hubristic pride (Authentic pride: $M_{\text{authentic}} = 3.68$, $SD = 0.82$; $M_{\text{hubristic}} = 3.76$, $SD = 0.70$; $M_{\text{control}} = 3.62$, $SD = 0.80$; F (2, 269) = 0.730, $p >$

TABLE 1 | Means between the pride conditions: study 1.

	Authentic pride	Hubristic pride	Control	F	p
Positive eWOM	4.91 (0.94)	4.26 (1.38)	4.48 (1.14)	6.904	0.001ac
Negative eWOM	2.91 (1.02)	3.57 (1.33)	3.02 (1.36)	6.982	0.001bc
Constructive eWOM	6.07 (0.85)	5.53 (1.03)	5.62 (1.09)	7.594	0.001ac
Destructive eWOM	3.01 (1.33)	3.71 (1.49)	3.20 (1.46)	5.607	0.004bc

a, Authentic pride condition significantly different from control condition, $p < 0.05$.
b, Hubristic pride condition significantly different from control condition, $p < 0.05$.
c, Authentic pride condition significantly different from hubristic pride condition, $p < 0.05$.

0.05; Hubristic pride: $M_{\text{authentic}} = 2.03$, $SD = 0.73$; $M_{\text{hubristic}} = 2.02$, $SD = 0.69$; $M_{\text{control}} = 1.86$, $SD = 0.53$; F (2, 269) = 2.028, $p > 0.05$). After the recall task, the participants in the authentic pride condition reported higher levels of authentic pride (M = 4.45, SD = 0.35) than the participants in the hubristic pride condition (M = 4.27, SD = 0.40; t (178) = 3.253, $p < 0.01$) and the control condition (M = 3.78, SD = 0.81; t (180) = 7.205, $p < 0.001$). The participants in the hubristic pride condition reported higher levels of hubristic pride (M = 2.50, SD = 0.89) than the participants in the authentic pride condition (M = 1.99, SD = 0.82; t (178) = 3.949, $p < 0.001$) and the control condition (M = 1.79, SD = 0.56; t (180) = 6.425, $p < 0.001$).

Main Effect

A series of multivariate analyses of variance (MANOVA) revealed that pride states have a significant impact on positive eWOM (F (2, 267) = 6.904, $p < 0.01$), negative eWOM (F (2, 267) = 6.982, $p < 0.01$), constructive eWOM (F (2, 267) = 7.594, $p < 0.01$) and destructive eWOM (F (2, 267) = 5.607, $p < 0.01$). Specifically, the intention to write positive eWOM was distinctly higher in the authentic pride condition (vs. hubristic pride condition, $p < 0.001$; vs. control condition, $p < 0.05$), but there were no significant differences between the hubristic pride condition and the control condition. The intention to write negative eWOM was distinctly higher in the hubristic pride condition (vs. authentic pride condition, $p < 0.01$; vs. control condition, $p < 0.01$), but there were no significant differences between the authentic pride condition and the control condition. The intention to write constructive eWOM was distinctly higher in the authentic pride condition (vs. hubristic pride condition, $p < 0.001$; vs. control condition, $p < 0.01$), but there were no significant differences between the hubristic pride condition and the control condition. The intention to write destructive eWOM was distinctly higher in the hubristic pride condition (vs. authentic pride condition, $p < 0.01$; vs. control condition, $p < 0.05$), but there were no significant differences between the authentic pride condition and control condition (see **Table 1**). These results supported H1a, H1b, H2a and H2b.

STUDY 2

Study 2 explored the impact of the two facets of pride on different eWOM behaviors at the trait level and tested the mediating role of social status pursuit strategy in this process. We hypothesized that participants with high levels of authentic pride would be more inclined to use a prestige strategy and would thus be more likely to write positive eWOM and constructive eWOM, while participants with high levels of hubristic pride would be more inclined to use a dominance strategy and would therefore be more likely to write negative eWOM and destructive eWOM.

Method

Four hundred and ten participants from Credamo completed this study. Thirteen participants were excluded because they failed the attention check. Ultimately, 397 participants remained (49% female; $M_{\text{age}} = 28$).

First, we measured pride, the social status pursuit strategy and eWOM behaviors with measures derived from previous studies. Authentic pride and hubristic pride were measured on the trait version of the Authentic and Hubristic Pride Scales developed by Tracy and Robins (2007). The scale contains two dimensions and a total of 14 items. Seven items were used to measure authentic pride ($\alpha = 0.92$), and the other seven items were used to measure hubristic pride ($\alpha = 0.88$). Prestige and dominance were measured on the 17-item scale revised by Cheng et al. (2010). The scale contains two dimensions and a total of 17 items. Nine items were used to measure prestige; however, based on a reliability analysis and confirmatory factor analysis (CFA), we excluded three items and retained only six items ($\alpha = 0.86$) for the current study. The other eight items in the scale were used to measure dominance; however, based on a reliability analysis and CFA, we excluded two items and retained only six items ($\alpha = 0.87$) for the current study. Participants' intentions to write positive eWOM or negative eWOM were measured on a 6-item scale adapted by Fu et al. (2015). In this scale, three items were used to measure the intention to write positive eWOM ($\alpha = 0.89$), and the other three items were used to measure the intention to write negative eWOM ($\alpha = 0.90$). Following Weitzl (2019), this study used typical and specific constructive WOM behavior (helping a company) and destructive WOM behavior (revenge taking) to reflect the participants' intentions to write constructive or destructive eWOM. Helping a company was measured on a 4-item scale adapted from Hennig-Thurau et al. (2004). Based on a reliability analysis and CFA, we excluded one item and retained only three items ($\alpha = 0.76$) for the current study. Revenge taking was measured on a 3-item scale developed by Wetzer et al. (2007; $\alpha = 0.90$).

In addition, to better reflect the impacts of the two strategies on consumers' constructive and destructive eWOM, and to reduce common method bias, we conducted measurements at

TABLE 2 | Descriptive statistics, correlations and Cronbach's α.

Variables	GDR	AGE	AP	HP	P	D	PE	NE	HC	RT
GDR	**N/A**									
AGE	0.06	**N/A**								
AP	−0.23***	0.28***	**0.92**							
HP	−0.01	−0.04	−0.04	**0.88**						
P	−0.23***	0.23***	0.74***	0.04	**0.86**					
D	−0.07	−0.05	−0.06	0.66***	0.09	**0.87**				
PE	−0.07	0.19***	0.54***	−0.03	0.56***	0.03	**0.89**			
NE	0.07	−0.13**	−0.10	0.34***	−0.12*	0.33***	0.06	**0.90**		
HC	−0.09	0.11*	0.39***	−0.06	0.42***	−0.03	0.46***	−0.05	**0.76**	
RT	0.04	−0.25***	−0.38***	0.34***	−0.33***	0.33***	−0.32***	0.31***	−0.43**	**0.90**
M	1.49	28.37	5.30	2.82	5.08	3.03	5.36	3.51	5.25	2.71
SD	0.50	5.63	0.97	1.12	0.89	1.16	1.20	1.66	1.12	1.41

****p< 0.001, **p< 0.01, *p < 0.05, Bold face items on the diagonal are the Cronbach's α GDR, gender, AP, authentic pride; HP, hubristic pride; P, prestige; D, dominance; PE, positive eWOM; NE, negative eWOM; HC, helping a company; RT, revenge taking.*

the behavioral level. To make participants equally likely to write constructive eWOM and destructive eWOM, participants were asked to recall an unsatisfactory consumption experience and then to write an online review based on this negative experience. Two graduate students who were unaware of the hypotheses coded the reviews written by the participants; the answers were coded as constructive eWOM, destructive eWOM, neither, or as error responses. Answers that merely described an experience and did not reflect constructiveness or destructiveness were coded as neither. Some participants did not write a review as required or recalled a positive consumption experience and then commented on it. These answers were coded as error responses. The Cohen's kappa value between the two independent coders was 0.82, and a third coder, unaware of the hypotheses, resolved the discrepancies.

Results and Discussion

Preliminary Analyses

Table 2 provided the means and standard deviations for all measures employed alongside the correlations among all constructs.

Main Effect

Hypotheses 1a, 1b, 2a and 2b were tested using multiple linear regressions. Regression analysis revealed that after controlling for gender and age, authentic pride positively affected participants' intention to engage in positive eWOM ($\beta = 0.55, p < 0.001$) and their intention to help the company ($\beta = 0.39, p < 0.001$), thereby supporting H1a and H2a. Hubristic pride positively affected participants' intention to engage in negative eWOM ($\beta = 0.34$, $p < 0.001$) and their intention to take revenge ($\beta = 0.33$, $p < 0.001$), thereby supporting H1b and H2b.

Mediation Effects

Hypotheses 3a, 3b, 4a and 4b were tested using Baron and Kenny's (1986) method. Regarding H3a and H4a, a previous analysis showed that authentic pride significantly predicted the intentions to write positive eWOM and help a company. Further analysis showed that authentic pride significantly predicted prestige ($\beta = 0.71$, $p < 0.001$) and that prestige significantly predicted the intentions to write positive eWOM ($\beta = 0.56, p < 0.001$) and help a company ($\beta = 0.42$, $p < 0.001$). Multiple regressions showed that both authentic pride ($\beta = 0.29, p < 0.001$) and prestige ($\beta = 0.36$, $p < 0.001$) significantly predicted writing positive eWOM, thereby supporting H3a. Both authentic pride ($\beta = 0.18$, $p < 0.05$) and prestige ($\beta = 0.30$, $p < 0.001$) significantly predicted helping a company, thereby supporting H4a.

For H3b and H4b, a previous analysis showed that hubristic pride significantly predicted the intentions to write negative eWOM and take revenge. Further analysis showed that hubristic pride significantly predicted dominance ($\beta = 0.66$, $p < 0.001$) and that dominance significantly predicted the intentions to write negative eWOM ($\beta = 0.33$, $p < 0.001$) and take revenge ($\beta = 0.32, p < 0.001$). Multiple regressions showed that both hubristic pride ($\beta = 0.21$, $p < 0.01$) and dominance ($\beta = 0.19$, $p < 0.01$) significantly predicted writing negative eWOM, thereby supporting H3b. Both hubristic pride ($\beta = 0.21$, $p < 0.01$) and dominance ($\beta = 0.19$, $p < 0.01$) significantly predicted revenge taking, thereby supporting H4b.

Behavioral Analysis

Forty-seven answers that were coded as error responses were removed, and 350 responses were left to be analyzed. First, we further explored the impact of authentic pride on the intention to write constructive eWOM. We conducted a binomial logistic regression with perceived authentic pride as the independent variable, constructive eWOM (Yes = 1, No = 0) as the dependent variable, and gender and age as the control variables. The results showed that authentic pride significantly predicted constructive eWOM ($B = 0.46$, $p < 0.001$). Next, we further tested the mediating role of prestige and found that authentic pride significantly predicted prestige ($B = 0.63$, $p < 0.001$) and that prestige significantly predicted constructive eWOM ($B = 0.55$, $p < 0.001$). A binomial logistic regression with authentic pride and prestige as the independent variables showed that prestige significantly predicted constructive eWOM (B= 0.40, $p < 0.05$), while authentic pride had no significant effect on constructive eWOM ($B = 0.21$, $p > 0.05$). The results thus supported H2a and H4a, which is in line with the results of the self-reported scales.

Second, we further explored the impact of hubristic pride on the intention to write destructive eWOM. We conducted a binomial logistic regression with perceived hubristic pride as the independent variable, destructive eWOM (Yes = 1, No = 0) as the dependent variable, and gender and age as the control variables. The results showed that hubristic pride significantly predicted destructive eWOM ($B = 0.36$, $p < 0.001$). Next, we further tested the mediating role of dominance and found that hubristic pride significantly predicted dominance ($B = 0.67$, $p < 0.001$) and that dominance significantly predicted destructive eWOM ($B = 0.37$, $p < 0.001$). A binomial logistic regression with hubristic pride and dominance as the independent variables showed that the correlation between dominance and destructive eWOM was marginally significant ($B = 0.24$, $p = 0.064$), while hubristic pride had no significant effect on destructive eWOM ($B = 0.20$, $p > 0.05$). The results therefore partly support H2b and H4b, which is in line with the results of the self-reported scales.

DISCUSSION

The development of online review platforms and social networking sites provides not only assistance to consumers in product evaluation and purchase decisions by generating and spreading eWOM but also a new space for consumers to build their self-image and establish interpersonal relationships. Consumers' eWOM on social networks extends beyond their interactions with products and their interactions with service personnel. Expectations of how eWOM will affect other consumers' perceptions of them also impact consumers' eWOM behaviors. Therefore, it is important to explore consumers' eWOM behaviors in the context of social interactions. This study thus explored how two different subtypes of pride influence consumers' eWOM through different social status pursuit strategies. Our results show that authentic pride promotes positive and constructive eWOM through the mediator of prestige, while hubristic pride promotes negative and destructive eWOM through the mediator of dominance.

Theoretical Implications

The current research extends the previous literature in several ways. First, this research adds to our understanding of different types of eWOM. Consumers have different willingness to write different types of eWOM. The results of both study 1 and study 2 show that consumers are more willing to write positive eWOM and constructive eWOM and more reluctant to write negative eWOM and destructive eWOM. Furthermore, we find that one factor may have different impacts on consumers' willingness to post different types of eWOM. Past research has largely focused on the drivers of overall eWOM or a specific type of eWOM (Hu and Kim, 2018; Nam et al., 2020; Sohaib et al., 2020; Kim and Hwang, 2022). In the current research, we explore how emotions influence consumers' willingness to write various types of eWOM differently. We also focus on a pair of eWOM, constructive and destructive eWOM (Wetzer et al., 2007). Limited attention has been given to constructive and destructive eWOM, and there is a lack of empirical research on its antecedent variables (Weitzl, 2019). However, as consumers gain increasing influence in the market, constructive eWOM, as a typical behavior of value-cocreatin, and destructive eWOM, as a typical behavior of value- codestruction, are more important. This research empirically demonstrates that when consumers feel authentic pride, they prefer to write constructive eWOM, while consumers feel hubristic pride, they prefer to write destructive eWOM. In addition, we provide a novel method to measure the willingness to write constructive eWOM or destructive eWOM by asking participants to write a review on an unsatisfactory consumer experience.

Second, this research furthers our understanding of how consumers' emotions, specifically, their discrete positive emotions, affect their eWOM behaviors. Our results indicate that authentic pride and hubristic pride encourage consumers to create different types of eWOM to express their consumption experiences, thereby reflecting how discrete positive emotions can have a unique impact on individuals' cognition, expression, and behavior (Griskevicius et al., 2010; Campos et al., 2013; Shiota et al., 2014; Nikolinakou and King, 2018a). Furthermore, our research enriches previous studies by showing that differences within similar discrete positive emotions can impact the expressions and behaviors of consumers. Our research also shows that evolution-based mechanisms still function in the emerging field of eWOM. From an evolutionary perspective, previous studies have regarded discrete emotions as neurocomputational programs that solve adaptive problems by activating a series of cognitive and motivational subprograms (Griskevicius et al., 2010; Sznycer et al., 2017). Our results indicate that pride influences consumers' intentions to write different types of eWOM through their pursuit of social status, which is an adaptive behavior. Thus, once again, this finding validates those of previous studies. In addition, we provide empirical support for the manipulation of pride (Ashton-James and Tracy, 2012). Our results show that the manipulation of pride can indeed increase participants' authentic pride and hubristic pride by measuring their pride before and after manipulation.

Finally, this research contributes to the dominance-prestige model (Henrich and Gil-White, 2001; Cheng et al., 2013). This model suggests that the pursuit of social status includes dominance strategies, which are common in primates, and prestige strategies, which are unique to humans. Previous studies have explored how dominance strategies and prestige strategies are linked to different personality variables (Cheng et al., 2010), mate retention strategies (Conlon, 2019), specific social influence tactics (Ketterman and Maner, 2021) and consumer behaviors (Panchal and Gill, 2020; King and Auschaitrakul, 2021). Our research expands this investigation to the context of eWOM behaviors and finds that prestige strategies promote positive eWOM and constructive eWOM, while dominance strategies cause negative eWOM and destructive eWOM. Our results also provide support for the temporal stability of the dominance-prestige model. eWOM is a field that has only emerged in recent decades, and the dominance-prestige model still explains people's behaviors in this emerging field. This result implies that the model remains stable even as the environment changes.

Practical Implications

The volume of eWOM can positively affect perceived credibility and a company's revenue (Filieri, 2015; Yan et al., 2018; Kim et al., 2019). However, different types of eWOM have different impacts on consumers (Lis and Fischer, 2020). For example, positive eWOM and constructive eWOM, as typical behaviors of value-cocreatin, can bring benefits to businesses, while negative eWOM and destructive eWOM, as typical behaviors of value-codestruction, will harm the merchants (Dolan et al., 2019). Study 1 showed that consumers may write different types of eWOM for the same consumer experience. Therefore, when firm and marketers are engaging in social media marketing, they need to be aware of which type of eWOM consumers are more likely to generate and then induce the specific types of eWOM, such as positive eWOM and constructive eWOM.

Previous research has shown that pride has a significant impact on eWOM creation intention and has suggested that firms provide services that trigger the emotion of pride (Wen et al., 2018). However, our results show that only triggering authentic pride can generate more eWOM that is good for the company, and triggering hubristic pride will generate more negative eWOM and destructive eWOM, which is detrimental to the company. Therefore, marketers should be careful to stimulate consumer pride. They need to further consider which marketing strategies activate the authentic pride of consumers and which marketing strategies activate the hubristic pride of consumers.

Our results also show that status strategy is an important antecedent variable related to how consumers write different types of eWOM. Individuals who tend to use a prestige strategy are more likely to engage in value-cocreation, i.e., positive and constructive eWOM, while consumers who tend to use a dominance strategy are more likely to engage in value-codestruction represented by negative and destructive eWOM. The results therefore suggest that the intention to write eWOM can be effectively affected by influencing consumers' social status pursuit strategies. Finally, based on the theory of planned behavior, we believe that creating a community norm and atmosphere that foster a prestige-based pursuit of social status can better promote positive and constructive eWOM.

Limitations and Future Directions

This research focuses on the influence of different subtypes of pride on different types of eWOM through social status pursuit strategies. To further understand how discrete positive emotions affect eWOM through adaptive mechanisms, future research should explore the impacts of other discrete positive emotions, such as enjoyment and happiness. In addition, we should also determine whether discrete negative emotions can affect different types of eWOM through social status pursuit strategies. For example, anger is one of the main reasons for aggressive behaviors, which can also lead to revenge taking. Does dominance mediate this process? Future research can identify whether other identifiable variables affect consumers' social status pursuit strategies, their eWOM behaviors, and other consumer behaviors.

Future research can explore the antecedents that influence consumer' intentions to write different types of eWOM more systematically based on the theory of planned behavior (Ajzen, 1991). The current research only examines the mechanism of social status-acquisition strategies, which reflect one of the three determinants of intention, attitude. Individuals who adopted the prestige strategies have more positive attitudes toward positive eWOM and constructive eWOM, while individuals who adopted the dominance strategies have more positive attitudes toward negative eWOM and destructive eWOM. However, subjective norm and perceived behavioral control also influence consumers' intention to write different types of eWOM. For example, consumers are less likely to write negative eWOM when there is a general belief that they should be sympathetic and tolerant of service personnel and when the process for posting a negative eWOM is more complicated. Future research can further explore the antecedents of posting different types of eWOM from the perspective of subjective norm and perceived behavioral control.

In addition, although the current research discusses the influence of pride on eWOM from the perspectives of state pride and trait pride, both the manipulation and questionnaire measurement are different from those used in real situations. Future researchers can influence consumer pride through product design and analyze the content posted by users online to identify their pride and social status pursuit strategies to more realistically predict consumers' eWOM behaviors.

Finally, in this research, the participants were asked to write eWOM in a simulated situation or a recalled situation, which is different from an actual scenario. Therefore, there may be differences between the participants' consumer experiences and actual consumer experiences, especially in terms of emotional arousal. Future research can therefore use field studies to manipulate participants' pride directly, either before or during consumption, or to measure their emotions immediately after they create comments to enhance the external validity.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Zhejiang University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JL designed the study and drafted the initial manuscript. QX collected the data and performed statistical analysis. JZ contributed to the revised manuscript. All authors discussed the results and contributed to the final manuscript.

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Analyzing Intention to Purchase Brand Extension via Brand Attribute Associations: The Mediating and Moderating Role of Emotional Consumer-Brand Relationship and Brand Commitment

*Weijun Bian[1,2] and Gong Yan[2]**

[1] *School of Literature and Business, Xi'an Siyuan University, Xi'an, China,* [2] *School of Urban Construction, Xi'an Siyuan University, Xi'an, China*

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Edited by:
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Correspondence:
Gong Yan
gongyan87958557@163.com

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The aim of this study is to investigate the drivers of brand extension attributes and its impact on intention to purchase brand extensions mediated by emotional consumer-brand relationship (ECBR). Data was collected from Chinese university students with the help of questionnaire. Structure equation modeling was applied with the help of AMOS to analyze collected data. Results depict that brand attribute association has significant impact on intention to purchase luxury brands extension. Results further explain that emotional consumer-brand relationship mediates the relationship between brand attribute associations and purchase intention of brand extensions. Furthermore, results indicate that brand commitment moderates the relationship between brand attribute associations, emotional consumer-brand relationship and intention to purchase brand extensions. This study provides an intensive knowledge of the association that exists between the intent to buy luxury brands' extension and ECBR. This study focuses on the heart versus mind distinction, which is integral to the research on the relationship between consumers and brands. This study provides useful insights to brand managers to use strategies that enhance the bond between emotional and cognitive factors customers associate with a particular brand. Luxury brand managers ought to balance emotionality and rationality to create and capitalize on unique associations with customers.

Keywords: brand extension, brand attribute, luxury brand, commitment, emotional consumer-brand relationship, purchase intention

INTRODUCTION

Brand extension refers using a brand's name to facilitate market penetration for a new product and this strategy is used in promoting luxury brands (Zhu et al., 2021). Already a lot of luxurious fashion brands enjoy brand extension across various traditional luxurious market segments like jewelry, accessories, and perfumes; there are also extension possibilities when it comes to the non-traditional segments like technology, accommodation, food, and alcohol. Even though a parent brand name presents a chance for brand extension success, the brand extension also has its fair share of limitations (Gelb and Friedman, 2021). Brand dilution emanates from overextension which contributes immensely to brands losing the special aura or brand promise to the potential market and subsequently reducing their market share. For that reason, it is crucial to determine the determinants that specifically affect the success of a particular luxury brand extension. There has been little study on the drivers of successful luxury brand extensions. The studies on non-luxury brand extensions cannot be used in the luxury brand category hence the need to carry out a separate study on luxury brands (Jamil et al., 2021a; Ma et al., 2021).

According to Knoerzer and Millemann (2021), both relational and cognitive factors play a significant role when it comes to consumer decisions. Tsai et al. (2020) stated that cognitive roots drive consumer emotions (Gul et al., 2021a). When consumers retain brand attributes in their minds, it leads to the consumer-brand association. Consumers always tend to create salient schemas associated with the brand in their mind, thus developing an emotional bond with that brand. Global consumer expenditure growth also challenges organizations to create productive brand associations; thus, it is valuable to create and improve the emotional attachment between customers and luxury brands through taking advantage of cognitive aspects like brand relationships which consumers have imprinted in their minds (Dewani et al., 2021; Gul et al., 2021b). It will also be beneficial to determine whether marketers can get desired results like encouraging consumers to purchase luxury brand extensions through capitalizing on the interplay of these mechanisms. Zhong et al. (2021) discussed that despite this, there appears to be a paucity of research that investigates the influence of cognitive and relational elements (in addition to expected synergies) on brand expansions.

Past studies on the discussed issues have several empirical and conceptual limitations. For instance, Prados-Pena and Del Barrio-García (2021) focused on affective commitment only. Gelb and Friedman (2021) and Hultman et al. (2021) conceptualization about customer-brand association focused on hedonic values and emotional attachment. Zhu et al. (2021) focused on brand elicited effects, that is, feelings experienced by consumers when coming across a brand are different from the emotional attachment between the brand and consumer. Besides, most studies have always put more emphasis on brand quality when it comes to conceptualizing cognitive factors. Other studies did not have generalizability because of the specific assumptions which, may have affected how the findings were interpreted. Take, for instance, Ahn et al. (2018), who argued that emotions tend to be more impacting than attitudes when predicting how consumers will react to luxury brand extensions. However, this only happens when a consumer expects a moderate or high-level fit between brand extension and parent brand. According to del Barrio-García and Prados-Peña (2019), consumers' judgments on brand extensions are enhanced by strong brand association quality, however only in low and moderate commitment extensions. These limitations have prompted the current study to develop and test the empirical model suitable for examining the importance of emotional consumer-brand relationships (E-CBRs) and brand attribute relationships in determining the intent of a luxury brand extension. ECBR is referred to as an emotional attachment that consumers develop as time goes by with their preferred brands. In addition, this study examines the impact caused by brand commitment (Jamil et al., 2022).

The current study focuses exclusively on luxury brands' context, adding to the available knowledge about luxury brand consumption. Luxury brands come with specific characteristics, making them viable for examining all aspects that have been discussed. For instance, luxury brands offer consumers benefits that can be transferred across various product categories. Also, luxury brands come with high hedonic and expressive characteristics. According to Kumar and Kaushik (2020), luxury brands are a blend of cognitive and emotionally laden values like entertainment, experiences, aesthetics, and superior quality. Chinese young consumers have experienced tremendous growth when it comes to interest in leading a luxurious lifestyle and using global luxury brands. So, the research analyses views from young consumers in China to draw various practical and theoretical contributions (Gul et al., 2021c). The findings show that the Chinese luxury brand market now boasts of having a wide variety of global luxury brands. Besides, Chinese consumers have interesting behaviors, like marked impacts of cultural factors, that ate worth studying for a lot of global investors and brands.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Consumer Intention to Buy Brand Extensions and Brand Attribute Association

Brand attribute associations are descriptive features used in the characterization of a brand, for instance, its intangible benefits, factors that influence consumption or purchasing of a brand, and an image that resonates well with consumers (Prados-Peña and Del Barrio-García, 2020). This study appreciates the views of Butcher et al. (2019) in describing the conceptualization of brand attributes associations. There are five main dimensions that consumers highly value regarding luxury brands. Among those dimensions (perceived quality, perceived originality, and prestige/elitism/conspicuousness) are associated with non-personal attributes, while the remaining two (perceived extended self and perceived hedonism) are related to personal values. According to Tsai et al. (2020), luxury values are represented by three dimensions (hedonism, distinction, and elitism/prestige). When it comes to luxury brands, consumers usually perceive materialism and hedonism as individual values, conspicuousness, and prestige to be social values, uniqueness, and quality as functional values (Awan et al., 2021a).

Liang and Fu (2021) have confirmed that intention to purchase brand extensions is a result of associations with brand attributes. For example, suppose a consumer comes across new brand extensions. In that case, their evaluation of the brand extensions is based on the parent brands' attributes and the knowledge they currently have concerning that product category (Kumar and Kaushik, 2020). Besides, theoretical support on how the purchase intention of a brand extension is influenced by these dimensions. For instance, Youn and Dodoo (2021) confirm that the brand image is likely to influence the perceived quality of the brand even before making a purchase. So, these dimensions influence how a consumer will evaluate a brand extension (Awan et al., 2021b; Ma et al., 2021). Hedonic attributes from the parent brands also affect how consumers perceive a brand and promote the development of feelings by a consumer toward a brand (Tseng et al., 2022). These attributes can be used on new products irrespective of the categories they fall in. Brand prestige suggests that the likeability or relatability of a parent brand affects how brand extensions are evaluated (Giovanis and Athanasopoulou, 2018; Jamil et al., 2021b). Researchers have also pointed out that the values provided by a brand (functional and prestige values) influence how consumers will react to brand extensions. A parent brand with prestigious values might negatively impact consumers' purchasing decisions in the event of a brand extension by providing highly perceived quality (Nandy and Sondhi, 2020). Finally, brand uniqueness refers to extrinsic or inter-personal advantages brought by brand consumption and is important when customers tell other potential customers about their first-hand experience regarding a particular brand. Brand extensions can enjoy such benefits (Awan et al., 2021c; Zhong et al., 2021).

There are a number of major conceptual and empirical constraints in the existing research that examines consumer-brand relationships as a factor in evaluating brand expansions. These limitations affect the study in both a conceptual and an empirical way (Tseng et al., 2021). Even though a lot of research has been done on the impact of intention to purchase a brand extension. But studies regarding luxury brands confirm that consumers depend on the attributes of the parent grand in creating perceived quality of brand extensions (Gaber et al., 2021; Mohsin and Ivascu, 2022). Consumers often use those attributes to determine the benefits they stand to gain after purchasing brand extensions. Positive attributes of the parent brand will enable consumers to positively evaluate the brand extension (Mohsin et al., 2021). The quality of a brand's connection to its consumers and the degree to which consumers feel that the brand is a good match for them both have separate and distinct impacts on how consumers feel about the growth of the brand. However, their findings only revealed a substantial influence on behavioral reactions to brand growth, not on views toward the expansion of the company. This is because opinions are more subjective. Dewani et al. (2021) found that only extensions with moderate to low fit had a favorable influence on consumer perceptions of good brand connection quality. This meant that only extensions with a moderate to low fit had a positive impact. In other research, it was investigated how customers' impressions of the parent firms changed as a result of the introduction of new brands. According to Gorlier and Michel (2020), unique, prestige, and hedonic values positively impact how consumers perceive brand extensions. Therefore, we proposed following hypothesis:

> H1a: Emotional consumer-brand relationship (ECBR) impacts consumer intentions to purchase a brand extension and brand attribute associations.

The Moderating Role of Brand Commitment

A strong sense of psychological attachment toward an object is regarded as a commitment (Das et al., 2019). It is an enhanced urge to have a certain attitude, and it binds or pledges the person to a particular behavior. Various forces around the individual (culture and social network) and consumer experience are the drivers of commitment (Piehler, 2018; Liu et al., 2019). Affective attachments and emotions influence a particular object. So, commitment comes with positive feelings and customer partiality (Abid et al., 2020).

According to Tong et al. (2018), it is possible to transfer an emotional attachment from one object to another. An individual with a deep attachment to a certain object tends to stay committed to preserving the relationship with it. Besides, Kumagai and Nagasawa (2021) also confirmed that high attachment to brand extensions occurs at the high levels of fit. So, the effect will only be transferred depending on the emotional attachment toward the brand extension and its similarity to the main brand (Liu et al., 2017; Ou et al., 2020). In an instance where the brand extensions display high perceived quality, they can easily be regarded to have similar features to the parent brand (Gul et al., 2021d). So, the effect is transferred with an enhanced commitment condition. Therefore, we proposed following hypothesis:

> H1b: Brand attribute associations significantly affect intention to emotional consumer relationship (E-CBR).

The Mediating Role of Consumer-Brand Relationship

A substantial degree of synergy exists between E-CBR and brand attribute associations while influencing the intention to buy brand extensions (Kaufmann et al., 2019). Gupta et al. (2021) confirm that emotions facilitate brand-associated information when making purchase decisions, mostly if unique, conspicuous, and hedonic attributes affect the decision. Besides, the relationship between a consumer and a brand often becomes a conduit linking purchase decisions and the brand extensions' cognitive factors (perceived quality or brand image). One can determine whether brand relationships are mediating by putting into consideration emotions resulting from a consumer's bond with a particular brand that usually affect the consumer's purchasing decisions (Pourazad et al., 2019; Naseem et al., 2021).

Still, these works have theoretical and conceptual frameworks that should be subjected to additional empirical analysis. Even though, according to Loureiro and Sarmento (2019), emotional reactions are more effective than perceived fit and attitudes when predicting how a consumer will react to the brand extension. This confirmation is only viable for moderate and high levels of brand extensions and parent brands. Besides, Hayes et al. (2020) framework put more emphasis on a single aspect of brand relationship development (hedonic benefits from parent brands). Also, the works of Khatoon and Rehman (2021) on perceptual factors dwelt on the quality of brand portfolio and parent brand breadth. Furthermore, Gaber et al. (2021) used the dyadic approach, appraised brand relationship, hence hindering conclusions generalizability. Therefore, we proposed following hypothesis:

H2: Brand attribute has a significant influence on intention to purchase a brand extension.

Brand Attributes and Intention to the Emotional Consumer-Brand Relationship

Past studies acknowledge the significance of the interaction between relational and cognitive factors and how they affect customer decisions (Schmuck et al., 2018). Successful brands establish a productive relationship with consumers through providing an exceptional combination of product benefits and perceptual brands. According to Yazdanparast et al. (2016), brand image assists in creating brand relationships in case consumers consider self-image to be consistent with the perceived quality. Consumers use the unique intangible benefits of a brand to evaluate a brand or develop feelings toward it (F. Hu and Trivedi, 2020).

According to the Theory of Optimal Distinctiveness (Hornsey and Hogg, 1999), individuals tend to join moderately distinct and inclusive groups to fill different or simply fulfill the demand for inclusion (Liu et al., 2021). Besides, consumers always display their identities by associating with prestigious brands to gain status, respect, and exclusivity. According to Social Identity Theory, an individual embodies the attributes of social identity, which assist them in realizing positive, aspirational targets. As social identities, brands have prestigious attributes that attract consumers, making them develop attachments with the brand (Liu et al., 2020). According to Sultan and Wong (2019), congruency between a consumer's ideal self and the brand impacts brand attachment positively. Hayes et al. (2021) also suggest that hedonic and symbolic benefits can cause brand attachment. As a result, this study proposes these hypotheses:

H3: Brand commitment mitigates the relationship between intentions to purchase a brand extension and the emotional consumer-brand relationship.

H4: Brand commitment mitigate the relationship between intention to purchase brand extension ad brand attribute associations (see **Figure 1** for all relationships).

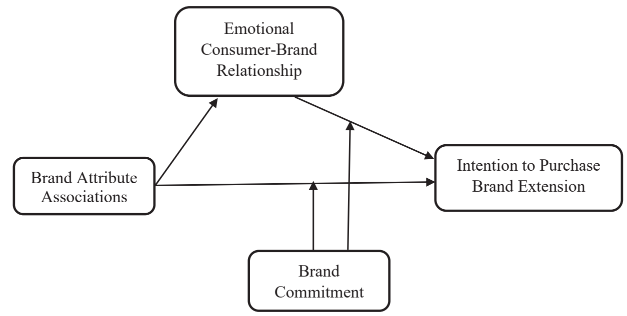

FIGURE 1 | Conceptual framework.

Research Methodology

Data was collected from respondents using a self-administered questionnaire. Before the final analysis a pilot study was conducted with first thirty and last thirty questionnaires. After the results of pilot study two experts of the marketing field reviewed the questionnaire items and the responses of the respondents and they suggested some minor revisions to improve the quality of the instrument. Non-probability convenience sampling technique was applied to collect data from university students situated in Beijing the capital of PR China. Though convenience sampling may constitute a generalizability issue, researchers suggested that young samples are more accurate and knowledgeable about fashion products. This study follows the suggested sample size criterion of Kline (2015). According to him ten responses for an item are sufficient. Our study used twenty-five items and the minimum suggested sample should be two hundred and fifty. Keeping in view the reliability and validity we collected data from three hundred and twenty-five Chinese students who are studying in different universities in the territory of capital city Beijing.

Questionnaire and Measurement

The study used items established from prior research to confirm the reliability and validity of the measures. All items are evaluated through five-point Likert-type scales where "1" (strongly disagree), "3" (neutral), and "5" (strongly agree). Intention to purchase brand extension was measured with three items adopted which were adopted from prior study of Taylor and Baker (1994). Brand attribute association was evaluated with eleven items and these items were previously used by Hwang and Hyun (2012). Emotional Consumer-Brand Relationship (E-CBR) was used as mediating variable and this was determined with the help of eight items which already were used by Carroll and Ahuvia (2006) and Batra et al. (2012). To check moderating effect of brand commitment we used three items and these items were formerly used by Albert et al. (2013) in their study.

Demographic Profile of the Respondents

The demographic analysis results showed that 59% of the respondents were male, and 41% were female; participation in both the sample assures the inclusion of genders in the dataset. About 35% of the respondents were aged between 18 and 25 years, followed by 40% aged between 26 and 35 years, and the rest of 25% were above the age of 35 years. Respondents were well-educated, with about 40% were graduation students, and about 45% of respondents were post-graduate students.

STUDY RESULTS

The SEM approach has been extensively employed because it can illustrate robust regression associations in a single model and test (Kline, 2015). It is also applicable and rational to

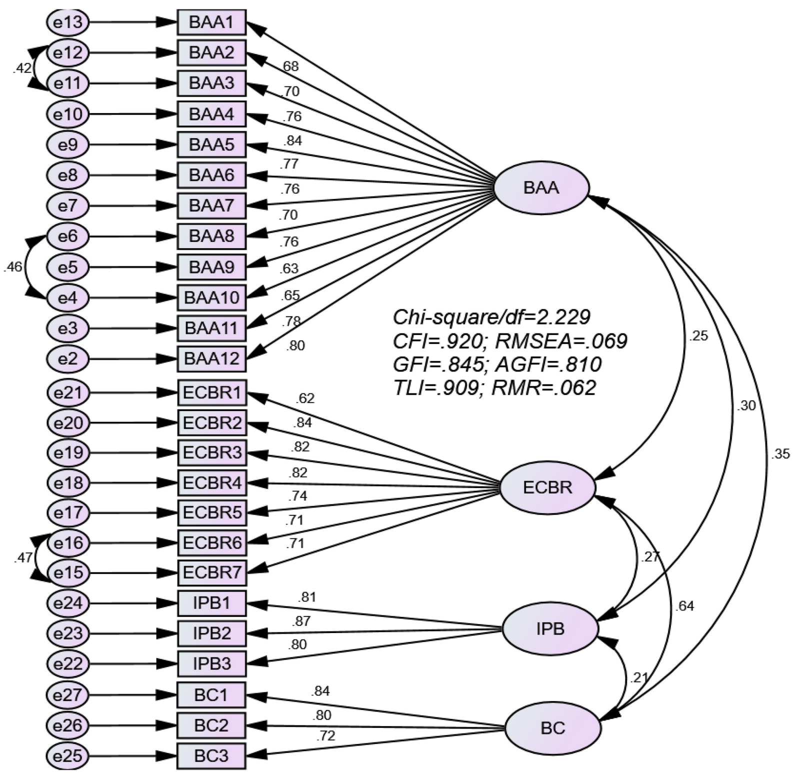

FIGURE 2 | Model fit measures.

TABLE 1 | Model fit measures.

Index	Measurement model	Structural model	Cut-off criteria	Benchmark	Conclusion
Absolute fit measures					
CMIN/DF	2.229	2.366	<5.0		Appropriate
RMSEA	0.069	0.073	<0.08	MacCallum et al., 1996	Appropriate
SRMR	0.050	0.051	<0.08	Byrne, 2013	Appropriate
GFI	0.845	0.857	>0.80	Hu and Bentler, 1995	Appropriate
Incremental fit measures					
CFI	0.920	0.923	>0.90	Bentler, 1990	Appropriate
AGFI	0.810	0.821	>0.80	Bentler and Weeks, 1980	Appropriate
TLI	0.909	0.913	>0.75	Sivo et al., 2006	Appropriate

determine associations and mediation effects. Therefore, this research employed SEM to assess the proposed hypotheses of the research model. This study utilizes analysis of moment structures (AMOS) to assess and evaluate the structural model based on standardized scale data. CFA was implemented to examine the validity and reliability of the constructs. Data analysis was carried out using statistical package AMOS version 24. In contrast, a bootstrapping technique was utilized to test the significance of the research hypotheses.

Measurement Model

A confirmatory factor analysis with AMOS 24.0 software on 260 returned survey data was conducted. According to the Structural Equation Model (SEM) index suggested by Bagozzi and Yi (1988), the fit indices of the model are satisfactory (CMIN/DF = 2.229, RMSEA = 0.069; GFI = 0.845; SRMR = 0.050, AGFI = 0.81; CFI = 0.92; TLI = 0.909), suggesting that The CFA findings are an excellent fit to the data (see **Figure 2**). The detailed findings for the measurement model and cut-off criteria are shown in **Table 1**.

Next, we assessed the efficiency of the design measures by measuring the individual Cronbach alpha Ca coefficient, with the resulting estimates varying from 0.832 to 0.935, all of which were higher than the recommended standard of 0.7 (Nunnally, 1994). A CFA was then carried out to test the cumulative measurement model to ascertain the convergent and discriminant validity. Following the guideline of Hair et al. (2016), this research examines the convergent validity through factor loading, average variance extracted (AVE), and composite reliability (CR). The factor loadings of the items range from 0.618 to 0.841 (all larger than 0.6). The CR values are greater than 0.7, and they range from

TABLE 2 | Confirmatory factor analysis results.

Items	Loadings	Estimate	S.E.	C.R.	CA	CR	AVE	MSV	MaxR(H)
Brand attribute associations					0.935	0.934	0.545	0.121	0.939
BAA3	0.759***	1.094	0.097	11.265					
BAA4	0.841***	1.290	0.104	12.356					
BAA5	0.767***	1.109	0.097	11.382					
BAA6	0.758***	1.049	0.093	11.261					
BAA8	0.759***	1.231	0.109	11.270					
BAA11	0.785***	1.231	0.106	11.616					
BAA12	0.801***	1.240	0.105	11.836					
Emotional consumer Brand relationship					0.904	0.901	0.568	0.404	0.911
ECBR2	0.837***	1.474	0.139	10.610					
ECBR3	0.820***	1.382	0.132	10.466					
ECBR4	0.815***	1.432	0.137	10.422					
ECBR5	0.737***	1.427	0.147	9.7100					
ECBR6	0.711***	1.286	0.136	9.4420					
ECBR7	0.712***	1.303	0.138	9.4570					
Intention to purchase Brand extension					0.866	0.867	0.685	0.088	0.872
IPB1	0.809***	1							
IPB2	0.869***	1.101	0.078	14.190					
IPB3	0.804***	1.019	0.075	13.548					
Brand commitment					0.832	0.833	0.625	0.404	0.841
BC1	0.839***	1							
BC2	0.804***	0.952	0.073	13.106					
BC3	0.724***	0.838	0.071	11.876					

*Significance of estimates at ***p < 0.001 level; Cα ≥ 0.7; CR ≥ 0.7; AVE ≥ 0.5.*

TABLE 3 | Discriminant validity.

	Fornell–Larcker criterion					Heterotrait–monotrait (HTMT) ratios			
	BAA	ECBR	IPB	BC		BAA	ECBR	IPB	BC
BAA	0.738				BAA				
ECBR	0.250	0.754			ECBR	0.249			
IPB	0.297	0.266	0.828		IPB	0.297	0.274		
BC	0.348	0.636	0.210	0.790	BC	0.339	0.650	0.209	

BAA, brand attribute associations; ECBR, emotional consumer-brand relationship; BC, brand commitment; IPB, intention to purchase brand extension.

0.833 to 0.934. AVE values vary from 0.545 to 0.685, all of which are greater than 0.5. All the measures demonstrated sufficient convergent validity, as seen in **Table 2**.

The two methods are included to validate the proposed model's discriminant validity, namely the Fornell-Larcker criteria and heterotrait-monotrait (HTMT) ratios (Hair et al., 2016). According to the Fornell and Larcker (1981) criterion, after taking the square root of the AVE of each variable, if the upper side of the first value of each column is significantly higher, it demonstrates the confirmation of discriminant validity (Fornell and Larcker, 1981; Hair et al., 2016). **Table 3** indicates that discriminant validity is confirmed based on the Fornell-Larcker criteria since the top value of the association of measures is maximum in each column. According to the HTMT ratios criteria, the values of the HTMT ratios must be <0.85; but, values up to 0.90 are appropriate. The **Table 3** demonstrates that all HTMT ratios are <0.90, which suggests that the current research model's discriminant validity has been confirmed.

Structural Model Results

We used SEM with maximum likelihood estimation procedures to test the proposal hypotheses. To measure the degree fit of the structural model we evaluated the following indicators: absolute fit measures including Chi-square/df (CMIN/df), goodness of fit index (GFI), root mean square error of approximation (RMSEA) and root mean square residual (RMR), Standardized Root Mean Square Residual (SRMR); incremental fit measures including, comparative fit index (CFI), adjusted goodness of fit index (AGFI), Tucker–Lewis coefficient (TLI). **Table 1** shows that the fit indices of the model are satisfactory (CMIN/DF = 2.366, RMSEA = 0.073; GFI = 0.857; SRMR = 0.051, CFI = 0.923; AGFI = 0.821; TLI = 0.913), suggesting that the relationships among latent constructs fits the data. The direct, indirect and total effects are analyzed and shown to clarify the relationship among the factors (Usman Shehzad et al., 2022). The results of the hypotheses testing of the structural relationship among the latent constructs in the proposal model are shown in **Figure 3** and **Tables 4**, **5**.

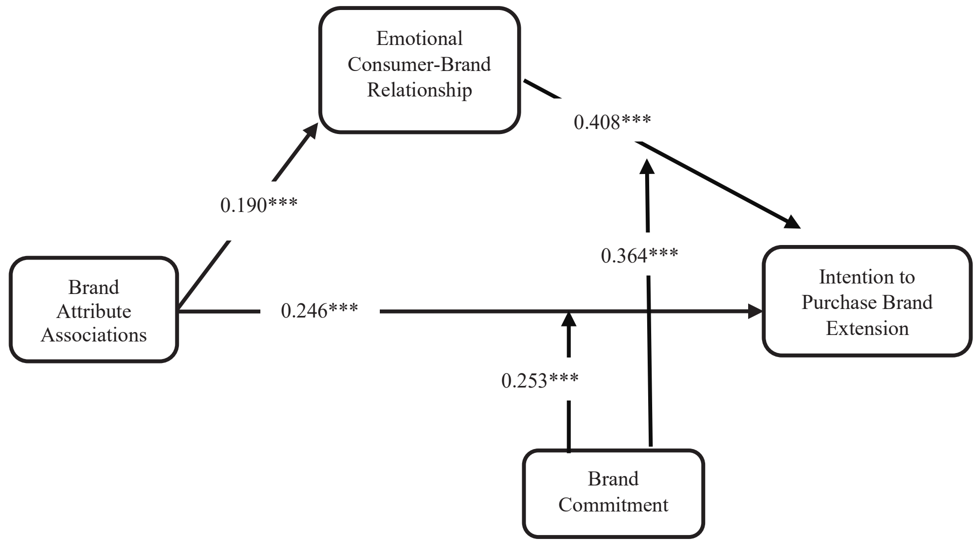

FIGURE 3 | Measurement model. ***$p < 0.001$.

TABLE 4 | Structural model results effects.

Structural paths	Proposal effect	Estimate	S.E.	*T*-Value	Decision
BAA → IPB	(H1) +	0.246***	0.108	2.277	Supported
BAA → ECBR	(H2) +	0.190***	0.054	3.508	Supported
ECBR → IPB	(H3) +	0.408**	0.143	2.864	Supported
BAA*BC → IPB	(H4) +	0.253**	0.082	3.081	Supported
ECBR*BC → IPB	(H5) +	0.364**	0.072	5.055	Supported

****Significant at the 0.001 level; **significant at the 0.01 level.*

TABLE 5 | Direct, indirect, and total effects analysis.

					Bias-corrected confidence intervals	
	Proposal effect	Direct effects	Indirect effects	Total effects	Lower confidence level	Upper confidence level
BAA → ECBR → IPB	**(H2a)** +	0.246***	0.051**	0.297***	0.03	0.164

****Significant at the 0.001 level. **significant at the 0.01 level.*

Direct Effects

The results of path analysis of the aforementioned structural equation model are summarized in **Figure 3** and **Table 4**, and the conclusions of each hypothesis can be obtained. In **Table 5**, statistically significant (p-values), *T-Value*, standard error and path coefficients (β) are presented. These values provide good basis to decide the acceptance or rejection of a hypothesis. The results in **Figure 3** and **Table 4** show that both direct relationships are statistically significant had support for the positive effects of BAA on IPB and ECBR. The path from BAA to IPB is used as Hypothesis 1. The value of path coefficients (β) and p-value of the path from BAA to IPB are 0.246 and <0.001, respectively. The p-value is below 0.05 and path coefficient is positive, which is indicating that the BAA has significant impact on IPB. Therefore, Hypothesis 1 is being accepted. Another path was developed to check the impact of BAA on ECBR. Hypothesis 2 was designed to show second relation. The path coefficient and p-value for Hypothesis 2 are 0.1190 and <0.001, respectively, which shows that path is statistically significant at 5% level of significance. Similarly, Hypothesis 2 has been supported.

Direct, Indirect, and Total Effects

We also have discussed earlier that the study tests indirect relations along with the direct paths. Similarly, to explore the mediating relations, one mediation hypotheses was proposed. The hypothesis was proposed to check the mediation effects of ECBR on BAA and IPB. The estimated results from mediation testing are presented in **Table 5**. The results for the mediation of ECBR in the impact of BAA on IPB have indicated that the path coefficient and p-value are 0.051 and <0.01, respectively. The p-value is below 0.05. Hence, Hypothesis 3 has been accepted. It has been already stated and confirmed that BAA

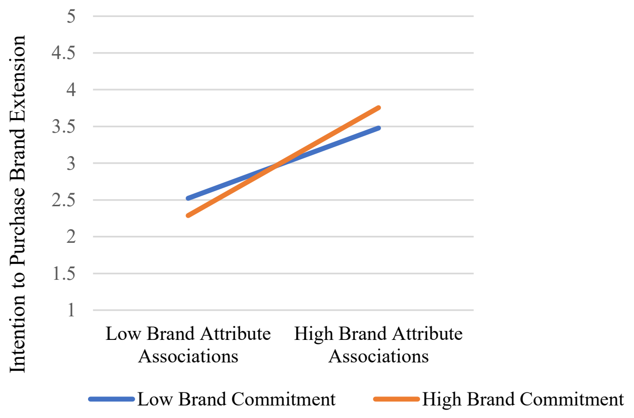

FIGURE 4 | Moderating effects of BC.

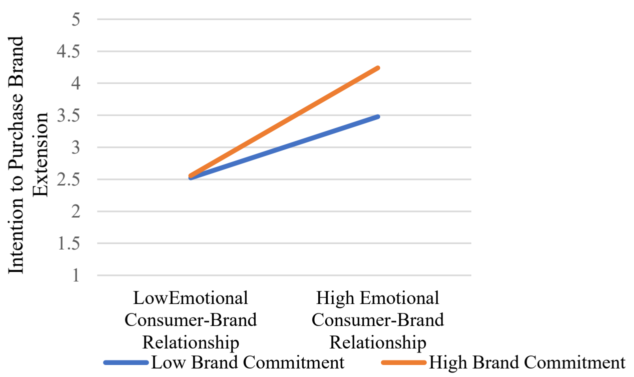

FIGURE 5 | Moderating effects of BC.

has direct positive effect on IPB. Consequently, it can be said that the mediation is partial mediation. Similarly, it can be concluded that ECBR partially mediates the relationship between BAA and IPB.

Moderating Effects of Brand Commitment

For H4, to test the moderating effects of Brand Commitment, we added the interactions between BAA and BC in the model. The findings of H4 predicts that the higher the BC, the higher is the effect of BAA on IPB. The results of moderating analysis in **Figure 4** and **Table 3** reveal a positive and significant interaction effect between BAA and BC on IPB ($\beta = 0.253$, $p < 0.01$), which indicates that BC strengthens the positive effects of BAA on IPB. Next for H5, to test the moderating effects of Brand Commitment in the relationship between ECBR and IPB, we added the interactions between ECBR and BC in the model. The findings reveal that the higher the BC, the higher is the effect of ECBR on IPB. The results of moderating analysis in **Figure 5** and **Table 3** showed a positive and significant interaction effect between ECBR and BC on IPB ($\beta = 0.364$, $p < 0.01$), which indicates that BC strengthens the positive effects of ECBR on IPB.

DISCUSSION AND IMPLICATIONS

The purpose of this study was to determine whether brand managers might achieve desired outcomes, such as increasing people's likelihood to purchase a product from a luxury brand, by strengthening the relationship between brand attribute associations and E-CBRs. The study employed SEM to demonstrate that E-CBR had a significant effect on people's want to purchase an extension of a luxury brand, as well as a significant effect on the relationship between brand attribute associations and desire to purchase the extension. This study established a link between customers' attribute associations with a luxury brand and their emotional attachment to that brand which is parallel with the previous study of Ahn et al. (2018) and contradicted with the findings of prior study of Jacob et al. (2020). This synergy is what motivates consumers to purchase the brand's new items, demonstrating how critical it is to leverage people's beliefs and knowledge about the brand to help them develop emotional relationships with it. According to Piehler (2018), brand commitment also influences whether individuals want to purchase an extension of a luxury brand and an extension of ECBR.

Theoretical Implications

Theoretically, this study provides an intensive knowledge of the association that exists between the intent to buy luxury brands' extension and E-CBR. This study demystifies the impact of brand attributes (uniqueness, prestigious values, and brand image) and relational factors (brand self-identification and brand love) on the intent to buy luxurious brand extensions. According to this study, consumers use salient cognitive memories and schemas associated with luxury brands and emotional bonds formed with brands to decide on whether to buy brand extensions or not. This study focuses on the heart versus mind distinction, which is integral to the research on the relationship between consumers and brands. The heart represents affective and emotional aspects of the brand-customer relationship, while the mind is all about the cognitive dimensions. Both emotional and cognitive aspects influence the intention to buy luxury brand extensions by operating separately and interdependently in formulating purchase behavior (Ahn et al., 2018).

Besides, this study attempted to create an in-depth theoretical interpretation of the interaction amongst emotional consumer-brand relationships and the intention to buy luxury brands' extension. In that connection, the study develops a new approach to defining the emotional bonds existing between luxury brands and customers. The new concept integrated all relations aspects of brand self-identification, brand passion, brand love and brand attachment (Chen and Qasim, 2021). Besides, this study contributed to the existing limited literature on conceptualization of brand interactions or appraisals of such relationships when determining how they influence brand extensions. This was through assessing how ECBR affects the intent to buy luxury brands' extensions (Tong et al., 2018). Most importantly, the study contributes to the limited current knowledge on emotional and cognitive connections existing between consumers in China and their preferred luxury brands.

The study generally creates an in-depth perception of the connection between brand attributes and ECBRs. It contributes to the current literature by combining various important emotional and cognitive elements to form one framework. This study also suggests that developing consumer emotions to brands comes from the cognitive relationship's consumers have in their minds. The study adds on the existing knowledge regarding the significance of establishing and creating intangible brand attributes interactions that transform perceptions to consumer-brand interactions.

Besides this study confirming that brand commitment moderates the interaction between intention to buy luxury brands' extensions and brand attribute associations, it also acknowledges that perceived fit facilitates the transfer of perceptions and attitudes from the main brand to its extensions. This study's findings offer specific theoretical implications to categories whereby brand's hedonic and unique attributes include important advantages of consumption related to luxury brands. According to this study, brand commitment can extend to luxury brand extensions. But this research failed to highlight the moderating effect caused brand commitment when it comes to the relationship between the intent to buy luxury brands' extensions and ECBR. According to the study, the categorization of brand extensions does not enhance how ECBRs affect the intention to purchase. Therefore, consumers' emotional bonds with brands influence their intent to buy brand extensions regardless of the existing commitment.

Managerial Implications

This study provides several crucial managerial implications. It appreciates the significant role displayed by brand attribute associations alongside its impact on ECBRs development. It is fair to conclude that more focus should be directed to showcasing the emotional and hedonic characteristics of a brand to create a lasting emotional bond with customers. Together with strong symbolic attributes, brand image, prestigious and unique qualities, emotional bonds can influence the intent to buy luxury brand extensions (Prados-Pena and Del Barrio-García, 2021). A strong connection between the parent brand and its extensions positively influences the development of an emotional bond with a brand. Customers need to be constantly told about the unique and prestigious factors of a parent company in order to decide whether to buy the brand's extension or not (Tsai et al., 2020).

Besides, the study provides empirical evidence on the relationship between brand attribute association and ECBR and their impact on the intent to buy luxury brand extensions. In that connection, brand managers need to use strategies that enhance the bond between emotional and cognitive factors customers associate with a particular brand. Luxury brand managers ought to balance emotionality and rationality to create and capitalize on unique associations with customers. For example, these managers must showcase through adverts the exceptional qualities of the brand while providing rational arguments intended to assist customers in deciding on whether to buy luxury brand extensions.

The study also confirmed the influence ECBR has on the intent to buy luxury brand extensions is not reliant on the existing brand commitment. Therefore, brand managers have an opportunity to capitalize on emotional bonds with their customers to bypass the challenges that emanate from unfit or dissimilar brand extensions. So, to reap from the booming luxury market in China, luxury brand managers must consider putting the brands in various categories instead of common or traditional products to create and maintain emotional attachments with consumers in China. From a general perspective, this study provides luxury brand managers with insight about the growing and under-exploited Chinese market. Findings from the current study are relevant luxury brand managers who want to explore this market.

LIMITATIONS AND RECOMMENDATIONS

The current research comes with some limitations that can form a basis for further studies. The conceptual framework only focuses on one important variable: the intent to buy luxury brand extensions. There need to be further studies on other pertinent outcomes such as brand loyalty and positive WOM. Besides, the study is only limited to brand commitment to be the moderator. Further studies need to put into consideration other dimensions such product innovation and extension direction. In the sample, most respondents consisted of young luxury brand customers from China. Even though this study highlights several crucial trends in the constantly growing market, future studies need to look at the various cultural contexts and comparison with older generations. The study capitalized on data collected from targeted retailers of luxury brands, specifically those with high status. Therefore, future studies need to also put into consideration the location of the store. Besides, this study capitalized on mock-up extensions in regards to the choice of the brand extensions. In future studies, actual brands may be used, followed by an evaluation of the brand extensions. Lastly, due to the unique luxury brands' characteristics, the model of research should draw a comparison in a low involvement setting to determine if similar theoretical links will occur and the impact on the intent to buy brand extensions.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

Both authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.884673/full#supplementary-material

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EDITED BY
Debora Bettiga,
Politecnico di Milano, Italy

REVIEWED BY
Iffat Aksar,
Xiamen University Malaysia, Malaysia
Rebecca Katherine Britt,
University of Alabama, United States

*CORRESPONDENCE
Tianqi Zhang
834729233@qq.com

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The effect of blind box product uncertainty on consumers' purchase intention: The mediating role of perceived value and the moderating role of purchase intention

Yi Zhang and Tianqi Zhang*

School of Economics and Management, Shanghai Institute of Technology, Shanghai, China

As the younger generation, who like to pursue novelty and excitement, becomes the main consumer and the traditional consumption culture changes in China, the blind box has become a popular product among young people with its uncertain characteristics. Previous studies have mainly explored the role of uncertainty in promotion, while this paper focuses on the role of uncertainty in daily sales of blind box products. Based on the stimulus–organism–response (SOR) theory, this paper conducted an online questionnaire survey and an empirical analysis in China, which examined the mechanism of the positive impact of uncertainty and the moderating effect of consumption purpose. The results show that uncertainty affects consumers' purchase intention mainly through affecting their emotional value, which is one dimension of perceived value; consumer purpose also moderates the effect of uncertainty on perceived value, and the effect of perceived value on purchase intention. The results of this study are not only of great significance for understanding the uncertain marketing and blind box products, but also have management implications for enterprises to make use of the uncertain marketing.

KEYWORDS

blind box, uncertainty, perceived value, purchase intention, customers purpose

Introduction

According to Ali Research, China's older generation (over 35 years) spent $1.9 trillion, while the new generation (18–35 years) spent $1.5 trillion in 2016. China's older generation (over 35 years) consumed US $2.4 trillion, while the new generation (18–35 years) consumed US $2.6 trillion in 2020. From 2016 to 2020, the consumption of young consumers increased by 73%. Meanwhile, the consumption of young consumers has surpassed the consumption of those over 35 years old to become the main consumption force by 2020. Compared with their parents, post-90s consumers have greatly improved material conditions, which makes them have more personalized consumer demands, preferring novelty and stimulation (Wang and Zhou, 2021). Therefore, blind boxes have become popular products among young people with their uncertain characteristics.

The concept of the blind box originated in Japan. It refers to a closed, opaque small box with the same exterior packaging and built-in dolls of different styles. In China, blind boxes mainly include dolls, such as Molly and Pucky, as well as animation and film co-branded blind boxes, such as Toy Story and Disney. In recent years, due to the blind box enterprises represented by POP MART regularly launching exquisite and diverse products, offline automatic box pumping machines are all over major shopping malls, which makes blind boxes popular among young consumers with their features of exquisite design and high uncertainty. There is solid evidence that the blind box has become the most popular product in the fashion consumption of the Chinese young generation. According to the "List of post-95 players hands-chopping" released by Tmall, among the most "expensive" hobbies of "post-95," garage kit ranked the top, among which blind box became the field with the fastest-growing number of players. According to research data, the market size of the blind box industry in China is expected to reach 25 billion yuan in 2025 (Zeng, 2021). The popularity of blind boxes lies in the word "blind," that is, uncertainty (Yan and Wu, 2021).

However, traditional research generally believes that consumers tend to pursue certainty rather than uncertainty. In addition, traditional Chinese culture advocates objecting to extravagance and praising austerity, so consumers will make more cautious choices in consumption and tend to avoid risks (Zhou, 2013). Therefore, many academic studies have focused on reducing or eliminating consumers' perceptions of uncertainty. For example, Taobao sellers reduce consumers' perceived uncertainty through online communication and buyer evaluation (Zhang and Liu, 2010), which can reduce the commodity return rate by reducing uncertainty (Matt and Hess, 2016). Brand reduces perceived uncertainty through brand community, so as to increase customer fit and brand loyalty (Fan and Chai, 2017).

Recently, the positive effects of uncertainty have received increasing attention. Goldsmith and Amir (2010) believe that taking uncertainty into account in marketing is a method to reduce marketing costs and maintain consumers' interest, which has a good marketing effect. Shen et al. (2015) argued that people would invest more time, money, and energy to obtain uncertain rewards. Based on the positive emotion theory, Lee and Qiu (2009) proposed that when consumers face an uncertainty related to a positive event, they will experience greater and more lasting positive emotions. Shou and Zheng (2017) sorted out nearly 20 years of research on uncertain promotion and paid attention to the positive role of uncertain betting games in service recovery (Shou et al., 2022). In practice, an increasing number of enterprises begin to make use of uncertain marketing, For example, online merchants provide uncertain freebies to increase customers' happiness (Zhang et al., 2021); the emergence and popularity of blind box and its derivative products (Yan and Wu, 2021).

Although some scholars have discussed the positive effect of uncertainty on consumers' purchases, most of the above literature focuses on the design of uncertain gifts or promotional activities, while the blind box, in which the uncertainty factor itself is the selling point, does not involve gifts and promotional activities. Due to the explosion of blind boxes in China, the existing relevant studies are all in China, while most of the existing studies on the blind box by Chinese scholars are from a qualitative perspective, studying the consumption mentality, emotional needs, and cultural behaviors of blind box players (Wang and Zhou, 2021; Zeng, 2021). Quantitative studies have explored the impact of different components of customer experience on blind box repeat purchases (Yan and Wu, 2021). There is no clear answer on how uncertainty affects consumer purchase. As a new fashion toy, why does the uncertainty of blind boxes appeal to consumers? What kind of experience does uncertainty bring to consumers? How do these experiences affect consumer decision-making? There are no clear answers to these questions.

Based on the existing research, this paper uses a questionnaire survey to conduct empirical research that explores the influencing factors of uncertainty driving consumers to buy blind boxes, focusing on the mediating role of perceived value between uncertainty and blind box purchase intention. The results contribute to a better understanding of the positive effects of uncertainty and blind box products.

Literature review

The positive effects of uncertainty

Some scholars have studied the mechanism of uncertainty marketing, in which summarized theoretical basis mainly includes positive emotion, information gap theory, uncertainty resolution, and innate optimism theory.

First, uncertainty priming induces a higher arousal state, which increases physiological arousal, which in turn makes people experience their emotions more intensely (Ruan et al., 2018). Positive uncertain events have been found to be imagination-provoking to the point that it is more likely to obtain and maintain positive emotions (Lee and Qiu, 2009). Meanwhile, Ketelaar et al. (2018) believes that positive uncertainty increases consumers' positive feelings when evaluating products, especially for high-level products, so that consumers can imagine and speculate on potential enthusiasm. When uncertainty is related to positive events, consumers may prefer to choose uncertain products and services (Lee and Qiu, 2009). For example, people will have higher expectations when the movie trailer they watched is uncertain about the specific content and the ending compared to when it is certain (Wilson et al., 2005).

Second, the information gap theory holds that there will be an information gap between the known information of a person and the unknown and desired information, which leads to a strong desire for information (Loewenstein, 1994). For example, ambiguous advertisements will make consumers desire complete information, arousing curiosity, and attracting more attention (Daume and Hüttl-Maack, 2019).

Furthermore, according to the information gap theory, Hsee and Ruan (2016) proposed the uncertainty resolution theory, which holds the view that human beings are born with an inherent desire to solve uncertainty. Even if the content expectation is negative, people may feel temporarily relaxed when solving uncertainty. For example, in advertising marketing, compared with receiving all information at the same time, consumers who receive partial missing information and then obtain complete information will have a better enjoyment experience (Ketelaar et al., 2018). In research on the mechanism of uncertainty reinforcement repetition, Shen et al. (2019) believed that uncertainty resolution is a psychological reward, which can be regarded as positive reinforcement.

Furthermore, the innate optimism theory suggests that many people subconsciously perceive themselves as lucky, estimating outcomes optimistically. Based on this theory, Ailawadi et al. (2014) concluded that in the face of uncertain promotion, people will think that the probability of favorable results is greater, so uncertain marketing has a better effect; Goldsmith and Amir (2010) found that consumers choose free mystery rewards (as opposed to known rewards) because they are too optimistic about the nature of free gifts.

Finally, customers' purchase purpose and product type also influence the effect of uncertain marketing. Laran and Tsiros (2013) believed that when an emotional purchase is involved, more attention has been paid to experience and emotional factors, and thus, it is more likely that customers express greater interest and motivation toward uncertain marketing. When it comes to cognitive purchase, more clear and detailed information should be provided to make decisions, and thus, it is more likely that customers prefer deterministic factors. At the same time, Goldsmith and Amir (2010) proves that different categories of commodities will affect consumer focus, which leads to the difference in attitude and behavior. When the target product is practical, consumers will consider the product itself more and pay more attention to the certainty information when making decisions; while when the product is hedonic, consumers will consider more emotional factors when making decisions, and uncertainty is more likely to play a positive role.

Chinese scholars Shou and Zheng (2017) summarized the information gap theory, positive emotion theory, and innate optimism theory when sorting out uncertain promotion strategies and also recognized the influence of customers' purchase purpose and product type. Positive emotion theory is the most widely used in uncertainty application research. Yan and Wu (2021), when studying the effect of blind box purchase customer experience on customer happiness, verified that unpredictability would produce positive emotions such as curiosity and adventure, thus bringing customer happiness according to the positive emotion theory. Shou et al. (2022) believe that uncertain betting games can bring positive emotional experiences, such as surprise, feeling of winning, and a sense of fun, and can hedge customers' negative emotional experiences in service failure to a certain extent and improve customer satisfaction, so as to realize service recovery. Jin and Wang (2019) summarized the theoretical basis of rewarding uncertain utility through information gap theory, positive emotion theory, and optimism theory when analyzing the influence of game elements on consumer engagement behavior.

Perceived value

Perceived value refers to "consumers' overall evaluation of product utility, which is based on consumers' perception of benefits and sacrifices of products" (Sheth et al., 1991). A large number of consumer studies have shown that perceived value is the key factor that directly affects customers' purchase intention. Customer perceived value can be divided into many dimensions, and different scholars put forward different dividing ideas according to their research background. Sheth et al. divided perceived value into five levels, including functional value, social value, emotional value, conditional value, and epistemic value, and believed that functional value was the decisive factor in consumer decision-making (Sheth et al., 1991). When studying the factors influencing online consumers' purchasing decisions, Li et al. (2017) divided perceived value into product perceived value, social perceived value, and service perceived value. By analyzing the determinants of perceived value, Liu (2008) divided it into functional value, emotional value, and social value. Based on the interview data and online comments, this paper summarizes the features of blind boxes, such as the novelty of appearance, excitement, and sociability, and refers to the last classification basis.

Stimulus–organism–response theory

Mehrabian and Russell (1974) proposed the SOR (stimulus–organism–response) theory, which holds that the environment, as a stimulus, will cause emotional changes and ultimately affect individual behaviors. SOR theory has been widely used in the research of consumer behavior. Among them, "stimulus" refers to various environmental factors affecting customer cognition; "organism" refers to customer perception (cognition, emotion, etc.); "response" includes customer purchase, recommendation, adoption, and other behaviors (Uzzi, 1996). For example, in the online shopping environment, uncertain factors (S) such as online shopping platforms and commodity information will affect consumers' internal perception (O) of online shops and commodities, and ultimately, affect their decision-making (R) (Sevgin et al., 2003). From the perspective of reducing uncertainty, Kaur et al. (2017) regarded brand familiarity and supplier brand reputation as stimuli (S), which could influence trust and attitude (O) and ultimately purchase intention. According to the information gap theory, uncertainty, as an external environment, can arouse individual behavior (Loewenstein, 1994). Negative uncertainty may cause psychological discomfort, anxiety, and other emotions, while positive uncertainty may generate more challenges and excitement, as well as create imagination space for customers and lead to more positive emotions (Lee and Qiu, 2009). Therefore, this paper considers uncertainty as a stimulus in the blind box purchase scenario, which will further affect consumers' internal perception.

Zeithaml (1988) believed that perceived value is a subjective judgment made by users in the process of purchasing products or enjoying services. Therefore, many researchers regarded perceived value as an organism. For example, Li Chuang et al. (2021) believed that consumption promotion policies (S) of new energy vehicles would affect the perceived value and perceived risk (O), and ultimately affect purchase intention (R); Chopdar and Balakrishnan (2020) used perceived value and impulsivity as an organism in exploring the drivers of buyback intention and satisfaction experience in the mobile commerce shopping environment (O). In the blind box purchase scenario, perceived value can also appropriately reflect the impact of uncertainty on consumers, which made us choose it as an organism (O). Consumers with high perceived value will make further purchases. Based on the above analysis, this paper selects the SOR theory as the theoretical framework, the uncertainty as an antecedent variable, perceived value as an intermediary variable, purchase intention as the outcome variable, and purpose of consumption as the moderating variable between uncertainty and perceived value; and perceived value and purchase intention, to explore the internal mechanism of uncertainty affecting blind box purchase intention.

Research hypotheses and conceptual models

Uncertainty, functional value, and purchase intention

The information abundance of products will have an important impact on the experience and further affect customers' judgment of perceived value (Chen and Dubinsky, 2003). Duan et al. (2012) also hold that perceived risk has a negative impact on perceived value. In the process of blind box purchase, due to the uncertainty caused by the opaque packaging, the product visual information and quality information cannot be directly displayed in front of consumers, which makes it difficult for consumers to judge whether the style of personalized products is suitable for themselves and doubt the reliability of products; therefore, it will have a negative impact on the functional value of the product.

Functional value refers to the perceived utility of a product from practicality, utility, or physical ability (Sheth et al., 1991). Traditional research believes that this is the original intention of consumers to make purchase decisions. In this study, the beautiful and personalized product design of the blind box reflects the functional value. Product visual information can establish the first impression of products to consumers, and with the homogenization of product attributes and the intensification of market competition, product appearance novelty has become an important means of differentiation (Talke et al., 2017). The visual stimulation of "beauty" will activate the reward center in the brain, thus affecting people's judgment and decision-making (Mugge et al., 2017). Therefore, the aesthetic experience obtained by consumers from vision will affect their behavior, such as showing off aesthetic products, cherishing products more, and being more willing to buy (Yan and Wu, 2021). A blind box is usually a cartoon image or cartoon character designed by a well-known designer. Its exquisite design will make consumers desire to buy it the moment they see the picture on an online platform or the outer package of the blind box. Based on the above discussion, the following hypothesis is proposed:

H1a: Uncertainty has a negative effect on functional value.
H2a: Functional value positively affects purchase intention.

Uncertainty, emotional value, and purchase intention

Emotional value refers to the satisfaction consumers get in emotional experience while enjoying products and services (Sheth et al., 1991). The uncertainty of the blind box will promote consumers to generate positive emotions and emotional value.

More and more studies have found that uncertainty is a state of arousal, which can arouse consumers' curiosity (Loewenstein, 1994) and imagination space (Lee and Qiu, 2009). At the same time, it brings positive experiences such as surprise (Laran and Tsiros, 2013), excitement, and stimulation (Lee and Qiu, 2009). On the one hand, curiosity is a state of information deprivation. When deprivation is solved, people will experience a happy sense of relief (Loewenstein, 1994); on the other hand, curiosity is a sense of interest, which is more consistent with the concept of positive emotion (Ruan et al., 2018). In addition, curious consumers understand that uncertainty will be solved soon, resulting in positive expectations. In fact, people can get a pleasant experience of uncertainty resolution at the moment of uncertainty resolution (Shen et al., 2019). The opaque packaging of the blind box will arouse the curiosity of players. In addition, the blind box merchants usually display the specific design of each product on the online platform. When consumers see the beautifully designed pictures, they will have imagination space and further generate positive emotions, such as expectation and excitement.

Positive emotions are extremely important to customer satisfaction and customer purchase (Laran and Tsiros, 2013). Consumers mainly make shopping decisions through rational thinking and emotional experience, that is, the descriptive attribute information of the product and the subjective emotional feelings related to the product are the basis for consumers to make purchase decisions (Iyer et al., 2019), while the uncertain priming increases the impact of emotional input on consumers' judgment and decision-making, making consumers pay more attention to the emotional attributes of the product (Faraji-Rad and Pham, 2017). In addition, the mere state of uncertainty can stimulate hedonic consumption to some extent (Rauwolf et al., 2021). Based on the above discussion, the following hypotheses are proposed:

H1b: Uncertainty has a positive effect on emotional value.
H2b: Emotional value positively influences purchase intention.

Uncertainty, social value, and purchase intention

Social value focuses on improving consumers' sense of gain at the social level (Sheth et al., 1991). Blind box uncertain gameplay can bring to the player social value (Yan and Wu, 2021).

According to the uncertainty resolution theory, players can solve the uncertainty after opening the box as a psychological reward (Shen et al., 2019). Different types of rewards can strengthen promotion and innovation, thus generating and creating a kind of behavior repetition (Koo and Fishbach, 2010). Different purchasing experiences of players will lead to differences in sharing intentions. The reward of uncertainty resolution will increase the positive experience of sharers and further promote sharing. Furthermore, due to the stimulation and interest in uncertain rewards, customers' willingness to recommend uncertain rewards is higher than that under specific rewards (Wang et al., 2018). In addition, the common interests, preferences, and pursuit of certain values of consumers are the bridges of social interaction. Players connect originally isolated individuals through the common love of uncertainty pumping. In the process of players' close interaction, a large number of highly valuable product information will also be generated, and the dissemination and sharing of such information will affect consumers' shopping behaviors (Wang and Ping, 2012). Based on the above discussion, the following hypotheses are proposed:

H1c: Uncertainty has a positive impact on social value.
H2c: Social value positively influences purchase intention.

The moderating effect of consumption purpose

In this paper, consumption objectives are divided into pursuit process and pursuit result (Shen et al., 2015). When people pursue a process, positive experience is crucial, and thus, it is possible that completion and emotional enrichment increase motivation (Fishbach and Choi, 2012). In contrast, when people pay more attention to the results and have a corresponding expectation of returns, they will be more cautious, and thus, it is possible that profitability and negative impact are the core of action evaluation (Hsee and Rottenstreich, 2004). Specifically in a blind box purchase, that is, process-oriented blind box buyers enjoy the experience of coming out and unpacking blind boxes, enjoying the challenge, excitement, and excitement of uncertainty. Therefore, uncertainty has a greater positive impact on emotional value as well as emotional value has a greater impact on purchase intention. At the same time, blind box buyers who pursue results may have a strong purpose for a certain doll because they like the appearance and design of the doll or want to collect all the dolls. Therefore, uncertainty has a greater negative impact on the functional value as well as the functional value has a greater impact on the purchase intention.

Considering that blind box consumers have the above two different consumption purposes, the following hypotheses are proposed:

H3a: Consumption purpose regulates the relationship between uncertainty and functional value, that is, compared with consumers pursuing process, uncertainty has a greater negative effect on functional value.
H3b: Consumption purpose regulates the relationship between uncertainty and emotional value, that is, compared with consumers pursuing results and consumers pursuing process, uncertainty has a less positive effect on emotional value.
H3c: Consumption purpose regulates the relationship between uncertainty and social value, that is, compared

with consumers pursuing results and consumers pursuing process, uncertainty has a less positive effect on social value.

H4a: Consumption purpose regulates the relationship between functional value and purchase intention, that is, functional value has a greater positive effect on purchase intention than consumers pursuing results and process.
H4b: Consumption purpose regulates the relationship between emotional value and purchase intention, that is, compared with consumers pursuing results and consumers pursuing process, emotional value has a less positive effect on purchase intention.
H4c: Consumption purpose regulates the relationship between social value and purchase intention, that is, compared with consumers pursuing results and consumers pursuing process, social value has a less positive effect on purchase intention.

See **Figure 1** for the specific model.

Research design

Variable measurement

In this study, the antecedent variable is uncertainty; the mediating variable is the three dimensions of perceived value: functional value, emotional value, and social value; the dependent variable is purchase intention; and the moderating variable is consumption purpose. Among them, uncertainty is adapted from the measurement scale proposed by Zhang and Liu (2010), including three items. Perceived value refers to the scale of Sweeney and Soutar (2001) and is adapted according to the comments of players in the blind box community, POP MART WeChat official account, and other channels. Functional value, emotional value, and social value all have three or more items. Purchase intention refers to the viewpoint of Dodds et al. (1991), with a total of four items. Consumption purpose is divided into process-oriented and results-oriented (Shen et al., 2015).

Research process and data collection

This study designed the questionnaire through the questionnaire star. Since the study focused on the role of uncertainty in blind box consumption, we required all the participants to have experience in blind box purchase. The questionnaire was released in the blind box exchange WeChat group, the blind box player QQ group, Xianyu blind box community, the Douban POP MART group, and other domestic blind box communities, which have a great many blind box players. To further confirm that every respondent has blind box consumption experience, the first question of the questionnaire is designed as "do you have blind box purchase experience," and only those who fill in "yes" can continue to answer the following questions. A total of 407 questionnaires were collected, and a total of 375 valid questionnaires were obtained, with effective recovery of 92.1%, excluding those with too short response time and obvious response regularity. In terms of sample characteristics, there are more female samples; most of the age groups are 18–25 years old. The education level is mainly undergraduate and junior college students; the monthly income of more than 5,000 yuan accounted for 46.9%. Specific sample characteristics are shown in **Table 1**.

Data analysis results

Reliability and validity analysis

Cronbach's α coefficient was used to evaluate the reliability of the scale. Cronbach's α coefficient of each latent variable was between 0.793 and 0.863, which was higher than 0.7; the

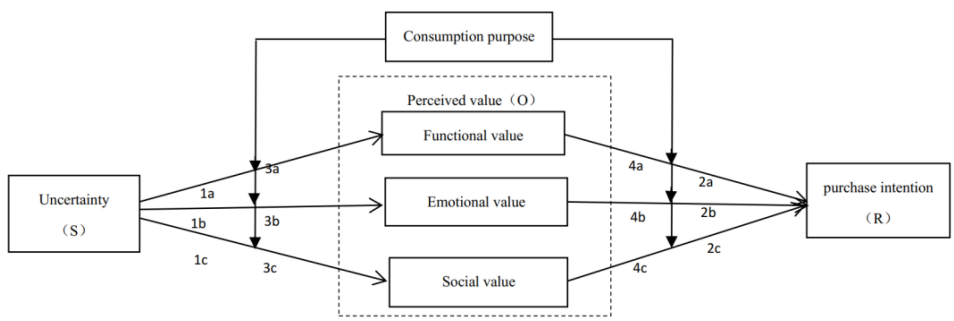

FIGURE 1
Hypothetical model.

TABLE 1 Sample overview (*N* = 375).

Variable	Category	Percentage (%)	Variable	Category	Percentage (%)
Gender	Male	35.7	Education degree	High school and below	2.9
	Female	64.0		Junior college	25.1
Age	<18	1.6		Undergraduate	65.9
	18–25	58.4		Master degree or above	6.1
	26–30	34.7	Monthly income	<2,000¥	12.3
	31–35	4.5		2,000–5,000¥	34.7
	>35	0.8		50,001–10,000¥	46.9
				>10,000¥	6.1

combined reliability CR ranged from 0.797 to 0.863, both higher than the baseline of 0.7; the AVE ranged from 0.522 to 0.631, both higher than the baseline of 0.5. This indicates the reliability of the measurement scale in this study, as shown in Table 2.

The discriminant validity test is conducted by comparing the correlation coefficients between the square root of the latent variable AVE and the latent variable, as shown in Table 3. According to Table 3, the AVE square root of latent variables is greater than the correlation coefficients between latent variables, indicating that the scale has good discriminant validity.

Structural model checking

In this study, Amos26.0 software was used to analyze the data of the research model. The results are shown in Table 4.

As shown in Table 4, uncertainty was negatively correlated with functional value ($\beta = -0.259$, $P < 0.001$), and positively correlated with emotional value ($\beta = 0.443$, $P < 0.001$) and social value ($\beta = 0.339$, $P < 0.001$). Hypotheses 1a, 1b, and 1c are supported. Functional value ($\beta = 0.286$, $P < 0.001$), emotional value ($\beta = 0.392$, $P < 0.001$), and social value ($\beta = 0.290$, $P < 0.001$) all had significant positive effects on customers' purchase intention, among which, emotional value had the greatest influence on customers' purchase intention. Hypotheses 2a, 2b, and 2c are all supported. In addition, the structural validity test indexes in the model all reached the standard, indicating that the data fit well with the theoretical model.

Mediating effect test of the perceived value

Taking uncertainty as the independent variable, purchase intention as the dependent variable, and perceived value as the intermediary variable, using the process compiled by Hayes, 5,000 bootstrap times, 95% confidence interval, model 4 is selected for mediating effect test. The results show that (Table 5) the direct predictive effect of uncertainty on purchase intention is not significant ($\beta = 0.0335$, $t = 0.6413$, $P > 0.05$), indicating that the path coefficient between uncertainty and purchase intention is not significant in the direct effect model, and the perceived value fully mediates the impact of uncertainty on purchase intention.

With the addition of perceived value variables, uncertainty has a significant negative predictive effect on functional value

TABLE 2 Reliability and validity analysis result.

Latent variable	Item	Factor load
	Before opening the blind box, I can't judge the specific style of the product	0.768
Uncertainty α = 0.833	Before opening the blind box, I'm not sure whether the goods meet the expectations	0.868
CR = 0.836 AVE = 0.631	Before I open the blind box, I can't be sure whether the goods are as expected	0.742
Functional value	The blind box has a beautiful appearance	0.751
α = 0.793	The blind box is exquisitely designed	0.740
CR = 0.836 AVE = 0.567	The quality of the blind box is very good	0.768
Emotional value	I enjoy the process of drawing the blind box	0.727
α = 0.864	Buying a blind box can bring me happiness	0.748
CR = 0.863 AVE = 0.560	I was looking forward to the process of extracting the blind box	0.755
Social value	Buying a blind box can strengthen my communication with my friends	0.718
α = 0.812	Buying blind boxes allows me to meet new friends	0.696
CR = 0.813	Buying a blind box shows my unique personality	0.737
AVE = 0.522	The blind box has become a bridge between me and other blind box players	0.737
Purchase intention	I will buy a blind box	0.726
α = 0.838	I will buy the blind box again	0.794
CR = 0.840	I look forward to buying the blind box again	0.788
AVE = 0.567	I am happy to recommend blind boxes to my friends	0.701

TABLE 3 Discriminant validity analysis result.

	Uncertainty	Functional value	Emotional value	Social value	Purchase intention
Uncertainty	0.794				
Functional value	−0.259	0.753			
Emotional value	0.443	−0.115	0.748		
Social value	0.339	−0.088	−0.150	0.722	
Purchase intention	0.198	0.216	0.403	0.323	0.753

(β = – 0.2282, t = 4.471, $P < 0.01$), while it has a significant positive predictive effect on emotional value(β = 0.002, t = 5.3735, $P < 0.01$) and social value (β = 0.3637, t = 7.5304, $P < 0.01$). Hypotheses 1a, 1b, and 1c are verified again. Functional value (β = 0.2243, t = 4.7678, $P < 0.01$), emotional value(β = 0.3178, t = 6.376, $P < 0.01$), and social value (β = 0.2336, t = 4.9222, $P < 0.01$) has a significant positive predictive effect on purchase intention, which verifies hypotheses 2a, 2b, and 2c again.

The percentile bootstrap method with deviation correction is used to further test the mediation effect. The 95% confidence interval of various effects is estimated by taking 5,000 bootstrap samples. If the confidence interval does not contain 0, the mediation effect is significant. The analysis results of intermediary effect show that the prediction effect of uncertainty on purchase intention is significant (β = 0.185, SE = 0.059, $P < 0.01$), and the 95% confidence interval is [0.0683,0.301]; the direct prediction effect is not significant (β = 0.0384, SE = 0.060, $P > 0.05$), 95% confidence interval [0.061,0.231]; the total mediating effect was significant (β = 0.146, SE = 0.043, $P < 0.01$), 95% confidence interval [−0.079,0.156]; the effect of each intermediary path is also significant. As shown in Table 6, the intermediary effect accounts for 79.2% of the total predicted effect. The above results show that functional value, emotional value, and social value play multiple mediating roles between uncertainty and purchase intention.

TABLE 4 Path test of the model.

	Standardized coefficients	SE	CR	Hypothesis
Uncertainty → Functional value	−0.259***	0.077	−4.096	Support
Uncertainty → Emotional value	0.443***	0.077	7.046	Support
Uncertainty → Social value	0.339***	0.076	5.317	Support
Functional value → Purchase intention	0.286***	0.057	4.749	Support
Emotional value → Purchase intention	0.392***	0.059	6.367	Support
Social value → Purchase intention	0.290***	0.059	4.799	Support

X^2/df = 1.370, GFI = 0.948, AGFI = 0.932, NFI = 0.934, RMSEA = 0.031. ***indicates $P < 0.001$.

The moderating effect of consumption purpose test: A multi-group analysis

To test the moderating effect of consumer intent, the overall sample was divided into pursuit process (N = 208) and pursuit outcome (N = 167), and Amos26.0 was used for multi-group analysis. There are three models: unconstrained model, measurement weight model, and structural weights model. By comparing the fit of different models, the unconstrained model was identified as a multi-group analysis model in this paper, and the fit indexes of this model were $X^{2/}df$ = 1.530, GFI = 0.878, AGFI = 0.862, NFI = 0.881, RMSEA = 0.038. The results show that different consumption purpose groups have a good fit for the conceptual model. The difference test of the first two models shows that there is no significant difference in the model as a whole (ΔX^2 (14) = 19.061, $P = 0.16 > 0.05$), indicating that there is no significant difference in different grouping models, and multi-group analysis can be performed on the original model. The chi-square values of the unconstrained model and the measurement coefficient model are compared, and it is found that the chi-square values of the two models are significantly different (ΔX^2 (20) = 44.013, $P = 0.001 < 0.05$), indicating that the path coefficients of structural equation models of different consumption target groups are significantly different. To further test the moderating effect, the CR index was used to compare the regression coefficients of consumers with different consumption objectives on the structural path. The results of the multi-group analysis are shown in Table 7.

As can be seen from Table 5, the negative effect of uncertainty on functional value and the positive effect of functional value on purchase intention is moderated by customer consumption. Hypotheses 3a and 4a are all supported. For process-oriented consumers, uncertainty has a stronger positive impact on emotional value, but this difference is not significant, hypothesis 3b does not support it. The reason may be that the customer who pays attention to the purpose can also experience the excitement and expectation brought by uncertainty in the process of box pumping.

TABLE 5 Mediating model test of perceived value.

	Functional value		Emotional value		Social value		Purchase intention	
Variable	**β**	***T***	**β**	***t***	**β**	***t***	**β**	***t***
Gender	0.036	0.723	−0.034	−0.709	0.998	0.658	−0.005	−0.109
Age	−0.027	−0.529	−0.091	−1.893	0.776	0.302	0.017	0.363
Uncertainty	−0.228	−4.471***	0.364	7.530***	0.002	5.374***	0.034	0.641
Functional value							0.224	4.768***
Emotional value							0.318	6.376***
Social value							0.234	4.922***
R^2	0.052		0.151		0.074		0.237	
F	6.838		22.021		9.839		19.066	

***Indicates $P < 0.001$.

The positive effect of emotional value on purchase intention is moderated by customer consumption. Hypothesis 4b is supported.

For consumers with different purposes, there is no significant difference in the coefficients of the two paths of the influence of uncertainty on social value and the influence of social value on purchase intention, and the moderating effect is not significant. Hypotheses 3c and 4c are not supported. The reason may be that in a blind box of consumption, regardless of whether to pursue a result, the player can share experiences, change kits, and harvest unexpected friendships.

Conclusion and implications

Conclusion

Uncertainty marketing is a way for enterprises to save marketing costs (Yan and Wu, 2021). Blind box, an emerging product favored by young people, has its core selling point of uncertainty. Understanding the positive role of uncertainty in blind box products can help enterprises better carry out marketing activities. This study examines the impact of uncertainty on blind box purchase intention from the perspective of perceived value, which is subdivided into functional value, emotional value, and social value. This study also discusses the moderating effect between uncertainty and perceived value, and between perceived value and customer purchase.

TABLE 6 Bootstrap analysis of mediation effect test.

Path	Effect	BootSE	BootLLCI	BootULCI
Total mediating effect	0.146	0.043	0.061	0.231
Uncertainty → Functional value → Purchase intention	−0.059	0.020	−0.102	−0.025
Uncertainty → Emotional value → Purchase intention	0.133	0.028	0.080	0.189
Uncertainty → Social value → Purchase intention	0.073	0.022	0.034	0.120

Our empirical data prove that perceived value plays a complete mediating role in the impact of uncertainty on purchase intention. Uncertainty has a significant negative impact on functional value and a significant positive impact on emotional and social values. Among them, uncertainty has the greatest impact on emotional value, which is consistent with the qualitative view of Zeng (2021) and Wang and Zhou (2021), but our study supplements empirical evidence. These results indicate that, in blind box consumption, uncertain gameplay mainly increases the emotional value of consumers, that is, curiosity, expectation, and satisfaction after the resolution of uncertainty in the process of box pumping, which affects the purchase intention of consumers. This also validates the views of Faraji-Rad and Pham (2017), who emphasize that the dependence of uncertainty on emotional input influences judgment and decision making. However, we further suggest that uncertainty not only increases dependence on emotional input but also increases emotional experience, which means that the effect of uncertainty is two-fold. The blind box of repeat purchase intention in the model, think social experience, unpredictable, and so on four factors together determine the blind box of repeat purchase intention (Yan and Wu, 2021). Uncertainty and social experience for the two variables are independent of each other, while in this paper, the conclusion shows that uncertainty has a positive influence on social value, which means the relationship between uncertainty and social experience is not independent.

When perceived value impacts purchase intention, the function value, emotional value, and social value significantly affect the blind box of purchase intention. Compared with functional value, emotional value and social value for a blind box of purchase intention were affected relatively stronger. This is inconsistent with the traditional conclusion of the influence

TABLE 7 Moderating effect of consumption purpose.

	Process-oriented	Results-oriented	Coefficient difference	CR critical ratio	Regulatory effect
	Standardized coefficients	Standardized coefficients			
Uncertainty → Functional value	−0.185*	−0.431***	0.246	−2.098	Significant
Uncertainty → Emotional value	0.555***	0.333***	0.222	−0.35	Not significant
Uncertainty → Social value	0.332***	0.331**	0.001	−0.058	Not significant
Functional value → Purchase intention	0.237**	0.461***	−0.224	−2.763	Significant
Emotional value → Purchase intention	0.636***	0.351***	0.285	2.211	Significant
Social value → Purchase intention	0.247***	0.286**	−0.039	0.846	Not significant

**Indicates $P < 0.01$, *indicates $P < 0.05$, ***indicates $P < 0.001$.

of perceived value on purchase intention, which holds the view that perceived functional value plays the most important role in customer purchase (Sheth et al., 1991; Zhu et al., 2017).

In addition, this study examines the moderating effect of consumption purpose on uncertainty and perceived value, and perceived value and purchase intention. Customer consumption purpose significantly adjusts the impact of uncertainty on functional value, the functional value on purchase intention, and emotional value on purchase intention, while the moderating effects between uncertainty and emotional value, uncertainty and social value, social value, and purchase intention are not significant. In other words, results-oriented consumers pay more attention to functional value. Therefore, uncertainty has a greater negative impact on functional value. The view that different consumption objectives lead to different effects of uncertain marketing has been verified in both international and domestic markets (Shen et al., 2015; Shou et al., 2022), our study again applied and verified this conclusion in specific products. In addition, no matter what purpose consumers buy blind boxes, uncertainty can bring emotional value and social experience. However, because results-oriented customers have a clearer goal orientation, emotional and social values cannot become the decisive factor for them to buy.

Implications

The conclusion of this paper has some enlightenment for academic research. First, this study is an important supplement to the application of uncertain marketing. Reducing consumer uncertainty is always the research focus, however, blind box as new products popular with young people; the uncertainty is the core factor to attract consumers to buy. Previous studies on the uncertainty of marketing focus on design promotion (Lee and Qiu, 2009; Laran and Tsiros, 2013; Shen et al., 2015), while the uncertainty in the blind box products is not involved in the promotion, but is a kind of daily sales. Taking blind box as the research object, this paper expands the positive effect theory of uncertainty in empirical research that verifies the explanatory power of perceived value on customer purchase. Second, this paper also expands the research on blind box products. Currently, most literature on the blind box is qualitative research (Wang and Zhou, 2021; Zeng, 2021). We provide new empirical evidence for blind box, an emerging hot product, to help us understand this new phenomenon. Finally, as the younger generation becomes the main consumer, we find new changes in the practical application of perceived value. Based on the importance of perceived value in marketing, this concept and its application have been repeatedly examined and deliberated by the academic community. According to Marshall's (1920) theory of "rational economic man," traditional research believes that functional value is the decisive factor influencing consumer purchase (Sheth et al., 1991), but the conclusion of this paper shows that for the younger generation of consumers, emotional value is gradually increasing in importance. Moreover, the drivers of perceived value are mostly analyzed from the perspective of profit and loss (Zeithaml, 1988). It is generally recognized that the driving factors of perceived value are mainly composed of deterministic factors such as product quality, service quality, and price (Parasuraman, 1997). Reducing profits and losses is also a way to improve perceived value, while the existence of uncertainty will undoubtedly make consumers unable to judge the real material of products, thus increasing profits and losses (Yang and Wang Yonggui, 2002). Contrary to the traditional view, our study concludes that uncertainty has a positive impact on perceived value, mainly due to the effect of uncertainty on emotion. Finally, Shen's (2015) study verified the direct effect of consumption purpose on uncertain purchases by means of experimental manipulation. We also referred to his study to use consumption as a moderator variable, but our study found new findings. Consumption purpose does not directly regulate the influence of uncertainty on purchase intention, but mediates the influence of uncertainty on functional value, the functional value on purchase intention, and emotional value on purchase intention.

The findings of the study have implications for enterprise marketing. The results reveal the new preferences and new characteristics of the young generation of consumers and provide enterprises with an in-depth understanding of how uncertainty affects consumers' purchase intention. First, according to the demographic characteristics of the blind box purchase samples, the buyers are mostly women, and the main age is between 18 and 25 years old. Enterprises can consider using the gender and age characteristics of consumers to segment the market when carrying out uncertain marketing. Second, research shows that in the blind box consumption,uncertainty mainly affects consumers emotional value, which is the key to deciding whether consumers purchase. Therefore, the enterprise when carrying on the uncertainty of marketing, should as far as possible to provide high quality, unique products, in order to enhance the consumers' positive emotion and imagination. For example, in advertising and marketing, advertisers can strategically reserve part of the information through screen design, story design, and other ways to create an information gap to give consumers imagination space. At the same time, enterprises should also design stories for products and give them more emotional value. Third, according to the adjustment effect of consumption purpose, more attention should be focused on the consumption process during uncertain marketing, so that customers can have a more participatory experience and strengthen the fun of participation, and consumers are allowed to invest their time, emotion, and energy to create emotional memories between consumers and products. Meanwhile, hedonic products combined with a blind box marketing design may be better. Moreover, product design is also important, and young consumers may buy products simply because they are "pretty."

Limitations

Although our findings have a certain significance, our current research still has some limitations. First, we focus on the impact of uncertainty on purchase intention in blind box products, without considering other product types and scenarios; then, in the course of our research, we found the positive impact of blind box uncertain gameplay on social value. The mechanism between them and the follow-up results after players' social sharing need to be studied.

Data availability statement

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

Both authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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EDITED BY
Debora Bettiga,
Politecnico di Milano, Italy

REVIEWED BY
Marion Garaus,
Modul University Vienna, Austria

*CORRESPONDENCE
Marco Bilucaglia
marco.bilucaglia@iulm.it

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From virtual reality to augmented reality: A neuromarketing perspective

Vincenzo Russo[1,2], Marco Bilucaglia[1,2]* and Margherita Zito[1,2]

[1]Department of Business, Law, Economics and Consumer Behaviour "Carlo A. Ricciardi", Università IULM, Milan, Italy, [2]Behavior and Brain Lab IULM, Neuromarketing Research Center, Università IULM, Milan, Italy

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Neuromarketing, virtual reality, and augmented reality in consumer behavior

Recent studies on consumer behaviors showed that the role of neuroscientific tools in increasing the knowledge of the neural mechanism is involved in the decision and emotional processes (Russo et al., 2022). Neuromarketing refers to the use of such tools in business practices, especially in advertising and marketing research (Ramsøy, 2019). It aims to overcome the limitations of the traditional methodologies by directly investigating emotional and cognitive reactions through electrophysiological and biometric measures (Karmarkar and Plassmann, 2019). In fact, traditional research uses self-report measures to investigate emotions, but this measurement is not sufficient to capture the complexity of the emotional experience since it is based on cognitive processes allowing to only investigate the conscious side of emotions (Micu and Plummer, 2010), and it is subjected to cognitive bias or social desirability (Missaglia et al., 2017). Neuroscience applied to consumer psychology can be crucial in understanding the role of advertising or other stimuli in the consumers' processing phases, wherein emotions can build meaning (Passyn and Sujan, 2006).

Nowadays, consumers' needs are not only related to the product/service as such but also to the associated buying experience that must be enchanting, captivating, and fascinating (Kazmi et al., 2021). Virtual Reality (VR) and Augmented Reality (AR) technologies represent suitable candidates, given their abilities to produce intense and enhanced experiences (Slater et al., 2020). In marketing, VR has been investigated in different areas, such as the product and offer perception (Grudzewski et al., 2018), the impact on B2B buyer perceptions (Boyd and Koles, 2019), the evaluation of brands, and how they can be perceived depending on the vividness effect of VR (Van Kerrebroeck et al., 2017), and the tourism sector with highlights for the tourism promotion (Adachi et al., 2020). In marketing, AR is considered "a strategic concept that integrates digital information or objects into the subject's perception of the physical world, often in combination with other media, to expose, articulate, or demonstrate consumer benefits to achieve organizational goals" (Rauschnabel et al., 2019, p.44). Thanks to 3D virtual objects or environments -most of which are interactive (Javornik, 2016a)–placed into the real scene, it enhances the user experience (Rauschnabel et al., 2022) and creates new ways to deliver information and show products (Huang and Liao, 2015).

In defining AR, scholars argue that it is somehow related to VR because of its immersivity: in both cases, users feel telepresence, namely, the sensation to be present in an environment that is real, with the possibility to respond, and control and act on the experience they are living (Steffen et al., 2019). VR scenarios are separated from the person (Preece et al., 2015), computer-generated, and depleted of elements belonging to the physical environment (Javornik, 2016a), while AR combines real objects with virtual elements (Rauschnabel et al., 2018, 2022) that match the physical environment in terms of real-time perception and interactivity (Javornik, 2016b; Rauschnabel et al., 2022). Beyond interactivity, which produces higher engagement (Esteban-Millat et al., 2014) and influences consumer responses (Gao et al., 2009), augmentation represents a key element in the AR since it redraws the physical reality (Preece et al., 2015). In the marketing field, augmentation applies to the person, the space, and the product. The augmentation of the person is applied in virtual fitting rooms, belonging to the field of the so-called virtual try-on. Also known as a virtual or magic mirror (Javornik et al., 2016), this type of augmentation is particularly used by cosmetic brands (Javornik, 2016a). The augmentation of the space can be found in the product placement or interior design areas, where virtual products can be placed in a real environment, giving consumers the idea of that placement (Jessen et al., 2020). Finally, the augmentation of products, based on interactive elements, provides additional information about real objects whose logo or QR code is scanned using smartphone apps (Do et al., 2020).

Even though VR and AR are similarly evolving in both the theoretical models and applicative examples (Loureiro et al., 2020), they still differ in popularity among consumer behavior researchers: only a few studies focused on AR (Javornik, 2016b; Kazmi et al., 2021), in contrast with the VR. Thus, focusing on AR emerged as crucial. This technology can be used to verify behavioral models related to the decision-making and the consumers' approach/avoidance experience (Loureiro et al., 2020), as well as to test predictive models for the consumer responses (Sundar et al., 2015). As technology augments the users' experience, it better supports their needs, influencing the whole experience and enhancing emotions linked to pleasure and arousal (Kourouthanassis et al., 2015). This would be functional to better capture the users' experience: understanding emotions, particularly in the precise moment in which they are felt, allowing them to understand the experimentation of a stimulus and the possibility that a message can influence the individuals' behavior (Donovan and Henley, 2003). Moreover, the technology usage has psychological implications since its interactivity can give a sense of control, or the personalization can flow into a sense of agency (Sundar et al., 2015), also boosting the brand image and the willingness to repeat the experience (Obada, 2013; Esteban-Millat et al., 2014).

Considering these elements, we argue the importance of deepening the role of AR in the emotional response of consumers to a product and to an experience that is closer to reality. Together with the mentioned engagement the combination of real objects with virtual elements matching the physical environment (Javornik, 2016b; Rauschnabel et al., 2022) and redrawing the physical reality (Preece et al., 2015), AR can be a precious element to investigate real-time consumers' experiences with neuromarketing technique. With regards to neuromarketing, although the context of VR has already been explored, AR neuromarketing is still underrepresented. Supplying this scarcity in the literature is important, as AR technology is applied more and more in different marketing fields. One example is in retail, where AR gives the augmentation of a product or a person (Rejeb et al., 2021), and beauty and cosmetics, where the use of magic mirrors provides recommendations for the makeup (Almeida et al., 2015), as well as the visual merchandising area, where augmented objects can be positioned in a real store (Jessen et al., 2020). In the e-commerce field, friendly shopping cart software can be used to boost the buying experience (Yaoyuneyong et al., 2014), similar to tourism, with tools for improving the immersion experience based on the augmentation of objects and environments, such as hotels rooms, restaurants, and museal contents (Siamionava et al., 2018). Finally, also healthcare marketing is adopting AR during the product evaluation (Renu, 2021).

Considering the characteristics of the associated media (Javornik, 2016a; Do et al., 2020), AR can be studied since they play a key role in measuring the impact of technology to the consumers, as well as in evaluating the interactions between human and technology (Li and Meshkova, 2013; Sundar et al., 2015). As argued by these studies, if at the beginning, AR was expensive and not fully accessible, now, technological development has cut the costs and made the use of AR within different devices possible. It can be embedded into fixed devices such as screens or mirrors, as well into mobile devices such as smartphones or wearable devices such as smart glasses (Yaoyuneyong et al., 2016; Rauschnabel et al., 2018, 2019). By creating an experience more immersive, enjoyable, and useful, AR technology can rise positive attitudes toward the used media, as shown, for instance, in the e-commerce field (Esteban-Millat et al., 2014; Yim et al., 2017).

Neuromarketing tools for virtual reality and augmented reality experience

As mentioned, the VR experience has already been investigated through neuromarketing techniques. A study by Uhm et al. (2019) suggested that subjects experimenting with a high sense of presence in a virtual environment show high arousal; a study by Ayata et al. (2017) tried to understand the consumers' behavior in a virtual supermarket; whereas a study by Ostrovskaya and Vives (2020) highlighted the importance of neuromarketing tools to capture users' preference while booking hotels rooms *via* VR experience. Considering the possibility of highly simulating the real environment through AR technology, it is important to also focus on neuromarketing tools to capture emotional responses in AR situations. This is particularly important as little has been done in AR with neuromarketing techniques, also with the understanding of the AR features in consumer behavior (Gill and Singh, 2022). As for the specific tools that were suggested to deepen research, the electromagnetic activity of the brain can be measured by electroencephalography (EEG) to assess, on a moment-to-moment basis, the brain changes related to memory activation, interest, or engagement (Zito et al., 2021a). Some tools record non-brain activity, such as eye tracking, which is mainly used to assess visual salience and exploration patterns, giving indications of attention (Russo et al., 2021). In addition, by measuring the pupil diameter, the eye-tracker provides information on emotional arousal and cognitive workload (Bilucaglia et al., 2019). Skin conductance is used to detect physiological activation: when arousal occurs, an increase in sweat secretion dealing with an increase in skin conductance is observed (Zito et al., 2021b). Heart rate, which reflects both the sympathetic and parasympathetic branches of the autonomous nervous system, can predict various cognitive and emotional states, such as engagement, attention, and emotional valence (Barraza et al., 2015). Finally, facial coding is used to measure, through human expressions, the experimented feelings. Based on Eckman's studies, this technique can detect the emotional impact of stimuli by the evaluation of unobservable micro-muscle changes (Stasi et al., 2018).

It is important to consider the nature of AR and the exposure to specific visual stimuli that could engage but also ask for an effort of adaptation that can change the human's sensitivity and sensorial perception (Baldassi et al., 2018). Therefore, neuromarketing emerges as an important element in the consumer responses to AR investigation. Neuromarketing studies could benefit from the AR technology as a new way to deliver marketing stimuli to investigate the emotional and cognitive impacts of augmented products, such as augmented food packages or augmented brand logos. In addition to different buying behaviors (e.g., perceived value, likelihood to purchase), novel eye-tracking patterns, as well as memorization, attention, and engagement values, are expected.

Neuromarketing tools have been already used within the immersive VR technology through devices applied to the head and the hands to record consumers' responses and changes in muscle control over a long time. This was possible since VR involves the sensorimotor system more than other stimuli, with the potential of increased realistic psychological and behavioral responses (Bohil et al., 2011). Recent studies in the Brain-Computer Interfaces tested the EEG technology in the VR field, with the aim to produce a more immersive experience for the subjects, through highly interactive and imaginative situations. This procedure is also to be applied to AR technology through applications that are able to give biofeedback from brain and body signals (Cardin et al., 2016; Loureiro et al., 2020).

Discussion

This article aimed to focus on the importance of deepening the role of AR in the emotional response of consumers to a product and an experience through specific tools, such as neuromarketing techniques, considering that AR could be closer to reality than other simulated situations. If VR has already been investigated, AR should be deepened by scholars, researchers, and companies for them to offer reliable answers on consumer behavior in augmented situations.

These considerations can be useful in tracing a roadmap for future research in the neuromarketing and AR fields. Neuromarketing studies could include AR as an alternative experimental environment, while AR could consider the benefits of the neuromarketing tools (Alimardani and Kaba, 2021).

Augmented Reality technologies will directly mediate the interaction between the brain and the real world, as well as the effort in adaptation and perception of risks, including cognition, memory, and decision-making (Baldassi et al., 2018). In this sense, neuromarketing tools could prevent these risks by monitoring brain and physiological signals, which can undermine the consumers' health and decision-making process. AR has the potential to create a world similar to reality, in which consumers can experiment with objects, self-augmentation, and different spaces, allowing brands to show how to use, enjoy, and engage with products. This is also functional to fully understand consumers' responses, through the measure of their emotions. To do this, understanding what influences the interaction between consumers and technology is crucial. This should consider both the possibility to control these responses through biofeedback detection and the usage and users' emotional response to a specific media applied to AR (o VR) technology. This is functional and essential to plan and combine AR technology with the right product and media to offer a real and enjoyable experience that consumers will repeat, dealing with consumers' needs to associate an experience with the product.

Author contributions

VR, MB, and MZ wrote the first draft and each section of the manuscript, contributed to the manuscript's final writing and revision, read, and approved the submitted version. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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EDITED BY
Omneya Yacout,
Alexandria University, Egypt

REVIEWED BY
Carla Mouro,
University Institute of Lisbon (ISCTE), Portugal
Passent Tantawi,
Arab Academy for Science, Technology & Maritime Transport (AASTMT), Egypt

*CORRESPONDENCE
Rouven Doran
rouven.doran@uib.no

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Comparing the motivational underpinnings of sustainable consumption across contexts using a scenario-based approach

Rouven Doran[1]*, Simen Bø[1,2] and Daniel Hanss[3]

[1]Department of Psychosocial Science, University of Bergen, Bergen, Norway, [2]Department of Strategy and Management, Norwegian School of Economics, Bergen, Norway, [3]Department of Social Sciences, Darmstadt University of Applied Sciences, Darmstadt, Germany

A sample of tourists (N = 780) responded to a survey addressing purchasing intentions and consumption motives in relation to buying sustainable groceries at a local food market. These intentions and motives were contrasted for two consumption contexts: on vacation vs. at home. An initial analysis of the data indicated that self-reported purchasing intentions were weaker for a vacation scenario than for a home scenario. Further analyses suggested that motives associated with purchasing intentions were not universal between contexts. At home, normative motives (i.e., good conscience) were positively associated with intentions, whereas other motives failed to explain significant variance (i.e., value for money, calm and safe, avoid boredom, pleasure, and good impression). On vacation, associations with intentions followed a similar pattern, except for the finding that hedonic motives (i.e., pleasure) added explanatory variance. Despite the increased importance of hedonic motives on vacation compared to at home, normative motives showed the strongest association with purchasing intentions in both consumption contexts. The findings are discussed with reference to the literature on contextual discrepancies in environmental behavior, while noting possible implications for promoting sustainable consumption among tourists.

KEYWORDS

home, vacation, consumption motives, purchasing behavior, sustainable tourism

Introduction

The tourism sector is associated with a range of environmental and sociocultural changes, in addition to having impacts on the economy, especially in developing countries (Rutty et al., 2015). This becomes evident, for instance, when considering that the sector stands for a non-neglectable share of global greenhouse gas (GHG) emissions. More specifically, the volume of sectorial emissions has been approximated to 8% of the global GHG emissions, part of which can be attributed to activities resulting from and relating to individual consumption (Lenzen et al., 2018). While this makes these activities a potential target to keep emission growth within bounds, some scholars have argued that those who are worn out from mitigative efforts in their everyday life could be prone to rebound effects once they are on vacation (Hall et al., 2013). It is because of this that understanding the reasons for why individual consumers could hesitate to show the same level of engagement across contexts promises to yield important insights for policy strategies and behavioral interventions that seek to promote sustainable forms of tourism.

With respect to consumption decisions that take place after people have arrived at their destination, the reasons for diverting from everyday life can be as manifold as the motivations for which people choose to travel in the first place.[1] Some consumers may choose the cheapest available option because it leaves room in their remaining travel budget, others may prefer products that provide a pleasant experience such as through the consumption of luxurious food, some may end up choosing a product based on the desire to escape the boredom of their regular shopping routines back home, and yet others may opt for an option that adheres to sustainable development goals. This study focuses on the latter and draws upon psychological literature that delineates motives that could drive decisions favoring products with sustainability attributes; see Steg and Nordlund (2019) for an overview of theories commonly used to explain environmental behavior.

Literature review

The effort a person may invest to protect the environment in everyday life rarely accounts for their respective activities as tourists. Dolnicar and Grün (2009) surveyed a sample of tourists about their environmentally friendly behaviors across different contexts. Only a relatively small share of their sample showed the same behaviors on vacation as at home (e.g., purchases of refillable or reusable products, recycling of newspapers or cans). And related to this, the participants provided plenty of reasons (e.g., that they would spend most time at home). MacInnes et al. (2022) echoed these findings in the sense that a large share of their sample diverted from regular environmental engagement they normally displayed at home. Reasons that were provided by the participants for not displaying environmentally friendly behaviors on vacation varied in specific cases; for instance, experienced time pressure was mentioned as a reason for not eating leftovers but not in the context of avoiding heating. This complements some broader scholarly debate addressing contextual spill-over of environmentally friendly behaviors, including various aspects of sustainable consumption (Nash et al., 2017; Frezza et al., 2019).

Goal-framing theory (Lindenberg and Steg, 2007) asserts that the manner in which people select, process, and act upon available information depends on the relative strength of three overarching goals. These are described as hedonic goals (such as the perceived pleasantness of the target behavior), gain goals (such as the efficient use of disposable personal resources), and normative goals (such as the perceived appropriateness of the target behavior). While multiple goals may operate at the same time, it is the one that is most focal in the situation at hand that will exceed the greatest influence on behavioral decisions, whilst others may still remain influential in the background (Lindenberg and Steg, 2007). For instance, the physical presence of another person who picks sustainable groceries instead of conventional alternatives may underline the social acceptability of this behavior, which by extension would increase the relative impact of normative goals on individual purchasing decisions. In addition to individual value endorsements that could lead people to pay increased attention to certain behavioral alternatives, the focal strength of each goal can differ based on situational cues (Steg et al., 2014, 2016).

This theoretical perspective has been employed in several empirical studies seeking to understand individual differences in consumer behavior. Tang et al. (2020) investigated whether motives derived from the three overarching goals are associated with behaviors such as the purchasing of eco-labeled products, water conservation, and paper recycling. Their results showed that the anticipation of positive emotions (corresponding to the hedonic goal) and the desire to do what is deemed appropriate (corresponding to the normative goal) both explained variation in the propensity to engage in these behaviors. Cost-benefit calculations (corresponding to the gain goal) were unrelated to the behaviors. Thøgersen and Alfinito (2020) tested the effects of a goal framing manipulation on the importance of product attributes for a choice between organic and non-organic food. A normative goal frame increased the tendency to choose organic food, whereas a hedonic goal frame increased the importance of the physical appearance of the food on people's preferences. These findings complement other literature that has employed a goal framing approach to understand individual consumption patterns (Chakraborty et al., 2017; Onel and Mukherjee, 2017; Shin and Kang, 2021; see also Barbopoulos and Johansson, 2016, for a related discussion).

When it comes to empirical studies that have explored the role of these motives for understanding tourism activities in particular, there has been a focus on hotel guests. Miao and Wei (2013) found that routine behaviors, such as switching off the lights, were shown less often in hotel rooms compared to what was regular at home. While normative considerations showed the strongest association with the investigated behaviors in a household context, the same behaviors in a hotel context

1 For a further discussion on the literature on tourist motivation, see Heitmann (2011) and Dann (2018).

were most strongly associated with hedonic considerations. Miao and Wei (2016) reported evidence to suggest that non-environmental aspects like time or effort can be linked to environmental behavior in hotels, again highlighting the role of hedonism in understanding tourism activities. Rodriguez–Sanchez et al. (2020) reported that hedonic motives (e.g., personal comfort) were negatively associated with water conservation during a hotel stay, whereas a positive association was reported for normative motives (e.g., felt obligation). And again, the association with conservation efforts turned out to be stronger for hedonic motives than for normative motives.

Research aims

A contextual emphasis on relaxation and enjoyment has been suggested as an explanation for why people may show less environmental behavior during their vacation compared to if they are at home (Dolnicar et al., 2019). The reviewed literature supports this view insofar that an increased focus on personal comfort can be associated with reduced efforts to conserve resources in hotels. One issue that deserves further attention is whether these observations can be generalized toward the activities by tourists at large, for instance when they are shopping for groceries. If the assumption holds that the fulfillment of personal needs becomes especially salient on vacation, the situational focus on hedonic motives can have implications for a wider range of consumption-related activities.[2] In the following, we report an empirical study that tests this claim, based on scenarios in which participants were asked to imagine buying groceries at a local food market. Several studies have pointed to the importance of food in shaping consumer experiences in tourism, especially when it is locally produced (Björk and Kauppinen-Räisänen, 2016; Birch and Memery, 2020).

Materials and methods

Participants

Participants were recruited among tourists who were visiting the city of Bergen (Norway) during the holiday (summer) season, N = 780, 18–91 years, M_{age} = 41.97, SD_{age} = 16.09. Data was collected at a vantage point near the city center, which provides a scenic overview of the city and the surrounding area. This site was chosen since it typically attracts visitors from a large variety of backgrounds, as well as with different modes of traveling. Research assistants approached potential respondents directly at the site, asking if they were currently on vacation. In the case of an affirmative response, the research assistants asked whether they would be willing to fill out a questionnaire addressing different facets of their experiences as tourists. Participation was voluntary, and without financial incentive. Female respondents (54.4%) were slightly more represented in comparison to male respondents (45.6%). For more details on the socio-demographic characteristics of the sample, including participants' last night accommodation, see **Table 1**.

Procedures

Each participant filled out a paper-and-pen questionnaire. To enable us to test whether the motivational underpinning

TABLE 1 Sample profile.

	n	%
Gender		
Female	424	54.4
Male	356	45.6
Age		
18–24	120	15.4
25–34	205	26.3
35–44	108	13.8
45–54	139	17.8
55–64	124	15.9
≥ 65	84	10.8
Accommodation[a]		
Camping facility	82	10.5
Private pension	39	5.0
HI hostel	17	2.2
Hotel	255	32.7
Cruise ship	161	20.6
Not specified	222	28.5
Continent[b]		
Europe	546	70.0
North America	134	17.2
South America	18	2.3
Oceania	22	2.8
Asia	54	6.9
Africa	1	0.1
Tourist type		
International	743	95.3
Domestic	28	3.6

Percentages of responses within each category (separated by empty rows) do not always add up to 100 due to missing values (n = 4 for accommodation, n = 5 for continent, n = 9 for tourist type).
[a]Participants reported on their last night accommodation.
[b]Participants reported on their current place of residence.

2 While one can think of several examples in which environmental engagement may infringe upon personal needs, the focus on pleasure seeking can make these tensions even more salient when people are on vacation (Dolnicar et al., 2008).

of intentions to buy sustainable groceries differs between contexts, participants filled out the measures of the target variables after having been asked to imagine visiting a local food market in a home scenario vs. a vacation scenario. Using imagined scenarios compared to standard questions helps to make the situations more concrete and approximate of real-life situations (Alexander and Becker, 1978). While the study assesses cross-sectional associations between consumption motives and purchasing intentions, a repeated measures design was employed to examine possible differences in associative patterns across consumption contexts. The sequence in which items pertaining to either one of the two scenarios were presented in the questionnaire was counterbalanced between participants to account for possible order effects. An overview of means and standard deviations for each context scenario can be found in **Table 2**.

Measures

Consumption motives were measured with seven items adopted from the Consumer Motivation Scale (CMS; Barbopoulos and Johansson, 2017a,b). Each item captured a unique motive and asked respondents how important this motive was to them personally (answer scale: 1 = Not at all important, 7 = Extremely important). The seven motives each related to one of three goals: The gain goal (motives: value for money, fulfills expectations, calm and safe), the hedonic goal (motives: avoid boredom, pleasure), and the normative goal (motives: good conscience, good impression). Items were introduced as follows: "Imagine that you are visiting a local food market that offers a wide range of products. These products differ in many ways including their environmental and social impacts etc. How important are the following aspects . . . [. . . when you are at home? . . . when you are on vacation?]".

Purchasing intentions were assessed with four items, each concerned with the likelihood to which participants would purchase grocery products with different sustainability attributes (answer scale: 1 = Very unlikely, 5 = Very likely). This selection of attributes (recyclable, fair trade, ecological, and bought directly from the farmer) was informed by prior research indicating that environmental and social aspects are common in consumers' concept of sustainable groceries (Hanss and Böhm, 2012). Items were introduced as follows: "Imagine the same situation as described above, namely that you are visiting a local food market that offers a wide range of products. How likely is it that you make the following choices . . . [. . . when you are at home? . . . when you are on vacation?]". Purchasing intentions were analyzed with composite scores that reflected average scores across the four items, computed separately for the home scenario ($\alpha = 0.77$, $M = 3.72$, $SD = 0.91$) and the vacation scenario ($\alpha = 0.80$, $M = 3.34$, $SD = 0.97$).

Results

Figure 1 shows mean differences in self-reported purchasing intentions, plotted separately for each sustainability attribute. A dependent *t*-test based on the composite scores of purchasing intentions yielded significant mean differences. More precisely,

TABLE 2 Means and standard deviations for item measures.

	Home			Vacation		
	n	*M*	*SD*	*n*	*M*	*SD*
Purchasing intentions (1 = Very unlikely, 7 = Very likely)						
When I buy wrapped food, I will make sure that the wrapping can be recycled.	749	3.77	1.21	754	3.33	1.26
When I buy fruits and vegetables and have the choice between ecological and conventional products, I will buy ecological products.	746	3.87	1.10	755	3.48	1.19
When I buy food and have the choice, I will buy products that guarantee fair payment to the producers.	748	3.92	1.03	755	3.59	1.15
When I buy fruits and vegetables, I will go to a farmers' market or a similar place where I can buy directly from the farmer.	749	3.35	1.31	758	2.99	1.30
Consumption motives (1 = Not at all important, 7 = Extremely important)						
Value for money: I should get a lot for the price I pay[a]	744	5.34	1.23	755	4.70	1.29
Fulfills expectations: the product should fulfill even my highest requirements and expectations[a]	741	5.53	1.07	749	5.21	1.10
Calm and safe: the product should make me feel calm and safe[a]	732	5.24	1.46	744	5.18	1.50
Avoid boredom: It is important that the product is not too boring or routine[a]	732	4.60	1.54	739	5.20	1.54
Pleasure: the product should be pleasant and agreeable[a]	727	5.49	1.14	738	5.65	1.10
Good conscience: the product should give me a good conscience[a]	732	5.51	1.25	743	5.29	1.31
Good impression: the product should make a good impression on people who are important to me[a]	736	4.55	1.82	745	4.57	1.86

This table summarizes means and standard deviations for items measuring purchasing intentions and consumption motives. Note that for consumption motives, the questionnaire displayed the first words of each item (e.g., "Value for money") in boldface. The sequence in which items regarding each consumption context were presented in the questionnaire was counterbalanced; for more details, see "Materials and methods" section. [a]Adopted from Barbopoulos and Johansson, 2017a,b.

participants were on average more likely to intend purchasing sustainable groceries at a food market when being at home than when being on vacation [$t(746) = 16.21$, $p < 0.001$, $d = 0.41$].

Figure 2 depicts mean differences in self-reported consumption motives, shown separately for each motive category. A series of dependent *t*-tests (Bonferroni corrected) indicated that perceived importance of specific consumption motives differed between the imagined scenarios. In connection with the vacation scenario, participants were less likely to emphasize gain motives such as value for money [$t(735) = -12.89$, $p < 0.001$, $d = -0.52$] and that the purchase would fulfill expectations [$t(730) = -7.61$, $p < 0.001$, $d = -0.29$]. They also put less emphasis on normative motives in the form of having a good conscience [$t(724) = -7.14$, $p < 0.001$, $d = -0.17$]. Participants were in the meantime more likely to consider hedonic motives such as avoiding boredom [$t(720) = 10.44$, $p < 0.001$, $d = 0.39$] and seeking pleasure [$t(717) = 4.84$, $p < 0.001$, $d = 0.15$], when they considered consumption at a local food market on vacation compared to at home. Two additional motives that were labeled as calm and safe [$t(722) = -1.80$, $p = 0.073$, $d = -0.04$] and good impression [$t(725) = 0.04$, $p = 0.970$, $d = 0.00$] did not differ in their perceived importance between the context scenarios.

Table 3 juxtaposes results from two multiple regression analyses to investigate the predictive value of different consumption motives for choosing sustainable groceries on vacation vs. at home.[3] Results indicate that having a good conscience (as a normative motive) was significantly and positively associated with intentions to make sustainable purchases, both at home and on vacation. However, pleasure (as a hedonic motive) showed differential associations. It was significantly and negatively associated with intentions to buy sustainable groceries on vacation, but not significantly associated with purchasing intentions in the home scenario. The remaining consumption motives failed to show any significant associations with purchasing intentions, irrespective of whether consumption decisions were imagined as taking place at home or on vacation.

Discussion

Tourism comprises the "activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes" (UNWTO, 1995, p. 1). Many images in popular culture portray these activities in connection with beach resorts, yet these descriptions fall short in capturing the complexity of tourism as a socio-cultural phenomenon. Some individuals may decide to go on vacation primarily because they look for comfort and relaxation, others could book a weekend trip to a foreign city in the anticipation of experiencing cultures that are different from their own, and yet others may be driven by the desire to reunite with family and friends during the holiday season. These examples illustrate that the motives that drive people to travel away from home, and by extension the type of experiences that they seek from related consumption decisions, can be quite heterogenous (see Heitmann, 2011; Dann, 2018).

These activities—despite their heterogeneity—can provide a means by which people can break out from the boundaries that are imposed on them in everyday life. This becomes reflected in the desire for an interim escape from regular routines and responsibilities, along with the wish to encounter positive experiences whilst being at the destination, both of which are traditionally viewed as core motivations for why people travel away from home (Dann, 1977; Iso-Ahola, 1982). The reported analyses support this view by showing that motives for boredom avoidance and pleasure seeking were more pronounced in the vacation scenario than in the home scenario, accompanied with a reduced emphasis on motives like having a good conscience when imagining a local food market visit as tourists. Taken together, these results support the notion that tourism constitutes a context where the subjective importance assigned to specific motives tends to differ from everyday life.

It is a core premise in goal-framing theory that cues supporting hedonic and/or gain goals can push normative goals into the cognitive background, which for the latter implies less influence on behavioral decisions (Lindenberg and Steg, 2007). Drawing upon this theoretical insight, the current study explored if an assumed situational focus on hedonism can account for some of the contextual variation in consumption-related activities. The specific assumption was that when a person operates within their regular context (at home) and the pursuit of pleasure gets relatively less emphasized, features associated with shopping in public, like the physical presence of other consumers, can resonate well with normative considerations regarding the need to preserve the environment. If the same person acts outside this context (on vacation) and the seeking of aggregable experiences becomes increasingly important, however, the relevance of normative considerations might be lessened. Despite evidence that the individual motivation for (not) behaving environmentally friendly may indeed differ from context to context (Miao and Wei, 2013), it is only recently that scholars have employed this perspective to understand food consumption during vacation (Liu et al., 2022).

There was one consumption motive that showed a negative significant association with product purchases when

3 To further scrutinize the identified patterns of associations, we reran the statistical analyses with participants' last night accommodation as a covariate, using contrast coding with hotels as the baseline. Results were remarkably similar to those reported here. For reasons of parsimony, this paper only reports on the analyses that exclusively incorporated measures addressing different consumption motives to explain individual differences in purchasing intentions.

FIGURE 1
Purchasing intentions when visiting a local food market, compared between contexts (answer scale: 1 = Very unlikely, 5 = Very likely). Mean differences (diamonds) are shown with 95% confidence intervals (bars). A positive value indicates that the likelihood to purchase sustainable products was rated higher in the vacation scenario than in the home scenario, a negative value indicates that it was rated lower.

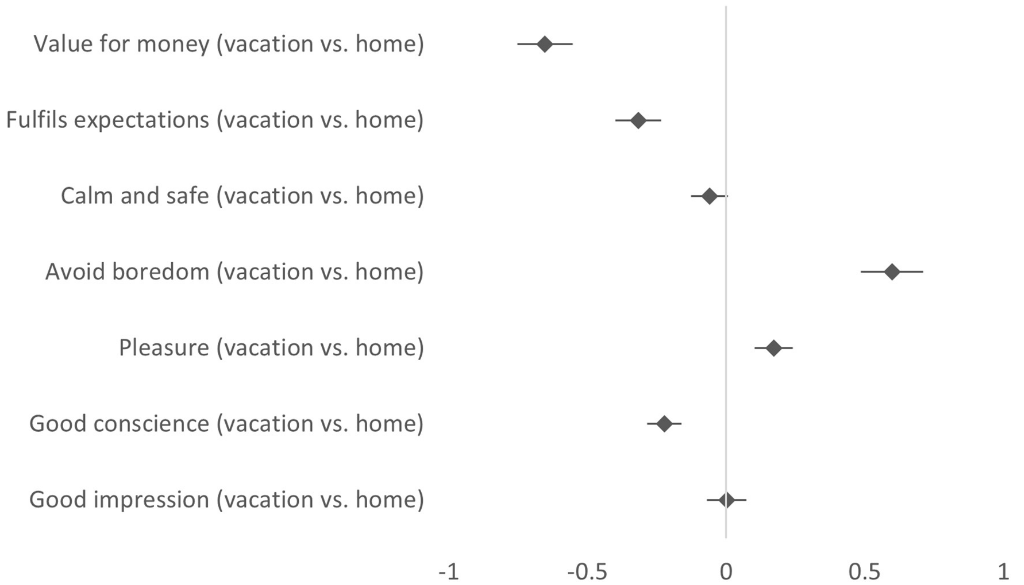

FIGURE 2
Consumption motives when visiting a local food market, compared between contexts (answer scale: 1 = Not at all important, 7 = Extremely important). Mean differences (diamonds) are shown with 95% confidence intervals (bars). A positive value indicates that the importance of the motive was rated stronger in the vacation scenario than in the home scenario, a negative value indicates that it was rated weaker.

participants were asked to imagine visiting a local food market on vacation: the more participants regarded the pleasantness and agreeableness of a product as important, the less likely were they to choose sustainable groceries in this scenario. However, and contrary to our initial assumption, the predictive value of this hedonic motive continued to be comparatively lower than that for the normative motive of having a good conscience. The latter was also the only consumption motive showing a

TABLE 3 Multiple regressions predicting purchasing intentions from consumption motives.

	Home			Vacation		
	B	95% CI	*β*	*B*	95% CI	*β*
Constant	2.61	[2.17, 3.05]		2.09	[1.65, 2.54]	
Gain motives						
Value for money	−0.04	[−0.10, 0.02]	−0.05	0.02	[−0.03, 0.08]	0.03
Fulfills expectations	0.05	[−0.02, 0.13]	0.06	0.04	[−0.04, 0.11]	0.04
Calm and safe	0.02	[−0.03, 0.07]	0.03	0.03	[−0.02, 0.08]	0.04
Hedonic motives						
Avoid boredom	0.01	[−0.04, 0.06]	0.01	−0.01	[−0.06, 0.04]	−0.01
Pleasure	−0.05	[−0.12, 0.02]	−0.06	−0.09	[−0.17, −0.02]	−0.11*
Normative motives						
Good conscience	0.21	[0.15, 0.27]	0.29***	0.22	[0.16, 0.28]	0.30***
Good impression	0.00	[−0.04, 0.04]	−0.01	0.04	[0.00, 0.08]	0.07
R^2	0.09			0.11		
R^2_{Adjusted}	0.08			0.11		
F		(7, 686) = 9.46***			(7, 702) = 12.94***	

Listwise deletion. $N = 694$ for home scenario, $N = 710$ for vacation scenario. CI, confidence interval for unstandardized regression coefficients (*B*). $^*p < 0.05$ and $^{***}p < 0.001$.

consistent significant association with purchasing intentions, regardless of where these decisions were imagined taking place. While the results support the view that a situational focus on personal comfort may constrain environmentally friendly behavior, they do not corroborate prior studies in which this particular motive outperformed normative considerations as a predictor for conservation efforts among hotel guests (Miao and Wei, 2016; Rodriguez–Sanchez et al., 2020).

In sum, the current findings would seem to suggest that signaling the importance of behaving responsibly as a consumer could be a strategy to motivate purchases of products with sustainability attributes across contexts. This can be done, for instance, by means of persuasive messages that express gratitude toward grocery shoppers for doing their part in supporting the environment (e.g., reusing their plastic bags; De Groot et al., 2013). If the context is such that hedonic motives increase in their importance, as it has been demonstrated in the scenario that involved making product choices on vacation, accentuating the personal gains resulting from these choices may be of additional benefit. Along appeals toward a person's sense of responsibility to take action that serves society at large, campaigners could stress areas where lower environmental impacts potentially enhance the quality of one's own tourist experience. An example could be to market certain qualities of the product itself, such as for instance the opportunity to experience the unique taste from locally produced food at the destination. This interpretation follows the idea that, in addition to strengthening the salience of normative goals, resolving conflicts with hedonic or gain goals can provide an alternative route to promote environmental behavior (Steg et al., 2014, 2016).

Since the identified motives explained only a small fraction of the variance in each regression model, there is room to speculate about other factors that may determine individual differences in dietary habits and food preferences (for an overview and discussion, see Vermeir et al., 2020). Including a broader selection of possible determinants would yield a more robust assessment of the comparative importance of hedonic and normative motives, both within and across different consumption contexts. It might be particularly worth looking at the role of non-psychological aspects, such as the availability or price of the product itself. This should ideally be supplemented with measures on perceived barriers, which, in combination to the intentions assessed in this study, may help to better predict sustainable purchases. The available literature has identified a variety of reasons for which consumers may not act on their intentions to buy local food, for instance, including but not limited to a lack of trust (Birch and Memery, 2020).

Limitations

The following issues remain to be addressed by future studies. First, each participant was approached at the same destination, which may have introduced a sampling bias as specific destinations may be particularly appealing to a certain visitor profile. Replications that comprise visitors at other destinations are warranted to test if the identified associations remain robust. Second, the questionnaire asked participants to imagine the scenario of visiting a local food market at home vs. on vacation. While there are cases in which mental simulation can substitute for actual experience in terms of having similar cognitive and behavioral effects (Kappes and Morewedge, 2016), the presented scenario may have less experimental realism than measuring behavior while participants are physically at each respective location (Morales et al., 2017). Third, the data was collected prior to the outbreak of the COVID-19 pandemic, which has disrupted consumption patterns and tourism activities in many countries. Some research indicates, for instance, that there has been an increased emphasis on utilitarian motivations in consumer decisions in response to the crisis (Vázquez-Martínez et al., 2021). At this point, it remains unclear how different motives for consumption may have changed with regards to tourism activities that take place during the pandemic, and if that should be the case, to what extent these changes continue to persist.

Conclusion

It is known that people employ various justifications to explain their reduced environmental engagement when they are away from home, such as for instance by emphasizing that holidays are an exception (Juvan and Dolnicar, 2014; Juvan et al., 2016). Rather than focusing on how people attempt to make sense of their behavior in retrospect, the present study compared intentions to purchase sustainable groceries at a local food market, followed by an empirical analysis of their motivational underpinning. People were more likely to plan on purchasing sustainable groceries when they imagined visiting a local food market at home, than when they imagined making these choices on vacation. Whereas purchasing intentions were in general more strongly associated with having a good conscience than with pleasure seeking, the explanatory value of the latter remained limited toward the vacation scenario. These findings suggest that social marketers may want to consider tailoring the content of their campaigns toward the specific consumption context at hand, and where applicable, address how choosing products with low environmental impacts may still result in pleasant experiences.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation, to any qualified researcher.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Informed consent was inferred by participants filling out the questionnaire.

Author contributions

RD and DH contributed to the conception and design of the study. RD organized the data collection and wrote the first draft of the manuscript. RD and SB performed the statistical analysis. SB and DH wrote sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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EDITED BY
Debora Bettiga,
Politecnico di Milano, Italy

REVIEWED BY
Don Donghee Shin,
Zayed University, United Arab Emirates
Agata Gasiorowska,
University of Social Sciences and Humanities, Poland

*CORRESPONDENCE
Sehar Sohail
seharsohail1@lahoreschool.edu.pk

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An examination of dispositional social needs, agent knowledge, and two dimensions of product anthropomorphism: A serial mediation model

Sehar Sohail*, Amber Sajjad and Sohail Zafar

Department of Business Administration, Lahore School of Economics, Lahore, Pakistan

Thriving attention has been paid to the process and concept of anthropomorphism in marketing literature, as the concept is considered to be a precursor of positive marketing outcomes. However, prior studies have not clarified the position or role of inductive reasoning and anthropomorphism or explained the relationship between anthropomorphism and consumers' individual dispositions. This paper aims to delve into the relationship between consumer psychological and dispositional motivational traits for a given product advertisement that has been personified and imbued with human body features. Building on the literature, a conceptual model has been proposed in which the psychological process-agent knowledge and dispositional motivation to meet social needs have been taken as independent variables positively related to one another and also related individually to the two distinct dimensions of anthropomorphism (i) physical anthropomorphism and (ii) anthropomorphic thinking. Furthermore, it was empirically tested if these two dimensions and these independent variables are linked in a sequential manner. The results show that the need for belonging is positively associated with agent knowledge acquisition, physical anthropomorphism, and anthropomorphic thinking for a given stimulus. Similarly, agent knowledge induced by a humanized stimulus was also positively associated with the two dimensions of anthropomorphism. Furthermore, the two dimensions had a positive relationship with one another. Finally, the need for belonging is also positively associated with agent knowledge and two dimensions of anthropomorphism in a sequential manner. Findings indicate that marketers need to take into account dispositional and psychological factors which might ultimately affect their anthropomorphic inferences in order to induce anthropomorphic thinking because of which positive marketing outcomes take place.

KEYWORDS

anthropomorphism, brand/product anthropomorphism, sociality motivation, serial mediation, need for belonging

Introduction

Anthropomorphism is defined as the tendency of a person to apply ways of thinking in one domain to other incongruous domains, particularly, attributing human characteristics, attributes, and traits to non-human entities such as animals, objects, or even abstract concepts such as brands (Aggarwal and McGill, 2007; Epley et al., 2007). Initial investigations into the phenomenon began in theology, sociology, and psychology to understand its importance in the human evolutionary process, to investigate different types of anthropomorphism, to explain the circumstances under which it takes place, and to investigate whether it is a valuable cognitive process. Used in abundance in areas such as robotics, anthropology, animal behavior, and social psychology, the concept has also gained considerable popularity in the domain of marketing for designing products, advertisements, and understanding consumer behavior.

Theory of anthropomorphism in marketing

Marketers frequently present brands or branded products in a humanized manner in numerous stimuli (Puzakova et al., 2009). Some examples of humanized representations of brands or branded products (by the marketers) include: (i) designing the front of a car in such a way that it appears to be smiling i.e., giving human facial or body features to a marketing stimulus; (ii) personifying the brand; (iii) naming the brand Mr. Kleen or Mr. Peanut or describing the brand in person pronouns such as he/she/I; and (iv) depicting the brand mascot in such a way that it resembles a human e.g. Tony the Tiger for Kellogg's Cornflakes (Aggarwal and McGill, 2007). This humanized representation of brands/products enables "retrieval, activation and application" of human schemata knowledge known as "inductive reasoning process" which stimulates or triggers anthropomorphism in the minds of the consumers (Puzakova et al., 2009; Aggarwal and McGill, 2011), resulting in greater positive or negative marketing outcomes.

Research has shown that humanized representation of brands/products results in positive product evaluations, higher perceived liking, lesser perceived risk, higher perceived cuteness, and positive behavioral priming (Aggarwal and McGill, 2007, 2011; Kim and McGill, 2011; Miesler et al., 2011; Kim and Kramer, 2015). Moreover, perceiving brands as anthropomorphized is considered to be the foundation and the process enabling the attribution of brand personality and formulation of consumer-brand relationships (Aaker, 1997; Fournier, 1998). Marketers also believe that consumers have natural capacities to engage in anthropomorphism even when physical humanization cues in marketing stimuli (such as the ones stated above) are not available. Anthropomorphism can also take place naturally as a result of brand image and self-image congruency through an inductive reasoning process in the minds of the consumers (Freling and Forbes, 2005; Chandler and Schwarz, 2010; Hart et al., 2013; Crystal et al., 2014; Portal et al., 2018).

In such types of studies, the process of inductive reasoning and anthropomorphism itself has been treated "either as a theoretical precursor affecting consumer behavior or a corollary affected by marketing communications" (Chen and Lin, 2021, p. 2175). Specifically, talking about anthropomorphism as the consequence of marketing communications, it is the "inherent audience characteristic" or theoretical mechanism for processing humanized stimuli in marketing communications (Delbaere et al., 2011) or process enabling consumer-brand relationships. In other words, such studies have treated and mentioned the exhibition of anthropomorphism and the inductive reasoning process through which anthropomorphism occurs as mainly intuitive in nature enabling marketing outcomes without investigating their link empirically, thus, not as such clarifying the position or role of inductive reasoning and anthropomorphism in consumer decision-making. In other words, scant research has addressed the position of anthropomorphism and the process of inductive reasoning itself in marketing literature other than it being a theoretical mechanism (Chen and Lin, 2021).

It is imperative to study the role of the inductive reasoning process because the availability and accessibility of human knowledge structure serve as an "anchor" and is considered as a primary knowledge structure for making anthropomorphic inferences (Epley et al., 2007; Chen, 2017). According to Taylor and Fiske (1978), the properties of stimulus determine the accessibility and retrieval of human knowledge at the time of making anthropomorphic judgments. Given the importance of inductive inference in anthropomorphic inferences and scant research on the relationship between inductive reasoning and anthropomorphism for a given stimulus, it is essential to test this relationship to better understand the process through which anthropomorphism takes place (Chen, 2017). In-line with the theoretical discussion above, the first objective of this study is to empirically test and establish the relationship between the inductive reasoning process i.e., activation and application of human schemata knowledge of self or other and anthropomorphism in response to a given humanized product advertisement. In this study, the inductive reasoning process has been operationalized as "Agent Knowledge" defined as "knowledge concerning human agency for a stimulus" (Epley et al., 2007; Chen, 2017). Anthropomorphism is operationalized using two dimensions present in literature as explained below.

Dimensions of anthropomorphism

As a result of treating anthropomorphism as a precursory or a corollary, numerous conceptualizations of the concept are present in the marketing literature (Chen and Lin, 2021).

Guthrie (1993) has defined three forms of anthropomorphism "partial, literal, and accidental." In partial anthropomorphism, only some of the aspects of human traits or characteristics are associated with a non-human object or an entity i.e., the object or entity is not seen as a human completely; in literal anthropomorphism, the entity is assumed to be an actual person whereas accidental anthropomorphism is coincidental in nature such as seeing faces in clouds. In marketing literature, brand or product anthropomorphism has widely been studied from the perspective of partial anthropomorphism (Crystal et al., 2014) i.e., the consumers can "attribute human features/physiognomy characteristics or assign cognitive abilities or imbue human personality traits such as warmth/sincerity or competence to brands or products" (MacInnis and Folkes, 2017).

These dimensions of product and brand anthropomorphism are also evident in three ways that construct is measured. The first category of measurement focuses on the consumer's perception of brands or products as a "person" in general (created to check successful manipulations of brand/product anthropomorphism in experimental studies) (Aggarwal and McGill, 2011; Kim and McGill, 2011), the second category elicits responses on the extent to which consumers are assigning personality or traits of human physical features such as a smile or neck or trunk known as "physical anthropomorphism" (Aggarwal and McGill, 2007; Miesler et al., 2011; Guido and Peluso, 2015), and finally, the third category deals with assigning human-like cognitive abilities such as emotions, feelings, or intentions to brands or branded products (Hart et al., 2013; Rauschnabel and Ahuvi, 2014). This third category of anthropomorphism is known as "anthropomorphic thinking or mind perception" in which people attribute sensation, feelings of consciousness, and mental states to non-human entities ascribing deeper meaning to the entity being anthropomorphized (Gray et al., 2007; Gray and Wegner, 2009; Epley and Waytz, 2010; Huang et al., 2020).

Since three distinct dimensions of anthropomorphism exist in the literature, this study operationalizes the concept of anthropomorphism using the second and the third category of measurement i.e., "physical anthropomorphism" and "anthropomorphic thinking" respectively. Physical anthropomorphism is perceiving similarities between "human body or facial features" in product/brand designs or advertisements whereas anthropomorphic thinking is ascribing "human-like mental" capabilities to the brand or product. One can also impact the other, research has shown that anthropomorphic thinking can be impacted by "facial expressions, speech parameters, personality dimensions and perceived intelligence" of robots, artificial agents, or product designs (Hess et al., 2009; Landwehr et al., 2011; Eyssel et al., 2012; Salem et al., 2013; Moussawi et al., 2021). In this regard, this research investigates if inductive reasoning (operationalized as agent knowledge above) is positively related to the two dimensions of anthropomorphism "physical anthropomorphism" and "anthropomorphic thinking" and if these two dimensions are distinct and also associated with one another for a given personified and humanized stimulus.

Social needs as a factor influencing agent knowledge and anthropomorphism

The inductive reasoning process (agent knowledge) is not only the psychological factor impacting anthropomorphism, in line with previous research, one possible factor influencing the extent of anthropomorphism experienced for non-human agents or objects appears to be the perceivers or people's motivation to fulfill their social needs. Social needs are defined as the "need and desire to establish social connections with other humans," these social needs can be situational (like loss of a loved one or social exclusion) or can be dispositional characteristics of a person (e.g., chronic loneliness) (Epley et al., 2007). Research has shown that feeling lonely in a certain situation or chronic disconnect from others can induce attribution of anthropomorphic qualities to objects and entities such as religious agents, animated entities and pets (Epley et al., 2008a,b; Waytz et al., 2010; Eyssel and Reich, 2013). Similarly, a higher desire for social needs can also increase the baseline accessibility of human knowledge while an individual is processing information about a non-human agent (Pickett et al., 2004; Gardner et al., 2005; Maner et al., 2007).

Social needs impact both the inductive reasoning process and anthropomorphism experienced for a non-human object or entity; however, ample research has been done on situationally induced loneliness and exclusion in the marketing literature (Chen et al., 2017; Christoforakos and Diefenbach, 2022), and little research has been paid attention to dispositional social needs (Chen and Lin, 2021); therefore, the second objective of this research is to investigate if dispositional social need "need for belonging" impacts inductive reasoning process and two dimensions of anthropomorphism first individually and then in a sequential manner for a given humanized product advertisement or the stimulus for this study; where the need for belonging is described as the need to form and maintain a minimum quantity of significant and positive interpersonal relationships (Baumeister and Leary, 1995).

Building on marketing and sociopsychology literature, this study contributes to the understanding of factors effecting anthropomorphism of a given humanized and personified marketing stimulus. For this, we designed a survey, in which an advertisement was shown to the respondents, the product in the advertisement was designed in such a way that it had certain features of the human body such as a trunk or feet and, we further added a personified and functional message to the product stimulus as well. We measured the extent to which this advertisement elicited agent knowledge and induced physical

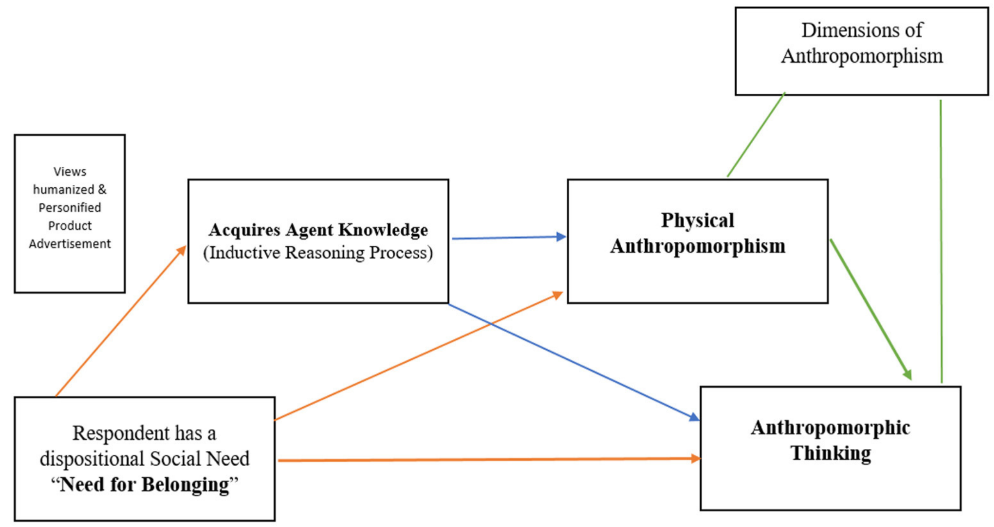

FIGURE 1
Inter-relationship between constructs.

anthropomorphism and anthropomorphic thinking inferences. Figure 1 depicts how constructs in this study are linked.

Theoretical background

Guthrie (1993) argued that anthropomorphism is a universal psychological process in which every human being indulges in the same capacity to either explain, interact or socialize with the non-human agent effectively. However, it was discovered later that this was not the case. Research suggested that anthropomorphism or the extent of anthropomorphism experienced by a person for non-human agents varies from one individual to another due to the inductive nature of the process and has been redefined as a tendency or a capacity of a person (Epley et al., 2007; Waytz et al., 2010; Cullen et al., 2013). The SEEK-Model of anthropomorphism introduced by Epley et al. (2007) provides a full psychological and motivational account of anthropomorphic tendency by identifying various dispositional, situational, developmental, and cultural variables related to these motivational and psychological factors.

The two independent constructs in this study agent knowledge (activation of human knowledge on seeing a stimulus-psychological component) and dispositional social needs (need for belonging-motivational components) have been taken from this SEEK-Model of anthropomorphic tendency. In the following sections, we derive our hypothesis, present the methodology and results for the study along with discussing the practical as well as managerial implications of our findings.

Hypotheses development

Social needs and agent knowledge

Individuals have a pervasive need for love, belonging, close attachment, and interpersonal connections (Epley et al., 2007). This need may be situational social exclusion/inclusion, chronic disconnect, or a general disposition to maintain and form significant relationships. Each dimension of social needs impacts how people process information about other human-being or various stimuli. Research has shown that people who are socially excluded, chronically lonely, or have a high desire for dispositional social needs become voracious social monitors i.e., they become sensitive to decoding or detecting social cues in human and non-human objects (Pickett et al., 2004; Gardner et al., 2005; Pickett and Gardner, 2005). It has been investigated that chronic loneliness impairs the decoding of social cues given to the lonely person by other people (Knowles et al., 2015) and directly impacts social monitoring (Floyd and Woo, 2020). Furthermore, for pleasant depictions of a human vs. object stimulus, lonely individuals appear to be less rewarded by social stimuli of people than of objects whereas non-lonely individuals showed appreciation for pictures of people than of objects (Cacioppo et al., 2009). Socially excluded people viewed their pets in more socially supportive ways because they become especially sensitive to cues and opportunities to re-establish social connections (McConnell et al., 2011). Similarly, the social exclusion also leads to greater detection of fake and real smiles (Bernstein et al., 2008).

Unsatisfied need for belongingness has been associated with a feeling of isolation and loneliness that can impact the ways different social cues are interpreted (Mellor et al., 2008). Baumeister and Leary (1995) identified this desire or need for belonging as a need to form and maintain significant relationships, such need is not directed toward any particular agent because it is the need that propels individuals to seek out general social contact and maintain long-lasting relationships. Pickett et al. (2004) found that need for belonging positively impacted the identification of social cues. People who had a higher need for belonging were able to identify and be more cautious of social cues such as vocal tones, facial expressions, and emotions across a number of different stimuli and situations. Therefore, individuals' need for belonging will enhance social perception skills that will either help them or intervene in recognizing opportunities for building social relationships (Chen and Lin, 2021).

These studies established the fact that individuals with varying levels of chronic loneliness, feelings of exclusion, and need for belonging will process stimuli differently. In line with this argument, we hypothesize that the need for belonging will have a positive relationship with the inductive reasoning process (agent knowledge) while making inferences about a humanized product advertisement. A respondent's need for belonging will be positively related to agent knowledge because respondents with a higher need for belonging will be able to pick human cues from the humanized advertisements as compared to people with a low need for belonging; therefore, the first hypothesis of this study is as follows:

> ***Hypothesis 1*** *= Dispositional Social Need-need for belonging of a consumer is positively related to agent knowledge acquired for a given humanized product advertisement.*

Social needs and two dimensions of anthropomorphism

Epley et al. argue that people anthropomorphize non-human objects to meet two types of needs, one of those needs is sociality needs. Like dispositional social needs, chronic loneliness and social exclusion can impact the way people process stimuli, these social needs also impact the extent to which people anthropomorphize non-human objects and entities. Epley et al. argue if social needs are not met through human relationships people are more likely to turn non-human entities to fulfill their need for social contact. This means that when people have a higher need for social contact, feel lonely or helpless, their sociality needs are thwarted, and they become motivated to repair it. Anthropomorphism serves them means of accomplishing this goal and fulfill unmet needs of belongingness.

Regarding the potential connection between social needs and anthropomorphism, research has shown that feeling chronically disconnected or currently lonely often induces the attribution of anthropomorphic qualities to objects such as gadgets, greyhounds, various religious entities, and robots (Epley et al., 2008a,b; Li et al., 2020). Kwok et al. (2018) concluded that anxious attachment styles and anthropomorphic tendencies are positive, moreover, if people who have avoidant attachment styles do not regulate their social belongingness through anthropomorphizing, the association between loneliness and anthropomorphism becomes weak (Bartz et al., 2016).

In line with these findings, previous studies conclude that physical anthropomorphism or anthropomorphic design cues in human-like agents lead users to perceive the interaction between them and the technology as more social and interpersonal leading to more anthropomorphic inferences (Eyssel and Kuchenbrandt, 2012; Kim and Sundar, 2012; Eyssel and Reich, 2013; Kang and Kim, 2020). Similarly, anthropomorphism increased the feeling of connectedness between technology and its user and pets and their owners (Paul et al., 2014; Im Shin and Kim, 2020). Talking specifically about the need for belonging, this form of social disconnect acted as a mediator between the artificially created social seclusion and anthropomorphism experienced for that artificial agent (Ruijten et al., 2015). Similarly, Chen et al. (2017) also reported a mediating role of the need for belonging between the social exclusion (social disconnect) and anthropomorphism of consumers about a humanized brand. Applied to the present research, when consumers encounter a humanized product advertisement those human-like characteristics of the product may enhance social cues to immediately elicit their anthropomorphic perceptions which will be positively associated with their need for belonging. Therefore, a person's need for belonging will be positively related to both dimensions of anthropomorphism.

> ***Hypothesis 2 (a)*** *= Dispositional social need for belonging of a consumer is positively related to the first dimension of anthropomorphism (i.e.,) physical anthropomorphism for a given humanized product advertisement.*
> ***Hypothesis 2 (b)*** *= Dispositional social Need for belonging of a consumer is positively related to the second dimension of anthropomorphism i.e., anthropomorphic thinking for a given humanized product advertisement.*

Agent knowledge and two dimensions of anthropomorphism

Epley et al.'s (2007) SEEK-Model explains the psychological process of anthropomorphism known as agent knowledge which involves the availability, accessibility, and applicability of human-centric knowledge while making inferences about lesser known, non-human agents. Agent Knowledge for a stimulus or a construct refers to "how readily the given stimulus or construct is coded into a given category" (Higgins, 1989). In the case of anthropomorphism, a given stimulus, an agent, or an entity is added to the human or the self-category. But before the agent or the entity is added to the given category, the knowledge regarding the category has to be accessed first (Higgins, 1996). Anthropomorphizing, therefore, requires the perceiver to acquire or activate the human or self-related knowledge for a given non-human object or an entity (Urquiza-Haas and Kotrschal, 2015). Self-knowledge is readily and easily available and can be applied to a number of situations, even when we are making inferences about other people we rely on our own mental states as a starting point for induction (Keysar and Barr, 2002). Similarly, since human beings only have "phenomenological experience" of being a human and do not have this experience for any other non-human object or an entity, human knowledge is immediately, completely, and easily accessible (Epley et al., 2007; Hart et al., 2013).

Research has shown that people tend to apply human-centric knowledge when the stimulus appears to be like them; therefore, the physical appearance and movements of non-human agents are an important factor in retrieving and applying agent knowledge and making any type of anthropomorphic inferences (Crowell et al., 2019). Aggarwal and McGill (2007) have defined this accessibility of human-centric knowledge as a schema-congruity process, which explains anthropomorphic inferences. Similarly, any apparent similarity of the stimulus with one's concept of the self or the human implies that unknown properties of the stimulus should "mirror the distribution of other properties" known to be possessed by a human (Rips, 1975). Research has shown that when the target stimulus appears dissimilar, people often rely on alternative forms of information to make inferences such as stereotypes (Ames, 2004). In line with the above argument, we can deduce that readily observable human-like features should influence the accessibility of ego-centric knowledge and deeper anthropomorphic inference (Epley et al., 2007). Therefore, the following hypotheses are derived from the discussion above.

***Hypothesis 3 (a)** = Agent knowledge acquisition is positively related to the first dimension of anthropomorphism i.e., physical anthropomorphism for a given humanized product advertisement.*

***Hypothesis 3 (b)** = Agent knowledge acquisition is positively related to the second dimension of anthropomorphism i.e., anthropomorphic thinking for a given humanized product advertisement.*

Physical anthropomorphism and anthropomorphic thinking

As stated in the introduction earlier, the conceptualization of anthropomorphism in marketing literature has been inconsistent. Similar inconsistencies can be seen in researches pertaining to artificial intelligence agents and robots, where researchers have conceptualized the concept as (i) a tendency, (ii) a process (iii) a perception (iv) a technological stimulus, and (v) an inference (Li and Suh, 2021). From whichever perspective anthropomorphism is conceptualized researchers have most abundantly paid attention to how anthropomorphism (when taken as an inference i.e., in this case anthropomorphic thinking) can be understood from the user's notion of perceived humanness i.e., the extent to which the perceiver believes non-human agent acts or presents itself as having human-like characteristics leading to outcomes such as trust and eliciting emotions (Shin, 2021a), applying theories such as social presence theory, social response theory, uncanny valley theory, trust theory, and CASA paradigm to name a few to explain perceived humanness and anthropomorphic inferences. The following discussions explain this point and further sheds light on how anthropomorphic designs or cues lead to higher anthropomorphic inferences leading to higher emotional outcomes such as trust.

Pfeuffer et al. (2019) state that the more anthropomorphic design/cues are embedded in the design of an information system, the more likely human users are to anthropomorphize it. Moreover, Anthropomorphic cues also increase the users' perception of social presence which refers to the feeling of warmth, sociability, and human contact (Go and Sundar, 2019). Similarly, Shin (2021b) further delves into the process of humanizing AI interactions and proposes "causability" as a key antecedent of the user's ability to humanize AI interactions. Shin (2021b) further proposes that causability leads toward trust in AI and consequently trust positively affects the user's evaluation of AI. The causability refers to the causal effect of trust on users' perception and attitude toward AI because of the anthropomorphic explanation users attach to their conversations with AI.

Eyssel et al. (2012) studied the impact of gender and human-like vs. the synthesized voice of a robot on human-robot acceptance, physical closeness, and psychological anthropomorphism, their findings are in line with the above studies. The robots who had the same gender as participants and a human voice were anthropomorphized more indicating that fact that physical anthropomorphism leads to psychological anthropomorphism. In their Meta-analysis on anthropomorphism in service provision, Blut et al. (2021) found that physical features (embodiment) and non-physical features (such as the ability to depict emotions, gaze, gestures, voice, and mimicry) positively impacted anthropomorphic perceptions about these service provision agents, these anthropomorphic perceptions later determined their intention of using service agents such as physical robots, chatbots, and other AIs.

In addition to these AI studies, much of the literature regarding perceived humanness, physical anthropomorphism, and anthropomorphic inferences has mentioned marketing as a key area for investigation. Studies on anthropomorphism in marketing explore how through visual cues, verbal devices and rhetorical devices such as "personification" anthropomorphic inferences can be activated (MacInnis and Folkes, 2017).

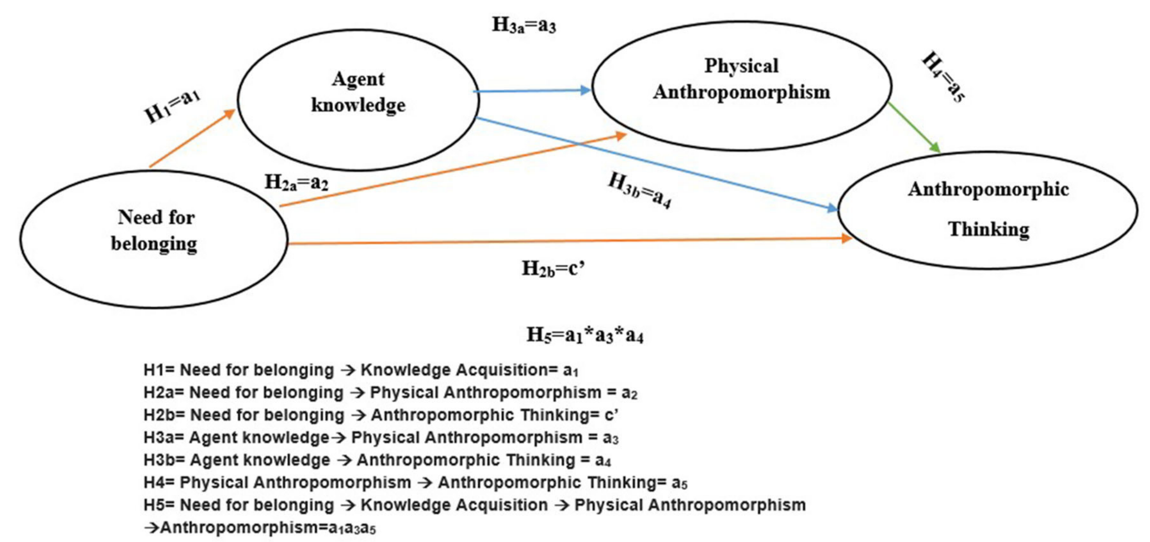

FIGURE 2
Conceptual framework.

Research has shown that when consumers were shown advertisements in which the brand's features resembled a human face, soda bottles were depicted as a family, the product was performing human actions (such as sunbathing) or brand character such as Tony the tiger was bought to life, human-like perceptions for the brands increased (Aggarwal and McGill, 2007; Wan and Aggarwal, 2015; Kim et al., 2016). Similarly, gendered schemata also increased perceived anthropomorphism for brands (Van den Hende and Mugge, 2014). However, as stated earlier, the majority of these studies have not tested the relationship between physical anthropomorphism and perceived anthropomorphism thus, not clarifying the position of the concept in marketing.

Based on the discussion above, we hypothesize that when consumers view advertisements that consist of physical anthropomorphic cues, they will be able to pick out the human cues and attribute anthropomorphic inferences to the product and think the brand has human-like mental abilities. The following hypothesis pertains to the discussion above:

> ***Hypothesis 4*** = *Physical Anthropomorphism the first dimension of anthropomorphism dimension is positively related to the second dimension anthropomorphic thinking for a given humanized product advertisement.*

Inter-relationship between need for belonging, agent knowledge, and two dimensions of anthropomorphism

Summarizing the discussion above, it can be noted that social needs can impact a person's ability to detect social cues and retrieve human-centric knowledge in order to better interact with non-human objects, that retrieval and application of human-schemata knowledge lead to better detection of schemata congruity or human cues in a given humanized stimulus which can in turn trigger anthropomorphic thinking. Since a theoretical and empirical relationship exists in the literature for each construct, we test if the need for belonging, agent knowledge, and two dimensions of anthropomorphism are linked in a sequential manner as well. So, the last hypothesis of our study is

> ***Hypothesis 5*** = *Dispositional social need-Need for belonging of a consumer is positively related to agent knowledge, physical anthropomorphism, and anthropomorphic thinking in a sequential manner.*

Figure 2 depicts the theoretical model for this study.

Methods

Procedure and sample

In line with Chen (2017), this study utilizes a survey research design by collecting data through self-administered questionnaires. Survey design has been used in a number of studies related to studies in anthropomorphism (Chen, 2017; Van Esch et al., 2019; Moussawi et al., 2021), and these studies mainly aim at studying the anthropomorphic inferences drawn for a particular stimulus to study the process of perceived anthropomorphism better and relate the anthropomorphic inferences of that stimulus with various dependent variables. Therefore, survey was opted because the aim of the study was to investigate the impact of dispositional social need, need for belonging, and agent knowledge acquisition on two dimensions of anthropomorphism for a given humanized advertisement and their interlinkages. This will enable us to understand the relationship of constructs better and understand why and how consumers anthropomorphize a particular humanized stimulus. A color advertisement with humanized product design and a combination of personified message and a functional message was constructed as the stimulus for the survey. Tim dish brush by Koziol was chosen as the product in the advertisement or stimulus for the survey for two reasons but the name of the product was modified: (i) the humanized/unique shape of the product design and (ii) that this brush or any other brush of similar product designs is not available in the country where the survey was conducted; hence, the anthropomorphic meaning derived would be more based on the stimulus rather than based on past experiences as intended in this study. The name of the brush was changed from Tim dish brush by Koziol to Flash dishwashing brush. Aggarwal and McGill (2007) and Miesler et al. (2011) noted that the humanization of a product may be unsuccessful if a proper context is not created which facilitates anthropomorphism. The original shape of the brush was retained however, a message having both elements of personification and functional characteristics of the product was added on top of the picture of the brush, the personified message for the brush was "will rise to the challenge, become your partner" and a non-personified message was "Dishwashing made easy." The full statement containing both elements "The unique Flash dishwashing brush will rise to the challenge, become your partner and make your dishwashing experience easy" was depicted above the product's picture in the advertisement to set the personified and functional context for the product. This was done so that, respondents could either reject or accept anthropomorphic inferences while making judgments about the stimulus depicted in Figure 3.

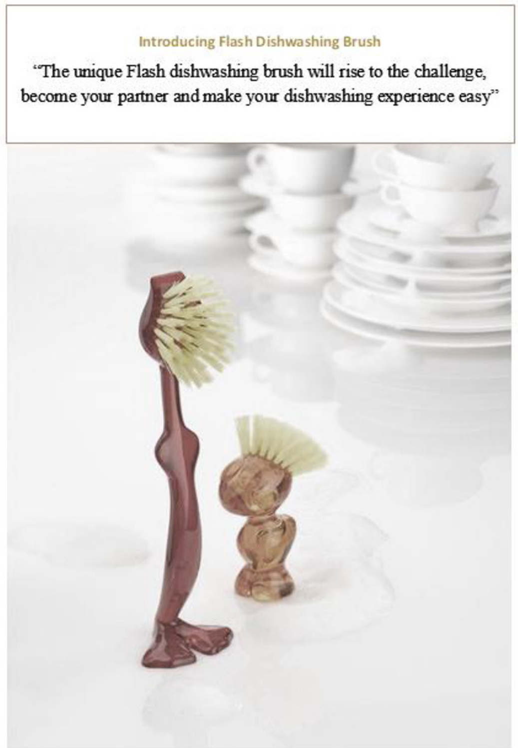

FIGURE 3
Advertisement/stimulus for survey.

In an initial pretest, the picture of the brush was shown to around 100 student respondents and their feedback was verbally taken on if they could point out any uniqueness in the design of the brush. Some respondents pointed out the similarities between the product design and human body features fairly quickly (48%) while for others it was a regular product with a unique design (52%). To test the stimulus further with the message, 150 more respondents in a mall intercept were asked to look at the stimulus i.e., picture of the brush and the message, they then answered the questions related to agent knowledge and alternative knowledge acquisition while processing the stimulus (Chen, 2017). Sample questions for agent knowledge include: "I had many thoughts related to humans when I saw the advertisement of Flash dishwashing brush." Sample questions for alternative knowledge included "I had many thoughts unrelated to humans when I saw the advertisement for Flash dishwashing brush." An index was created for the alternative and agent knowledge of each respondent. Out of 150 respondents, 85 had a high index for agent knowledge, while 65 had a high index for alternative knowledge. Suggesting that the stimulus was effective in either eliciting or rejecting human thoughts.

In order to test the hypothesized model, shoppers were surveyed in two major malls in the main metropolitan areas of Lahore Pakistan. Most customers leaving the mall were asked to fill in the questionnaire at their convenience. They were told that a new dishwashing brush was being launched and their feedback was required for the advertisement however, before viewing the advertisement and answering questions about it, they are required to fill out an additional form containing 10 questions (need for belonging questions). The researchers were present at these malls to collect data themselves during peak hours 5:30 p.m. to 8:30 p.m. on weekly basis. However, Covid-19 restrictions made the data collection process a bit cumbersome and the process took longer than expected. The questionnaire was arranged in such a way that the respondents first filled in the items for the need for belonging scale as requested. Filling in the responses for the need for belonging scale completed the first section of the questionnaire. Once the first part of the questionnaire was completed, the respondents were given the stimulus or the print advertisement of a Flash dishwashing brush along with the message mentioned and pre-tested above. The respondents were asked to take a good look at the print advertisement. After the respondents had taken a good look at the advertisement, they were given the second section of the questionnaire which contained items for agent knowledge acquisition, physical anthropomorphism, and anthropomorphic thinking.

Out of 500 questionnaires distributed at the mall intercepts, 376 were usable for the final analysis. Data were checked for outliers using Mahalanobis distance for detecting multivariate outliers using SPSS Software. A total of 10 outliers were identified and deleted from the data, making the total number of usable responses 366. Out of 366 respondents, 201 were male whereas 165 respondents were female. The average age of the respondents was 35 years; the majority of the respondents were graduates with an average income of Rs. 50,000–Rs.100,000.

Research instruments

An individual's need for belonging was measured by Leary's et al. (2013) need to belong scale. The scale consists of a total of 10 items. Responses for the items were recorded on a six-point Likert scale ranging from "strongly disagree" to "strongly agree." Agent knowledge acquisition was measured using the same two-item scales in the pre-test. Chen (2017) scale for agent knowledge was again utilized to measure the extent to which the advertisement of the Flash dishwashing brush elicited human thoughts.

Physical Anthropomorphism was measured using the Human Body Lineament dimension of product anthropomorphism devised by Guido and Peluso (2015). Responses were recorded on a six-point Likert scale ranging from "strongly disagree" to "strongly agree." The IDAQ scale (Waytz et al., 2010) has been modified and used repeatedly to measure anthropomorphic thinking and the tendency to anthropomorphize brands in the marketing literature (Hart et al., 2013; Rauschnabel and Ahuvi, 2014). The modified IDAQ scale has been used in this study for measuring anthropomorphic thinking about Flash dishwashing brushes. The scale consists of five items that measured the extent of cognitive and emotional capabilities respondents attributed to Flash dishwashing brush. Responses were again recorded on a six-point Likert scale ranging from "not at all" to "a very great extent."

Two software namely SPSS (version 20) and Smart PLS 3 were used for screening data and conducting analyses. The hypothesis testing and serial mediation analysis in this study were conducted in Smart PLS 3 software by using the bootstrapping analytical strategy suggested by Preacher and Hayes (2008) and Taylor et al. (2008). This estimation strategy directly tests indirect effects between X and Y through the mediators *via* bootstrapping procedure thus overcoming the weaknesses associated with other tests (Fritz and MacKinnon, 2007; Taylor et al., 2008).

Results

Common method variance

Since the variables were measured at the same time, the data might be subject to common method variance (CMV) bias defined as "variance that is attributable to the measurement method rather than to the constructs the measures represent" (Podsakoff et al., 2003, p. 879). Harman's single factor test was used to assess whether or not CMV was an issue for our data set. The result of Harman's single factor test shown in Table 1 depicts that a single factor only attributed 28.68% of the variance which is less than the cutoff value of 50% (Podsakoff and Organ, 1986). Therefore, the data are not subject to common method variance bias.

Measurement model

Confirmatory factor analysis was first conducted in order to check the reliability and validity of the latent constructs being used in this study. In the PLS-SEM context, the reliability and validity of constructs are assessed through the measurement model or the outer model by assessing the item reliability, construct reliability, convergent validity, and discriminant validity of each latent variable (Hair et al., 2009, 2011, 2012; Lowry and Gaskin, 2014). The internal consistency can be assessed through Cronbach's alpha and McDonald's omega of a latent construct, the latent measure is deemed reliable when the value for Cronbach's alpha measure is >0.7 and >0.65 for McDonald' omega (Hair et al., 2011; Kalkbrenner, 2021). In this study, all the latent variables had Cronbach's alpha greater of >0.7 and Mcdonald's omega values were also >0.65 for each latent variable. The next step in assessing the reliability of the latent construct was checking the reliability of individual items of the questionnaire that were used to measure respective latent constructs. Individual item reliability is adequate when an item has a factor loading that is >0.5 (Hair et al., 2009). In this study, all the reflective indicators for need for belonging, anthropomorphic thinking, physical anthropomorphism, and agent knowledge acquisition have factor loadings greater than 0.5, these results indicate that items as well as constructs are internally consistent. Convergent validity of the constructs was assessed by average variance extracted (AVE), and convergent reliability was assessed using composite reliability (CR) of a latent construct. A latent factor is deemed to have convergent reliability if its CR is 0.7 and Convergent validity if AVE is >0.5. For this study, the CR and AVE of all the constructs were greater than the recommended

TABLE 1 Common method variance.

Total variance explained						
Factor	**Initial eigenvalues**			**Extraction sums of squared loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	6.007	31.618	31.618	5.449	28.682	28.682
2	2.627	13.828	45.447			
3	1.310	6.893	52.340			
4	1.150	6.051	58.391			
5	0.935	4.920	63.311			
6	0.867	4.563	67.874			
7	0.800	4.210	72.084			
8	0.737	3.880	75.964			
9	0.688	3.620	79.584			
10	0.606	3.189	82.773			
11	0.547	2.880	85.653			
12	0.494	2.601	88.254			
13	0.435	2.289	90.543			
14	0.396	2.084	92.627			
15	0.375	1.976	94.602			
16	0.332	1.748	96.350			
17	0.299	1.574	97.924			
18	0.283	1.488	99.412			
19	0.112	0.588	100.000			

Extraction Method: Principal Axis Factoring.

TABLE 2 Latent constructs with standardized factor loadings.

Constructs	Items	Standardized factor loadings	Cronbach's alpha	CR	AVE	Mc-Donald's omega
Need for belonging	**NB1**	Dropped	0.803	0.855	0.500	0.842
	NB2	0.733				
	NB3	0.668				
	NB4	Dropped				
	NB5	0.749				
	NB6	0.609				
	NB7	Dropped				
	NB8	0.710				
	NB9	0.706				
	NB10	0.763				
Agent knowledge	**AK1**	0.906	0.894	0.925	0.756	N/A less items
	AK2	0.903				
Physical anthropomorphism	**PS1**	0.929	0.812	0.914	0.781	0.793
	PS2	0.906				
	PS3	0.812				
Anthropomorphic thinking	**APT1**	0.827	0.872	0.907	0.661	0.864
	APT 2	0.804				
	APT 3	0.826				
	APT 4	0.829				
	APT5	0.779				

Question Numbers and short forms of items measuring Latent constructs.

TABLE 3 Forenll-Lacker criteria for discriminant validity.

Constructs	Anthropomorphism	Knowledge acquisition	Need for belonging	Physical anthropomorphism
Anthropomorphism	0.813			
Knowledge acquisition	0.576	0.869		
Need for belonging	0.341	0.282	0.712	
Physical anthropomorphism	0.555	0.585	0.289	0.917

TABLE 4 Heterotrait-Monotrait (HTMT) ratio comparisons.

Constructs	Anthropomorphism	Knowledge acquisition	Need for belonging
Knowledge acquisition	0.748		
Need for belonging	0.377	0.288	
Physical anthropomorphism	0.767	0.675	0.341

TABLE 5 Path (structural) coefficients and their significance at *p < 0.05, **p < 0.01, ***p < 0.001.

Direct effect/path	Coefficient/beta	t-value	Confidence interval	R-square
H2(b): Need for Belonging→Anthropomorphic Thinking	0.1230***	3.3676	[0.0512;0.1949] Sig	0.7473
H4: Physical anthropomorphism→ Anthropomorphic Thinking	0.3665***	9.720	[0.3364;0.5071] Sig	
H3 (b): Agent Knowledge Acquisition→ Anthropomorphic Thinking	0.4217***	8.4277	[0.2810;0.4520] Sig	
H1: Need for Belonging → Agent Knowledge Acquisition	0.2572***	5.0770	[0.5176;0.3568] Sig	
H2(a): Need for Belonging →Physical a Anthropomorphism	0.1234**	2.829	[0.0376;0.2092] Sig	
H3(a) : Agent Knowledge Acquisition →Physical Anthropomorphism	0.552***	12.6553	[0.4662;0.6378] Sig	

thresholds. All these measures and their results are depicted in Table 2.

Discriminant validity of latent constructs can be checked by Fornell-Lacker criteria according to which the square root of AVE of each latent construct should be greater than the correlation of that construct with any other construct. Table 3 reports the discriminant validity for each construct; from this table, it can be seen that the diagonal elements (the square root of AVE) for each construct are greater than all the other entries in the table, proving variables hold discriminant validity.

Another measure for assessing discriminant validity in Smart PLS3 is the Heterotrait-Monotrait (HTMT) ratio. The ratio is calculated by dividing the correlations of the items of all the constructs by the correlations of the items of the same constructs. The constructs will hold discriminant validity if the ratio is less than 1 (Henseler et al., 2015). Table 4 reports the Heterotrait-Monotrait (HTMT) for each construct, it can be seen from the table that the ratios calculated for each latent construct when compared to other constructs are <1. According to these results, discriminant validity holds for all the latent constructs in this study.

The goodness of Fit for the model was assessed using the mean square residuals (SRMR) value of the estimated model. The value of SRMR should be <0.08 to be considered a good fit (Henseler, 2012). For this estimated model, the SRMR value is 0.071, this indicates a good fit. Other criteria for Model Fit assessment in PLS-based SEM are NFI, d_ULS (i.e., the squared Euclidean distance) and d_G (i.e., the geodesic distance). NFI should be >0.90 and d_ULS and d_G should be insignificant for the model to fit the data (Dijkstra and Henseler, 2015a,b; Hair Jr. et al., 2017a,b; Dash and Paul, 2021). For our analysis, NFI came out to be 0.92 which meets the threshold, similarly d_ULS (1.065) and d_G (0.395) came out to be insignificant suggesting good model fit.

Structural model

The structural model was assessed using path analysis, direct effects were first generated to test hypotheses *H1, H2 (a), H2 (b), H3 (a), H3 (b) H4 and H5*. Results in Table 5 depict that need for belonging positively and significantly effect on agent knowledge ($\beta = 0.257$, $p < 0.01$), physical anthropomorphism ($\beta = 0.552$, $p < 0.01$), and anthropomorphic thinking ($\beta = 0.123$, $p < 0.01$). Therefore, hypotheses *H1, H2 (a) and H2 (b)* were accepted. Results also reveal that agent knowledge was positively associated with physical anthropomorphism (β = 0.552, $p < 0.01$) and anthropomorphic thinking ($\beta = 0.4217$, $p < 0.01$) both, thereby hypothesis *3 (a)* and *(b)* are also accepted. Finally, physical anthropomorphism had a positive relationship with anthropomorphic thinking positively ($\beta = 0.367$, $p < 0.01$). This shows that our remaining hypothesis H4 was also accepted.

This study also proposed that need for belonging, agent knowledge, physical anthropomorphism, and anthropomorphic thinking are also related in a sequential manner. To test this hypothesis, the serial mediation hypothesis (H5) was formulated and tested through the three-path mediation model by checking the significance of direct effects and indirect effects. The serial mediation hypothesis was tested using the three-path mediation model and bootstrapping approach at a 95% confidence interval (Preacher and Hayes, 2008; Taylor et al., 2008). Table 6 and Figure 4 present a summary of the path coefficients, hypotheses, and the total, direct, and indirect effects between the need for belonging and anthropomorphic thinking.

As per the results, there is a significant total effect of the need for belonging on anthropomorphic thinking (c = 0.329; t = 5.735). But when mediators were added influence of the need for belonging decreased but remained significant (H1:c' = 0.123; t = 3.368). This result shows that there is partial mediation between the need for belonging and

TABLE 6 Direct, indirect, and total effects of the need for belonging on anthropomorphism.

Indirect effects of need for belonging on anthropomorphic thinking via mediators	Point estimate	Confidence interval
Need for belonging → Knowledge Acquisition→Anthropomorphic Thinking	0.1085	[0.0555;0.1672] Sig
Need for belonging → Knowledge Acquisition→Anthropomorphic Thinking	0.0452	[0.0138;0.0809] Sig
Need for belonging → Knowledge Acquisition→Physical Anthropomorphism→Anthropomorphic Thinking **($a_1^* a_3^* a_4$)**	**0.0520**	**[0.0293;0.0767] Sig**
Total Indirect Effect	0.2057	[0.1313;0.2776] Sig
Direct Effect of Need for Belonging on Anthropomorphism	0.123***	t-value = 3.676
Total Effect of Need for Belonging on Anthropomorphism	0.329***	t-value = 5.735

Significance at *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Bold values indicates the sequential mediation path.

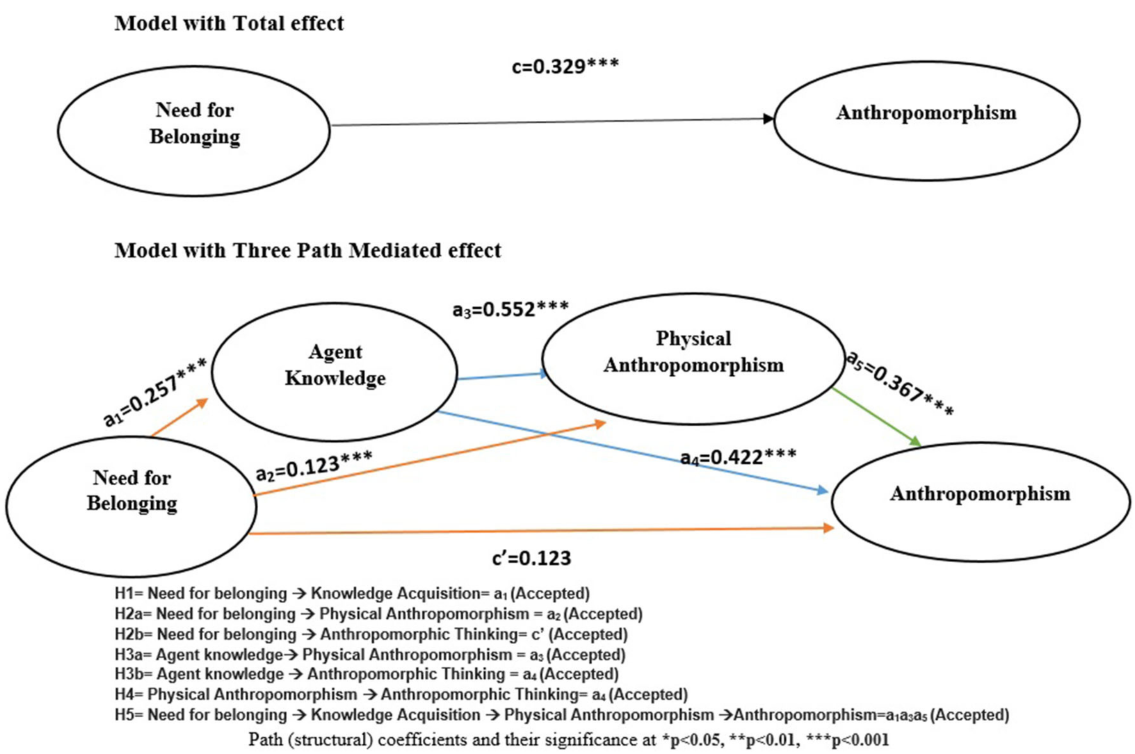

FIGURE 4
Direct, indirect, and total effects of need for belonging on anthropomorphic thinking.

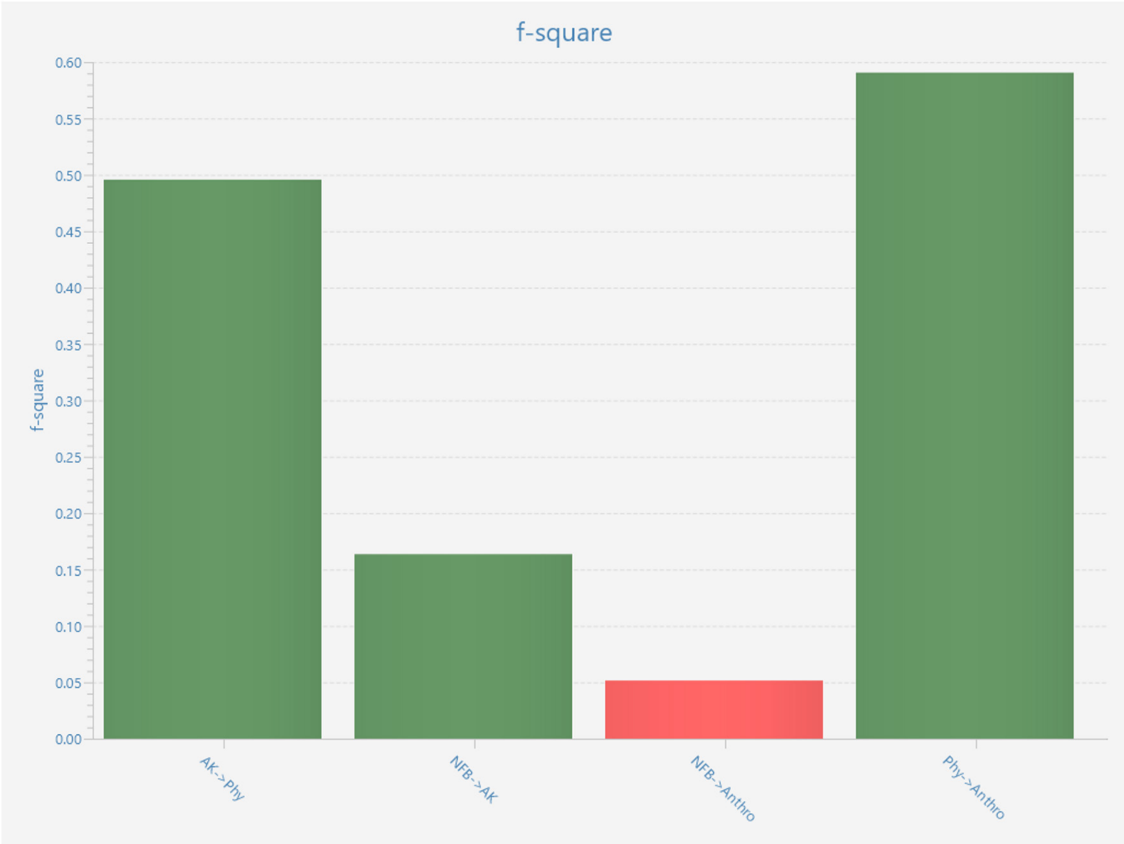

FIGURE 5
F-Squared explanatory power.

anthropomorphic thinking because both the direct and specific indirect effects are also significant (Zhao et al., 2010). The significant total indirect effect [β = 0.2056, 95% CI (0.1313; 0.2776)] can further be broken down into three specific significant indirect effects, the first specific indirect effect is from mediator agent knowledge acquired [β = 0.1085, 95% CI (0.0555;0.1672)], the second specific indirect effect is from mediator physical anthropomorphism [β = 0.0452, 95% CI (0.0138; 0.0809)] and the third specific indirect effect is from both of these mediators sequentially (H6) [β = 0.0520, 95% CI (0.0293; 0.0767)]. Since the specific indirect effects from both the mediators are positive and significant, we can conclude that sequential mediation exists therefore, hypothesis H5 was also accepted. i.e., need for belonging sequentially related to anthropomorphic thinking through agent knowledge and physical anthropomorphism.

To access the exploratory power of this proposed model *r*-squared, *f*-squared and *Q* squared_Predict were used. According to Hair et al. (2011), the model has significant explanatory power when the *r*-square is ≥0.75; for this conceptual model, the *r*-squared came out to be 0.747; hence, it can be implied that the model has significant explanatory power. Moreover, the *f*-squared value was used to access the effect size, a value >0.35 signifies a strong effect size (Hair et al., 2019). In terms of effects size agent knowledge (f^2 = 0.456) and physical anthropomorphism (f^2 = 0.591) has the greatest effect size on anthropomorphic thinking, on the other hand, the need for belonging has a moderate effect size (f^2 = 0.150) on anthropomorphic thinking. Indicating that agent knowledge and physical anthropomorphism are the most significant predictors of anthropomorphic thinking (depicted in Figure 5). Finally, predictive relevance was assessed using *Q*-squared_predict. The *Q*-squared_predict value is >0 for agent knowledge (0.125), physical anthropomorphism (0.077), and anthropomorphic thinking (0.110), demonstrating

TABLE 7 Explanatory power.

Constructs	Q-Square_Predict
Agent knowledge	0.125
Physical Anthropomorphism	0.077
Anthropomorphic thinking	0.110

that the model is predictively valid (depicted in Table 7).

Discussion

Theoretical implications

Our findings support and complement previous studies in establishing interrelation between dispositional social needs (need for belonging), agent knowledge, and anthropomorphism. Chen (2017) conducted the first study to investigate the psychological process of anthropomorphism by studying the impact of agent knowledge on anthropomorphism for a given marketing stimulus. This relationship was tested in order to understand how consumers anthropomorphize a particular personified marketing stimulus. This study in part is an extension of Chen (2017) study's first objective, our study investigates the relationship between the need for belonging a dispositional trait, agent knowledge acquisition an inductive reasoning process and anthropomorphism. Moreover, by conceptualizing anthropomorphism using two dimensions (i) physical anthropomorphism and (ii) anthropomorphic thinking, investigating their relationship with the need for belonging and agent knowledge both individually and sequentially for a given stimulus, this study makes a novel contribution to marketing literature. This research shows that psychological and dispositional both factors effect both dimensions of anthropomorphism for a particular stimulus *[hypothesis 2(a), 2(b), 3(a) and 3(b)]*.

The validated conceptual model first points out that the need for belonging is positively associated with agent knowledge acquisition at the time of making inferences about a humanized advertisement positively (*hypothesis 1*), this means that the respondent's need for belonging had a positive relationship with the application and activation of agent knowledge in the minds of the consumers for a given humanized marketing stimuli. Need for belonging also had a positive relationship with the two dimensions of anthropomorphism (i) physical anthropomorphism and (ii) anthropomorphic thinking as suggested in the literature [hypothesis *2(a)* and *2(b)*]. Confirming the fact that the assumption that consumers have similar capacities to indulge in anthropomorphism about a brand or a product has been taken for granted in literature (Letheren et al., 2016). It has been noted that despite marketers' efforts to create through the anthropomorphized presentation of brand one unified brand image or personality, different consumers tend to perceive different or multiple meanings, associations, or personalities for a such anthropomorphized brand (Kniazeva and Belk, 2010). This may be in part due to varying dispositional characteristics of consumers which could impact their anthropomorphic tendencies or inferences, one of which is their dispositional social needs tested in this study.

Our results also show that agent knowledge was positively related to the two dimensions of anthropomorphism [hypothesis *3(a)* and *3(b)*], elucidating that elicit agent knowledge encompasses exhaustive experience about the self or other human agents and that its induction easily helps consumers to discern brands characteristics in human-like terms. This is true for both dimensions of anthropomorphism i.e., seeing physical similarities between humanized product designs and elements of human bodily or facial features and attributing higher order anthropomorphic inferences such as mental states. It has been empirically tested in AI literature that humanization cues in the robotic lead to the perception of anthropomorphism. In line with this finding, we formulated our hypothesis *(hypothesis 4)* which states that physical anthropomorphism will also impact anthropomorphic thinking. Our finding depicts that perceived physical anthropomorphism or perceiving similarities between the human body/facial features will positively impact anthropomorphic thinking. Another important finding of this study is that physical anthropomorphism and anthropomorphic thinking as suggested by literature are two different dimensions of anthropomorphism and should be treated differently because one can impact the other because the perception of physical humanness can impact anthropomorphic thinking and anthropomorphic thinking can lead to higher order outcomes such as trust (Shin, 2021a), social presence in AI literature and consumer brand relationships in marketing to name a few.

Epley et al. (2007) in their SEEK-Model suggest that motivational and psychological aspects of their theory are inter-linked and are promising areas for future research, following this suggestion we tested if need for belonging, agent knowledge and two dimensions of anthropomorphism are linked in a sequential manner (*hypothesis 5)*. Results reveal that these variables are also related to each other in a sequential manner. Reiterating the importance of psychological, motivational factors and availability of human cues in stimulus for attribution of higher-order anthropomorphism inference that are imperative for higher order relationships with non-human entities such as emotional attachment or trust, etc; therefore, this study contributes to current literature in the realm of consumer psychology and marketing by identifying predictors of two dimensions of anthropomorphism and inter-connecting them.

Managerial implications

Our research also points out the direction for practice. The findings imply that the marketers may imbue brands/products with human attributes, but the degree to which consumers indulge in anthropomorphic thinking or interpret those cues as human, would depend on their motivations, in this case, the dispositional social need for belonging, and the way they process information about non-human stimuli

(Waytz et al., 2010; Chen and Lin, 2021). Moreover, the way consumers process information can also be impacted by these motivations. Therefore, marketers are advised to look into dispositional variables or identity segments of consumers wisely, it is important to identify segments of consumers who would be more susceptible to such humanized cues based on their motivational or dispositional inclinations and cognitive processing abilities. In line with Chen and Lin's (2021) study, the findings of the study also imply that marketers need to create metaphorical presentations of humanized products in advertisements in such a way that it addresses or is tailored to their need for belonging, strategically targeting consumers by dispositional or demographic segments. Furthermore, two dimensions of anthropomorphism were taken under consideration, since various definitions and types of anthropomorphism exist in the literature, it is important to identify the type of anthropomorphism a marketer wants to achieve, because mostly anthropomorphic thinking contributes more to human-brand relationships. So, it can be deduced that understanding the antecedents of brand/product anthropomorphism is as essential as studying its implications on marketing outcomes. In other words, practitioners in the field should consider that anthropomorphism experienced for a particular stimulus may differ among different users or perceivers, as a person's individual tendency to anthropomorphize depends on numerous factors, like the ones identified in this study.

Another practical implication is that perceived physical similarity to human facial or body features will positively impact anthropomorphism. Let's take the example of how IOTs' are designed. Internet of things (IoT) refers to the connected web of electronic devices such as smartphones, sensors, electronic home appliances, and vehicles linked with the Internet through various forms of wireless technology and are able to identify themselves and other connected devices. Since the use of IoT has become an integral part of society it is argued that IoT is a "socio-technical ensemble." Shin (2014) points out that the design of IoT should be human-centered which means that the design of IoT should facilitate users to anthropomorphize IoT. This notion of humanizing IoT has its roots in the socio-technical perspective as IoT comprises devices, people, rules and practices, information infrastructure, and production of knowledge. The implications of humanizing IoT designs would be purely social in nature. Humanizing IoT devices would promote flawless interaction between users and IoT. The same can be inferred while designing brand messages or product designs by marketers.

Research limitation and future research

The limitation of this study is that the study uses a survey design methodology by employing only one humanized product advertisement (i.e., the same humanized advertisement was shown to all the participants) to highlight the process through which anthropomorphism takes place for one particular stimulus. In this study, a dishwashing brush was represented in a humanized manner by imbuing it with human body features, a personified and a functional message. Other variations in humanization were not included such as high humanized vs. low humanized conditions. So, it cannot be established through this research if there will be a difference in the process of anthropomorphism for different humanization options available to marketers or which humanization options will be anthropomorphized more by the respondents based on their motivations.

This study aimed at making an initial contribution to the understanding how and why consumers anthropomorphize hence, only one product was shown to all respondents. This means that the results can arbitrarily indicate the order of the variables. Studying how different humanization options can alter the perception of anthropomorphism can be a future avenue of research. In other words, researchers may want to manipulate the humanized features of the product and see how the relationships established in this study would vary for different stimuli with different human features using experimental design. A new mediator can also be added which is the self-image/product image congruity to the established relationships in this study. This will also help to establish causality and a stronger link between various variables. Furthermore, the impact of these relationships can also be investigated on different outcome variables such as trust, intention to buy or product evaluations or consumer brand relations. Future research should also take into consideration the demographic characteristics of the respondents such as age, gender, and marital status and their impact on anthropomorphism of a humanized product, and their interaction with dispositional motivations.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of Lahore School of Economics. Participants provided their written informed consent to participate in the study.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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EDITED BY
Debora Bettiga,
Politecnico di Milano, Italy

REVIEWED BY
Pritpal Singh,
Jagiellonian University, Poland
Dennis Tay,
Hong Kong Polytechnic University,
Hong Kong SAR, China

*CORRESPONDENCE
Sha Luo
sl4396@tc.columbia.edu

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Forecasting fund-related textual emotion trends on Weibo: A time series study

Sha Luo*

Teachers College, Columbia University, New York, NY, United States

Introduction: This paper reports a time series analysis of day-to-day emotional text related to fund investments on Weibo (Sina Corporation, Beijing, China).

Methods: The present study employed web-crawler and text mining techniques through Python to obtain data from January 1, 2021 to December 31, 2021.

Results: Using an auto-regressive integrated moving average model and vector auto-regressive model, the results indicated that fund performance was a significant predictor of fear, anger, and surprise expressions on Weibo. A relationship among emotions within a certain single fund was not found, but textual emotions could be predicted by ARIMA models within emotions.

Discussion: The findings provide insight for media emotion analysis combining linguistic and temporal dimensions in both the communication and psychology disciplines.

KEYWORDS

emotion analysis, forecast model, time series, web crawler, text mining

1. Introduction

Watching the stock index turning green or red can be accompanied by significant psychological changes among shareholders. When to sell short, to buy at the bottom, or to leverage are essential decisions for shareholders to make that must be made wisely. In the finance behavioral discipline, researchers look at emotion and its physiological representations along with financial decision-making. In previous studies, a relationship between years of trading experience, heart rate variation, and trading performance was reported (Kandasamy et al., 2016). Similar results were found in other studies on investment banking activities and the financial decision-making process (Quartz, 2009; Martin and Delgado, 2011; Fenton-O'Creevy et al., 2012). In addition, in social psychology, numerous studies have investigated the process of emotion change interacting with financial and media activities. Some studies found emotion to be highly associated with investment and digital media use (Bradley et al., 1996; Shiv et al., 2005).

Social networking sites (SNSs) are platforms the public may use to communicate emotional text. Linguistic features on SNS were found to have correlational patterns over time in previous media and linguistic studies, and the temporal aspect could be a crucial dimension of quantitative modelin (Koplenig, 2017; Tay, 2022). To extend research variety, this study considers messages involving investment-related emotional expression on Weibo (Sina Corporation, Beijing, China), which is one of the most commonly used platforms among Chinese SNS users, to investigate emotion forecasting models. Statistical models were used to study linguistic characteristics on social media for temporal pattern on SNS platforms (Tay, 2018, 2021). Since not much research has focused on statistic computation of social media emotion through quantitative linguistic method, the current study established a three-step filter model to collect real-time scraped SNS data. Emotional messages were categorized into six types, including fear, disgust, surprise, anger, happiness, and sadness, according to Basic Emotion Theory (Ekman, 1992). We then used a time series analysis to understand how emotion and fund performance in the past could be used to predict future fund-related emotional expression on Weibo.

1.1. Emotional as a result of socio-cultural practice

In recent laboratory experiments, emotion was considered to be a passive response following the perception of stimulus (Garrido and Schubert, 2011; Kramer et al., 2014; Luo, 2022). This study took the approach of psychology constructivism, considering emotion as a felt affective experience that occurred after engaging in fund-related activities. Psychology constructivists believe that, through relevant manipulation, the appraisal–emotion association could be assessed by statistical imputation (Zammuner, 1998; Kirkland and Cunningham, 2012). Additionally, a different family of emotion studies have defined emotions as a natural-kind and sharing universal properties (Ross, 2006; Izard, 2007). For instance, the well-known Basic Emotion Theory proposed six kinds of basic emotions, including joy, sadness, anger, fear, disgust, and surprise (Ekman, 1992). Later, scholars re-arranged six prototypical emotions into eight kinds, adding trust and anticipation with positive and negative bases (Plutchik, 1980) and even hierarchical structures across cultures (Shaver et al., 1992, 2001). Other scholars have constructed their own models and up to 22 distinct emotion prototypes (Clore and Ortony, 2013). The emotions in this study are categorized into six types according to Basic Emotion Theory.

The historical debate between natural-kind and psychological constructivist families has continued since researchers first dove into emotion studies from different disciplines. Some recent theoretical studies argue that these two families of emotion could coexist (Panksepp, 2007). In this paper, emotion refers to the result of socio-cultural practice (Jain, 1994; Boiger and Mesquita, 2012; Ahmed, 2013).

1.2. Emotional word in the context of China

Despite that different families of emotion studies have interchangeably led the research trend, emotions are pervasive among humans across languages. Mandarin is the official language used on Weibo. Because emotional expression on Weibo is defined as a socio-cultural experience, socio-cultural differences between China and Western cultures were essential to address in this investigation. Early literature tended to argue that expressions of emotions are universal (Boucher and Carlson, 1980; Ekman and Keltner, 1997), while more recent studies found that they vary among cultures, especially between Eastern and Western ones (Jack et al., 2012). Most literature agrees that basic emotion categories are prevalent universally, but public discourse is government-led in the context of China. Reactionary opinions against governmental authority are not allowed on any platforms, including Weibo. In addition, Chinese cultures are reportedly different from Western ones in dimensions such as individualism vs. collectivism and masculinity vs. femininity (Hofstede, 2001, 2003). Highly related to cultural values, emotional textual messages of lower intensity are embraced more often in China than Western cultures (Lim, 2016), and emotional expression patterns also differ across languages (Ng et al., 2019). As such, there arises a problem to be solved in textual emotion analysis studies through a cross-cultural lens due to a lack of consistency in the emotion lexicon built upon language systems. To date, researchers have developed cultural-specific emotion lexicons regarding odor and food in languages such as French, English, Chinese, and Portuguese (Chrea et al., 2009; King and Meiselman, 2010; Ferdenzi et al., 2013).

This study combined the two following emotion lexicons developed in English and Mandarin, which categorized emotions into six types (fear, disgust, surprise, anger, happiness, and sadness) according to Basic Emotion Theory. First, the Latest Universal Scale (Ferdenzi et al., 2013), having both English and Mandarin versions, contains the most common emotion terms across multiple geographic regions. Second, the Affective Lexicon Ontology in Mandarin has been the most comprehensive lexicon for some time (Xu et al., 2008). However, both emotion lexicons were published around a decade ago, before social media platforms became as widely used as they are in 2021. For thorough data collection, additional online emotion expression vocabulary was included in text mining (TM), which was the method of data collection used in this study.

1.3. Time series analysis and TM on emotion words

A time series analysis of emotional expression on Weibo was not found, although this platform has been widely applied to users to post emotion text and gather fund-related information (Chan et al., 2012). Existing time series analyses of emotion include mothers' negative emotions (Lorber and Smith Slep, 2005), Korean swimmers' Twitter posts (Bollen et al., 2011), digitalized melodies (Vaughn, 1990) and YouTuber channel linguistic features (Tay, 2021). Time series models were widely used for analytic and forecasting purposes in finance-related fields such as daily stock market across countries (Singh and Borah, 2014; Singh, 2021). However, we did not find a time series study of emotion words related to financial service products nor one in the context of Weibo in the literature.

Traditionally, sociopsychological studies of media communication have adopted research methods, such as surveys, experiments, and observations (Dill, 2013). With the emergence of SNSs, the SNS platforms immediately became viral communication methods that overtook traditional forms. The online environment was considered a fresh and essential field for socio-emotional and developmental–emotional analyses (Stein et al., 2008). By May 2018, Weibo reported over 400 million active users monthly (Shan et al., 2021). Weibo is one of the major SNS platforms for financial service consumers to express emotions, other than GuBa (Eastmoney, Shenzhen, China, a stock forum similar to Reddit), and WeChat (Tencent, Shenzhen, China), which are awaiting investigation as well.

The drastic change in SNSs two decades ago attracted researchers to develop new technologies for digital data collection (Sundar and Limperos, 2013). New computational methods, such as TM, have gained attention and validation among researchers since information digitalization has become the new trend (Tang and Guo, 2015). Under the umbrella term of TM, there exist various methods, including natural language processing, information retrieval, and lexical statistics (Chartier and Meunier, 2011). A substantial amount of linguistic emotion studies has adopted TM methods to investigate customer reviews (Li et al., 2020), user behavior (Waterloo et al., 2018), and post-pandemic mentality (Dubey, 2020) on SNSs.

To collect data with fund-relevant emotion words on Weibo, this study embedded both semi-supervised and supervised learning methods in a Python written program to scrape Weibo posts. Both methods were found to be effective in data classification and regression (Zhu and Goldberg, 2009; Koshorek et al., 2018).

2. Materials and methods

In 2021, the amount of public equity funds in China has reached 9,000 and exceed scale of 25 trillion RMB as the fourth largest national fund market. A total of 14,125 Weibo observations were collected from January 1, 2021, to December 31, 2021 across four quarters. Details of sample size determination, all data exclusions, all manipulations, and all measures in the study are reported in the following portion of the text. The dataset can be made available after contacting the author.

2.1. Sample

Only funds launched before October 2018 were considered in this study so as to avoid emotional bias due to pre-launch marketing, promotions, and the bleak performance of the whole fund market in the first quarter. To reduce industry and theme biases, this study sought out funds with various combinations. Three funds with medical, blue-chip, and consumption (liquor) themes, respectively, were selected, which were the Lombarda China Healthcare Mix Fund, E Fund Blue Chip Select Mix Fund, and China Merchants Liquor Index Fund.

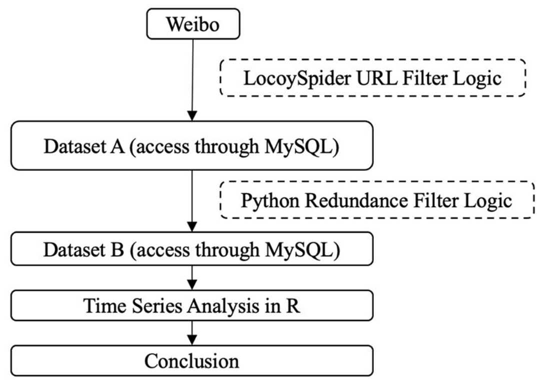

FIGURE 1
Framework of the study.

2.2. Data collection

The present study adopted a semi-supervised web crawler technology to obtain data, then used a fully supervised TM method to extract topic-focused data. LocoySpider version 10.2 (Lewei, Hefei, China) was employed to obtain data with the following steps, as seen in Figure 1:

1. *Web search domain*. We used https://weibo.com/ as the seed set for URLs.
2. *Simulation account login*. We used a newly created Weibo account and typed in its username and password.
3. *Filtering logic*. The first filter was a keywords list, which consisted of combinations of companies, themes, and fund types in selected funds. Each combination needed to be semantically meaningful phrases; for instance, keywords for the China Merchants Liquor Index Fund included China Merchant (招商), Liquor (白酒), Index Fund (指数基金), and Fund (基金). Because Weibo has an amount limitation on each data-mining effort made from an external source like LocoySpider, the program was set to run repeatedly every hour.
4. *Duplicate and upload data*. LocoySpider replicated data meeting filtering logic and uploaded data, content, and URLs to dataset A.

The collected posts were only for data analysis of this research study and available in public domain to all Weibo users. All personally identifiable information were removed from dataset as well as in result reporting. The researchers did not have any interaction and connection with Weibo users, nor disclose personal messages between users. Therefore, no ethic approval was not required.

2.3. Data cleaning

Next, the TM method was applied for data cleaning. New data collected every hour in dataset A were assigned to a filter logic developed in the Python program because the same article could be published repeatedly by multiple sources on Weibo. For the purpose of deleting redundant data, we compared the repetition rate among the textual content of new hourly data and every URL in dataset A. After 2 months of testing, the filtering repetition rate was determined to be 92%. This means that, if the text contents of multiple URLs were ≥92% identical, only the earliest post would be kept, and later posts would be filtered out. Reposting was excluded from redundant observations, as the action amplified the same emotion as the original post (Yi et al., 2022). The filtered data then entered cleaned dataset B. The framework of this study is visualized in Figure 1. The Python scripts are available after contacting the author.

The web crawler and TM methods were tested from October 1, 2020, to December 1, 2020. Noticeably, English and Chinese have different grammar systems where negation words are either separate or not from emotional words. For example, "un-happy" in English would be presented as two separate words in Chinese ("not happy"). To avoid the ambiguity of negation words, a research assistant went through links included in the dataset in dataset B. The backend interface presented the assigned identification number of each link and the publication date and time, link, and title. The research assistant could perform a false delete, which temporarily removed data that included negation words near emotion words and changed the semantic meaning of the sentence. Then, the researcher could review the articles again. After 2 months of training, the inter-rater reliability reached 80%, and the research assistant was able to interpret the content through the researcher's lens.

2.4. Measurement

We employed two types of measurement of fund-relevant Weibo emotion and fund performance as shown below.

2.4.1. Daily emotion word frequency

After testing, the most frequently used 34 words were listed in the Weibo emotion word matrix. Because the Affective Lexicon Ontology in Mandarin (Xu et al., 2008) has not been updated in the 14 years since its publication, we decided to add two more trending emotion words used by a large population of shareholders on Weibo. A total of 36 words were categorized into six basic emotions (fear, surprise, disgust, anger, sadness, and happiness), with six words per basic emotion. Cleaned data in dataset B were accessed with the MySequel programming language. We noticed that some words in the keyword lists were not used throughout the year. Therefore, we decided to exclude the least frequently used two words of every basic emotion for data analysis, leaving four words with daily frequency counts for each. For example, words under fear are "怕(fear)," "吓 人(frightening)," and "恐(afraid)," those under surprise are "讶(surprise)," "惊(startled)," and "奇(strange)." Frequency measurements among emotions and funds were independent, meaning that a post containing two emotions or funds would be counted twice.

2.4.2. Fund net worth

The daily unit net worth equals the funds' net market value minus the total liability, divided by the total amount of shares of the day. The daily cumulative net worth refers to the daily unit net worth plus an accumulative bonus available for shareholders. Both were obtained from EastMoney.com, which is a website containing funds information verified by the China Securities Regulatory Commission. Because the stock market opens on weekdays only, unit and cumulative net worth data were not available on weekends or legal holidays. To ensure the missing data pattern was completely at random, weekends and legal holiday observations ($n = 122$) were omitted from the data frame prior to further analysis.

2.5. Data analysis

The analytic emphasis of this paper focuses on Weibo emotions. We examined cleaned data from three perspectives: inter-emotion, inner-emotion, and net worth–emotion relationships. Two methods were employed, including graphical comparison and statistical model computation. Specifically, inter-emotion analysis aimed to discover the potential relationship between fear, surprise, disgust, anger, sadness, and happiness on Weibo within a single fund, while inner-emotion analysis looked at each emotion within and across funds in an identical time frame. Finally, the net worth–emotion analysis investigated the association between fund performance and Weibo emotion within a fund. The hypotheses of this paper are as follows:

- H_1: All six emotions word frequency are predictable itself within a fund.
- H_2: All six emotions word frequency are predictable by each other within a fund.
- H_3: All six emotions word frequency are impacted by fund performance net worth within a fund.

Starting with a graphical comparison, the initial analysis looked at the trend of variables in the same time window. Three time series figures of the Lombarda China Healthcare Mix Fund, E Fund Blue Chip Select Mix Fund, and China Merchants Liquor Index Fund, respectively, were plotted for visual comparison. Then, an auto-regressive integrated moving average (ARIMA) model was employed for time series model analysis of inner-emotions patterns. To satisfy assumptions for ARIMA modeling, we tested the stationarity of time series data with the augmented and applied differencing methods to remove the seasonality of non-stationary data. At the same time, the degree of differencing parameter (d) was calculated. Next, the auto-correlation function (ACF) and partial auto-correlation function (PACF) were examined to identify a range for lag order (p) and order of moving average (q) parameters in ARIMA (p, d, q) models. The time series in which ACF presented a gradually decreasing or geometric pattern, with PACF presenting a sudden cutoff after significant spikes, was tested for a possible auto-regressive (p, d, 0) model. Conversely, time series with the opposite characteristics were tested for the possible moving average (0, d, q) model, while those in which ACF and PACF both presented geometric or gradually decreasing patterns were tested for the auto-regressive moving average (ARMA) model. The model result tables were interpreted as follows:

$$\hat{y}_t = \mu + \phi_1 y_{t-1} + \ldots + \phi_p y_{t-p} - \theta_1 e_{t-1} - \ldots - \theta_q e_{t-q}$$

where $\hat{y}_t$ is the variable being explained at time t, φ is the coefficient of each parameter p, and θ is the coefficient of each parameter q. Because this paper focuses on a time series trend instead of constant, μ as intercept is not presented in the Results section. The Akaike information criterion was used to examine which model best fit the time series, and the Ljung–Box test reporting Q-statistics examined residual auto-correlation. Statistical significance was set at a level of 0.05 as a disciplinary common practice. Plot of ARIMA models were also superimposed on original time series plot to illustrate predictive accuracy through comparing predicted and observed values. After that, vector auto-regressive (VAR) models of six emotion variables within each fund were computed in the R programming software (R Foundation for Statistical Computing, Vienna, Austria). VAR modeling is also helpful for structural analysis among times series variables. For testing residuals' auto-correlation, the Portmanteau test was used to examine all VAR models. The same procedure was repeated with the addition of a single fund performance variable to the VAR model at a time.

3. Results

3.1. Relationship of each emotion among its time intervals

All measurements went through the augmented Dickey–Fuller test for achieving stationarity as seen in Table 1. Although emotion variables were all stationary, unit and cumulative net worth were non-stationarity, with $p > 0.05$; thus, the significance level of the hypothesis of stationarity was acceptable.

All unit and cumulative net worth time series took the first difference and reported $p < 0.01$ as stationary ($d = 1$). No further differencing was computed to avoid unnecessary serial correlation and complexity due to over-differencing. The maximum p and q numbers of ARIMA models were decided to be 2 ($0 \leq p \leq 2$, $0 \leq d \leq 1$, $0 \leq q \leq 2$) due to the spikes patterns of the three funds in 18 sets of ACF and PACF graphs. A combination of possible ARIMA(p, d, q) models based on ACT and PACF graphs were tested for all emotions. Fear of the three funds was tested for ARIMA(0,1,2) and ARIMA(1,1,0), and surprise associated with the three funds was tested for ARIMA(1,0,0) and ARIMA(2,1,0). Disgust, anger, sadness, and happiness associated with the three funds were tested for ARIMA(1,0,0) and ARIMA(1,1,0), as reported in Tables 2–4. A priority of model diagnostics was that residuals of the fitted ARIMA model had no auto-correlation. Models with residual auto-correlation were considered to lack overall randomness among a group of lags. Therefore, ARIMA(1,1,0) turned out to be the best forecasting model for fear, disgust, anger, sadness, and happiness of the three funds, while ARIMA(2,1,0) was the best model for surprise, supporting H_1 with statistical significance. Predicted values of these models were close to observed values, taking Lombarda China Healthcare Mix Fund fear and surprise as examples in Figures 2, 3.

3.2. Relationship among the six emotions within funds

Some patterns of emotional presence in the Lombarda China Healthcare Mix Fund, E Fund Blue Chip Select Mix Fund, and China Merchants Liquor Index Fund were found throughout the year, as seen in Figures 4–6.

In the Lombarda China Healthcare Mix Fund, surprise and sadness concurrently somewhat peaked between March 9–10, 2021, followed by continuing fear until March 26, 2021. A spike of strong sadness showed on June 6, 2021. Fear, surprise, disgust, and anger spikes overlapped on August 20, 2021, while fear and anger repeated overlapping patterns on August 21, 2021. A visually apparent spike of happiness appeared on September 5, 2021. Later, starting with fear, surprise, and anger on November

TABLE 1 Results of augmented Dickey–Fuller test.

	Dickey–Fuller	*p*-Value
Lombarda China Healthcare Mix Fund		
Fear	−5.54	0.01[a]
Surprise	−5.44	0.01[a]
Disgust	−5.44	0.01[a]
Anger	−5.67	0.01[a]
Sadness	−5.89	0.01[a]
Happiness	−6.28	0.01[a]
Unit net worth	−1.78	0.67
(Unit net worth)'	−6.42	0.01[a]
Cumulative net worth	−1.84	0.64
(Cumulative net worth)'	−6.49	0.01[a]
E Fund Blue Chip Select Mix Fund		
Fear	−5.25	0.01[a]
Surprise	−6.49	0.01[a]
Disgust	−5.43	0.01[a]
Anger	−5.33	0.01[a]
Sadness	−6.19	0.01[a]
Happiness	−6.17	0.01[a]
Unit net worth	−2.71	0.28
(Unit net worth)'	−6.03	0.01[a]
Cumulative net worth	−2.71	0.28
(Cumulative net worth)'	−6.03	0.01[a]
China Merchants Liquor Index Fund		
Fear	−3.65	0.03
Surprise	−6.23	0.01[a]
Disgust	−4.72	0.01[a]
Anger	−5.70	0.01[a]
Sadness	−5.69	0.01[a]
Happiness	−4.91	0.01[a]
Unit net worth	−2.65	0.30
(Unit NET WOrth)'	−5.65	0.01[a]
Cumulative net worth	−2.61	0.32
(Cumulative net worth)'	−5.74	0.01[a]

[a]p-value smaller than listed.

2, 2021, disgust joined the emotion group on November 3, 2021, and fear lasted until November 6, 2021. A second happiness spike appeared on November 21, 2021. Finally, getting close to the end of the year, some fear, surprise, and anger simultaneously presented on December 1, 2021.

In the E Fund Blue Chip Select Mix Fund, emotion trends were smooth until June 6, 2021, where a sadness spike appeared. Two months later, a combination of fear, anger, and sadness peaked on August 20, 2021. Strong happiness showed on November 21, 2021, with a lower peak of fear, anger, and sadness appearing on December 1, 2021.

In the China Merchants Liquor Index Fund, a small surprise spike showed on January 4, 2021, followed by some sadness on the next day. Simultaneous surprise and happiness spikes appeared on February 22, 2021. Slight levels of fear, along with anger, sadness, and happiness, fluctuated on March 8, 2021. Some disgust peaked on April 22, 2021, followed by some surprise peaking the next day, then slight fear on the day after. Similarly, some surprise resurfaced on June 22, 2021, while fear showed on the next day. A combination of fear, disgust, and anger presented on August 20, 2021, changing to surprise 2 days later, then to happiness. Strong happiness was noticed on November 4 and 21, 2021. Starting with slight surprise on December 28, 2021, strong fear with some disgust and anger joined the next day. On December 30, 2021, slight fear and surprise with some sadness was present, which cooled down to less fear on December 31, 2021.

Several correlations among emotions were found through VAR models, as seen in Table 5. To remove serial correlation, all emotion time series took the first difference. The Portmanteau test result of differenced time series turned out to accept the hypothesis that there was no longer serial correlation at a statistically significant level. However, the coefficient estimates were small in general. Specifically, in the Lombarda China Healthcare Mix Fund, surprise and sadness showed some degree of statistically significant positive correlation in the VAR(1) model ($B = 0.14$), where sadness served as a predictor. In addition, sadness ($B = -0.41$), fear ($B = -0.04$), and surprise ($B = 0.17$) presented significant correlations with anger. Other equations in VAR(1) did not report correlations at a statistically significant level. Happiness in the China Merchants Liquor Index Fund turned out to be a predictor of fear ($B = 0.31$) and surprise ($B = 0.2$). Furthermore, disgust could be a predictor of surprise ($B = 0.53$), and anger and fear positively correlated with each other. Additionally, some correlations among emotions in the E Fund Blue Chip Select Mix Fund were statistically significant, albeit with a small coefficient. Because a small coefficient indicates that the relationship is subtle, we considered the correlation among these emotions to be rather weak. Therefore, the results failed to validate H_2 of this study.

3.3. Relationship between emotions and fund performance

As little correlation was found, the six basic emotions could not be considered as control variables for one another in the

TABLE 2 ARIMA modeling results of the Lombarda China Healthcare Mix Fund.

	ARIMA parameter	MA(1)	MA(2)	AR(1)	AR(2)	AIC	Ljung–Box Q
Fear	(0,1,2)	−0.77 (0.06)***	−0.19 (0.06)**			1,145.39	9.32
	(1,1,0)			−0.39 (0.06)***		1,219.24	51.01***
Surprise	(1,0,0)			0.21 (0.06)**		938.85	10.99
	(2,1,0)			−0.43 (0.06)***	−0.31 (0.06)***	982.23	26.29***
Disgust	(1,0,0)			−0.03 (0.06)		489.17	4.72
	(1,1,0)			−0.52 (0.06)***		585.48	43.04***
Anger	(1,0,0)			0.00 (0.06)		934.31	12.65
	(1,1,0)			−0.49 (0.06)***		1,029.13	62.93***
Sadness	(1,0,0)			0.02 (0.06)		411.50	0.80
	(1,1,0)			−0.48 (0.06)***		508.73	33.63***
Happiness	(1,0,0)			0.02 (0.06)		751.31	9.14
	(1,1,0)			−0.48 (0.06)***		847.88	47.02***

**$p < 0.01$.
***$p < 0.001$.

TABLE 3 ARIMA modeling results of the E Fund Blue Chip Select Mix Fund.

	ARIMA parameter	MA(1)	MA(2)	AR(1)	AR(2)	AIC	Ljung–Box Q
Fear	(0,1,2)	−0.84 (0.07)***	−0.11 (0.07)			1,139.69	6.12
	(1,1,0)			−0.42 (0.06)***		1,221.82	43.80***
Surprise	(1,0,0)			0.17 (0.06)		1,028.88	11.46
	(2,1,0)			−0.47 (0.06)***	−0.31 (0.06)***	1,096.61	42.20***
Disgust	(1,0,0)			0.02 (0.06)		512.49	6.79
	(1,1,0)			−0.48 (0.06)***		609.64	41.90***
Anger	(1,0,0)			−0.019 (0.06)		901.01	20.64***
	(1,1,0)			−0.49 (0.06)***		1,001.38	78.95***
Sadness	(1,0,0)			−0.02 (0.06)		513.35	0.92
	(1,1,0)			−0.50 (0.06)***		613.30	34.17***
Happiness	(1,0,0)			−0.01 (0.06)		762.17	3.58
	(1,1,0)			−0.49 (0.06)***		861.50	39.01***

***$p < 0.001$.

VAR model with the addition of funds unit and cumulative net worth. Each emotion time series was computed separately in VAR(1) with the net worth time series of a fund. As seen in Table 6, a statistically significant relationship between fear and unit net worth ($B = -0.39$) was found in the Lombarda China Healthcare Mix Fund, while fear and cumulative net worth presented an even stronger correlation ($B = -5.23$). Both unit net worth ($B = -3.21$) and cumulative net worth ($B = -3.25$) showed a significant correlation with surprise, while anger has the strongest correlational relationship with unit net worth ($B = -5.58$). The VAR(1) models of the Lombarda China Healthcare Mix Fund were examined by Portmanteau test and accepted the test hypothesis that there were no serial correlations of the residuals, as well as the E Fund Blue Chip Select Mix Fund, as seen in Table 7. However, none of the coefficients of the E Fund VAR models were statistically significant. In Table 8, the China Merchants Liquor Index Fund modeling results reveal a significant correlation between fear and unit net worth, but this

TABLE 4 ARIMA modeling results of the China Merchants Liquor Index Fund.

	ARIMA parameter	MA(1)	MA(2)	AR(1)	AR(2)	AIC	Ljung–Box Q
Fear	(0,1,2)	−0.89 (0.06)***	−0.08 (0.07)			1,081.26	0.84
	(1,1,0)			−0.46 (0.06)***		1,161.61	33.69***
Surprise	(1,0,0)			0.17 (0.07)*		929.68	1.45
	(2,1,0)			−0.49 (0.06)***	−0.30 (0.06)***	989.31	16.55*
Disgust	(1,0,0)			−0.02 (0.06)		466.80	5.61
	(1,1,0)			−0.50 (0.06)***		567.93	41.87***
Anger	(1,0,0)			−0.02 (0.06)		292.70	0.37
	(1,1,0)			−0.50 (0.06)***		392.59	34.17***
Sadness	(1,0,0)			−0.02 (0.06)		818.32	0.24
	(1,1,0)			−0.58 (0.06)***		903.00	32.81***
Happiness	(1,0,0)			0.28 (0.06)***		921.81	16.39*
	(1,1,0)			−0.28 (0.06)***		1,003.60	54.78***

*$p < 0.05$.
***$p < 0.001$.

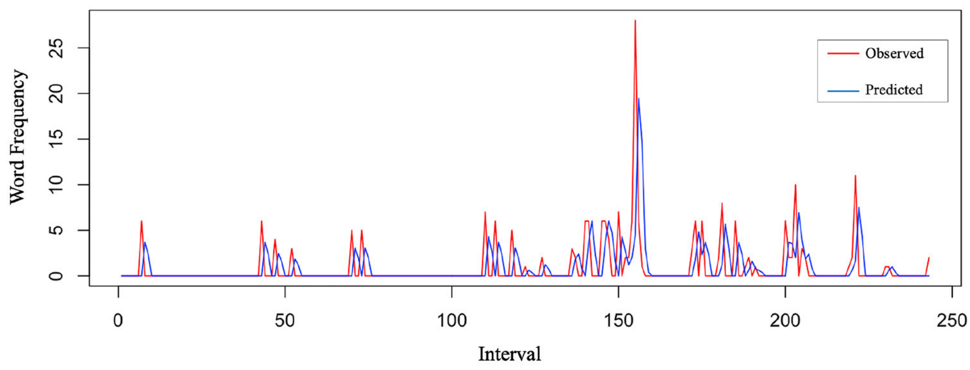

FIGURE 2
Observed vs. predicted (Lombarda fear).

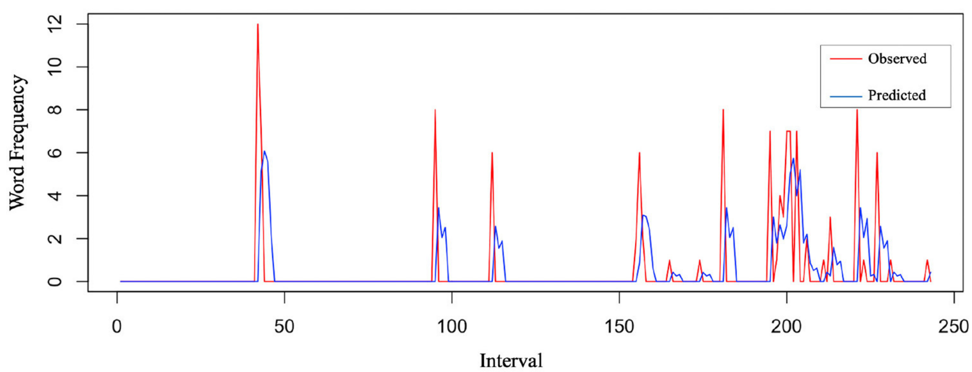

FIGURE 3
Observed vs. predicted (Lombarda surprise).

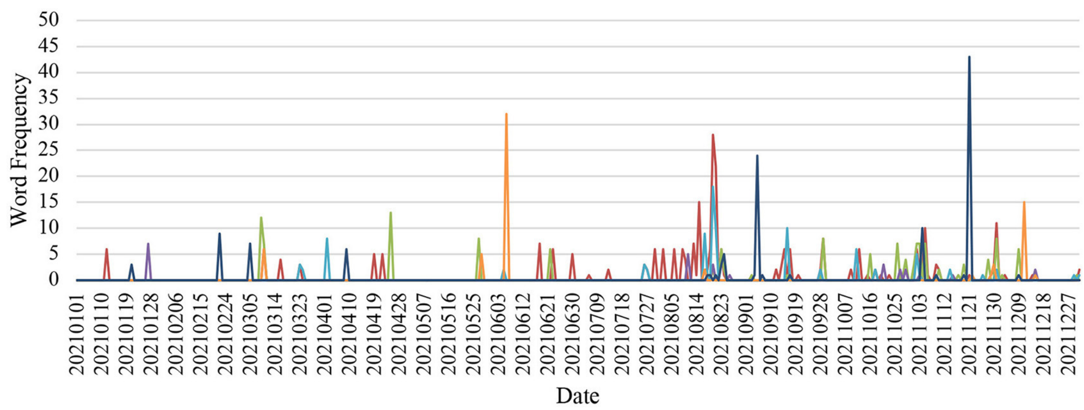

FIGURE 4
Lombarda China Healthcare Mix Fund.

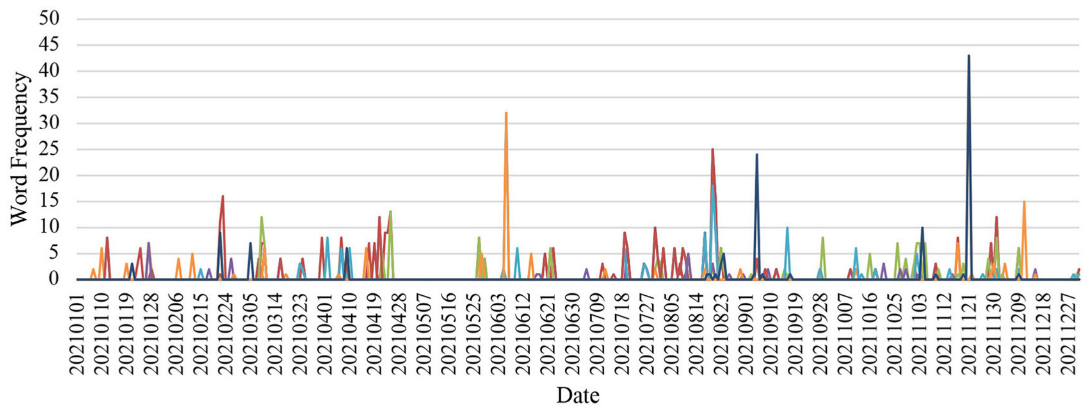

FIGURE 5
E Fund Blue Chip Select Mix Fund.

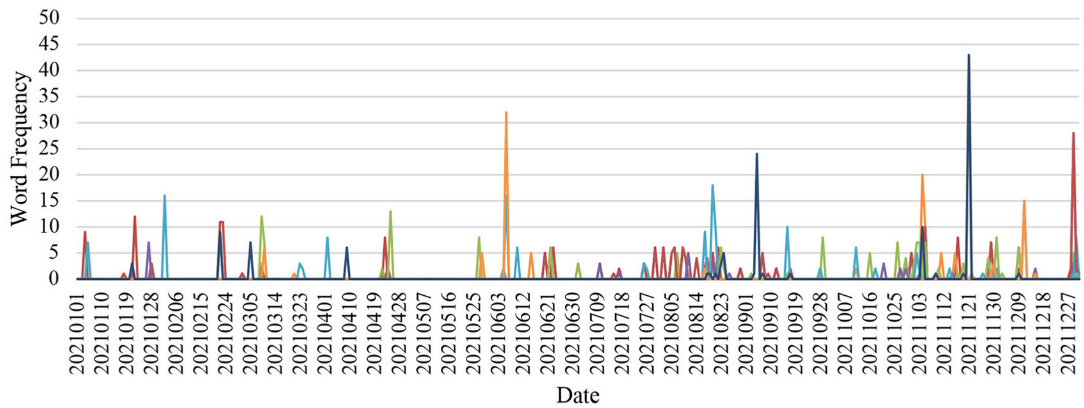

FIGURE 6
Merchants Liquor Index Fund.

TABLE 5 Vector auto-regressive model ($p = 1$) of emotions.

DV	IV	Lombarda China Estimate (SE)	E Fund Blue Chip Estimate (SE)	China Merchants Estimate (SE)
Fear	Surprise	−0.02 (0.10)	−0.07 (0.08)	0.08 (0.08)
	Disgust	−0.35 (0.21)	−0.02 (0.22)	−0.06 (0.22)
	Sadness	0.11 (0.09)	0.11 (0.12)	0.01 (0.33)
	Anger	0.17 (0.25)	0.18 (0.21)	−0.14 (0.10)
	Happiness	0.21 (0.12)	0.09 (0.13)	0.31 (0.08)***
Surprise	Fear	0.03 (0.04)	−8.66e−02 (6.06e−02)	−0.04 (0.05)
	Disgust	−0.12 (0.13)	3.20e−01 (1.64e−01)	0.53 (0.15)***
	Sadness	0.14 (0.06)*	1.98e−01 (9.26e−02)*	−0.13 (0.22)
	Anger	−0.22 (0.16)	−1.97e−02 (1.55e−01)	−0.03 (0.07)
	Happiness	−0.01 (0.08)	4.21e−01 (9.60e−02)***	0.2 (0.06)***
Disgust	Fear	9.43e−03 (1.86e−02)	5.17e−02 (2.24e−02)*	−0.02 (0.02)
	Surprise	1.00e−02 (2.59e−02)	−2.822e−02 (2.21e−02)	−0.02 (0.02)
	Sadness	−1.71e−03 (2.55e−02)	−5.51e−02 (3.42e−02)	0.03 (0.10)
	Anger	8.05e−04 (6.82e−02)	−7.84e−03 (5.73e−02)	−0.03 (0.03)
	Happiness	−1.85e−02 (3.39e−02)	−1.29e−02 (3.54e−02)	0.06 (0.03)*
Sadness	Fear	0.02 (0.05)	−2.77e−03 (5.04e−02)	−0.02 (0.01)
	Surprise	−0.08 (0.07)	−5.56e−02 (4.99e−02)	0.00 (0.02)
	Disgust	−0.08 (0.14)	4.74e−02 (1.37e−01)	0.02 (0.05)
	Anger	0.03 (0.17)	−4.99e−01 (7.70e−02)***	−0.02 (0.02)
	Happiness	−0.07 (0.08)	4.09e−02 (7.98e−02)	0.00 (0.02)
Anger	Fear	−0.04 (0.01)**	−3.23e−04 (2.28e−02)	0.15 (0.04)***
	Surprise	0.17 (0.02)***	−5.88e−03 (2.26e−02)	0.03 (0.05)
	Disgust	0.02 (0.04)	1.54e−04 (6.21e−02)	0.10 (0.13)
	Sadness	−0.41 (0.05)***	−1.55e−02 (3.49e−02)	−0.04 (0.18)
	Happiness	0.03 (0.03)	1.23e−02 (3.62e−02)	0.00 (0.05)
Happiness	Fear	−0.05 (0.03)	3.51e−02 (3.69e−02)	−0.08 (0.05)
	Surprise	0.05 (0.04)	−7.71e−02 (3.64e−02) *	−0.09 (0.06)
	Disgust	0.08 (0.10)	8.30e−02 (1.00e−01)	−0.09 (0.16)
	Sadness	−0.00 (0.04)	−6.69e−02 (5.63e−02)	0.28 (0.24)
	Anger	0.04 (0.12)	−2.69e−01 (9.45e−02)**	−0.06 (0.07)
	Portmanteau p-value	1.11E-15	<2.20E−16	8.69E−14

*p < 0.05.
**p < 0.01.
***p < 0.001.

model did not pass the Portmanteau test. Disgust was found to be correlated with both unit and cumulative net worth ($B = -3.45$), fulfilling the white noise requirement. In general, H3 of this study was accepted.

4. Discussion

The results of the ARIMA models of fear, surprise, disgust, anger, sadness, and happiness indicated the best-fit forecast

TABLE 6 Vector auto-regressive model ($p = 1$) between emotions and fund performance of the Lombarda China Healthcare Mix Fund.

IV	DV	Estimate (SE)	Portmanteau p-value
Unit net worth	Fear	−0.39 (0.06)∗∗∗	1.89E−03
	Surprise	−3.21 (1.52)∗	6.59E−03
	Disgust	−0.54 (0.65)	1.92E−03
	Sadness	−0.71 (0.55)	4.00E−02
	Anger	−5.58 (1.57)∗∗∗	5.83E−06
	Happiness	0.42 (1.11)	8.32E−04
Cumulative net worth	Fear	−5.23 (2.38)∗	2.11E−03
	Surprise	−3.25 (1.53)∗	6.61E−03
	Disgust	−0.55 (0.65)	4.99E−03
	Sadness	−0.72 (0.55)	4.00E−02
	Anger	−5.65 (1.58)	1.56E−06
	Happiness	0.42 (1.12)	9.92E−04

*$p < 0.05$.
***$p < 0.001$.

models for the Lombarda China Healthcare Mix Fund, E Fund Blue Chip Select Mix Fund, and China Merchants Liquor Index Fund. Model commonality was found across the three funds, where ARIMA(1,1,0) could be used as a reference for forecasting fear, disgust, anger, sadness, and happiness textual expressions on Weibo and ARIMA(2,1,0) could be used to forecast surprise of Weibo users, respectively. Through the results, we found that Weibo emotions could be predicted by emotions in the previous time point. Because the constants of models were not reported in the Results section, we recommended referencing the ARIMA parameter coefficients for univariate time series trends on emotion. The result of the inter-emotion analysis of each fund revealed a relatively weak or non-significant relationship among fear, surprise, disgust, anger, sadness, and happiness. Although visual trends presented a co-occurrence of multiple emotions during the same time interval, this paper failed to support the idea that a certain textual emotion relevant to a particular fund on Weibo could be a predictor of another. However, a predictive relationship was found in the structural analysis of emotion and fund performance time series. Through VAR models, fear, surprise, and anger on Weibo could be explained by fund performance and reported negative correlations.

An emotional pattern could be generated from our findings; specifically, as the fund net worth becomes lower, there could be a predictable spike in the textual expressions of fear, surprise, and anger on Weibo. This result was also supported by research on emotion and behavior stating that behavioral responses could be forecasted by emotion (Weisbuch and Adams Jr, 2012). Because spelling mistakes of textual emotion analysis were not included in the emotion frequency count, such could be a limitation of neglecting potential Weibo posts, which decreased the sample size of this study. Image mining, including of photos and emojis, was another challenge in this study; for instance, a sarcastic image could sometimes be a form of negation, which was not included in the data collection. We encourage future research on the digital negation of SNSs to improve this research.

TABLE 7 Vector auto-regressive model ($p = 1$) between emotions and fund performance of the E Fund Blue Chip Select Mix Fund.

IV	DV	Estimate (SE)	Portmanteau p value
Unit net worth	Fear	−12.09 (3.78)	2.79E−05
	Surprise	−1.68 (3.13)	1.41E−05
	Disgust	−1.36 (1.09)	1.45E−05
	Sadness	−3.39e−02 (1.10e+00)	5.42E−04
	Anger	−8.60 (2.39)	1.99E−10
	Happiness	−3.39 (1.82)	8.04E−05
Cumulative net worth	Fear	−12.09 (3.78)	2.79E−05
	Surprise	−1.68 (3.13)	1.41E−05
	Disgust	−1.36 (1.09)	1.45E−05
	Sadness	−3.40e−02 (1.100e+00)	5.42E−04
	Anger	−8.60 (2.39)	1.99E−10
	Happiness	−3.39 (1.82)	8.04E−05

TABLE 8 Vector auto-regressive model ($p = 1$) between emotions and fund performance of the China Merchants Liquor Index Fund.

IV	DV	Estimate (SE)	Portmanteau p-value
Unit net worth	Fear	−12.46 (4.75)**	9.26E−01
	Surprise	−2.90 (3.63)	7.82E−02
	Disgust	−3.45 (1.47)*	9.28E−03
	Sadness	4.13 (2.91)	2.47E−02
	Anger	−4.41 (1.00)	5.12E−02
	Happiness	1.40 (3.75)	7.54E−04
Cumulative net worth	Fear	−12.02 (4.75)	9.27E−01
	Surprise	−2.25 (3.64)	7.41E−02
	Disgust	−3.45 (1.47)*	9.07E−03
	Sadness	4.12 (2.91)	2.40E−02
	Anger	−4.40 (1.00)	4.33E−02
	Happiness	1.39 (3.75)	6.66E−04

*$p < 0.05$.
**$p < 0.01$.

5. Conclusion

We believe that this study contributes to a new perspective of linguistic investigation considering temporal aspect with an emphasis on SNSs and innovate statistic models of textual emotions. The results of this study also presented a practical forecasting trend equation of emotions for organizations with a need for Weibo emotion monitoring relevant to funds in China, such as media risk management teams. In addition, this study presented insight into computational linguistic methods in digital emotion studies. As future research, we will consider further validation of modeling of other funds we collected in the same timeframe and apply existing linguistic coding models to dataset. Lastly, we look forward to emotional studies in other fields and languages.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

SL has been involved in designing the algorithm logic and analytic algorithm coding, cleaning and analyzing data, and drafting the manuscript.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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