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What is Beautiful is Good: Attractive Avatars for Healthier Dining and Satisfaction

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Abstract

Purpose – As technology increasingly integrates into the restaurant industry, avatar servers present a promising avenue for promoting healthier dining habits. Grounded in the Halo Effect Theory and Social Comparison Theory, this study delves into the influence of avatars' appearance, humor, and persuasion on healthier choices and customer satisfaction.

Design/methodology/approach – This article comprises three experimental studies. Study 1 manipulates avatar appearance (supermodel-looking vs. normal-looking) to examine its effects on perceived attractiveness, warmth, and relatability. These factors influence customer satisfaction and healthy food choices through the psychological mechanisms of social comparison and aspirational appeal. Studies 2 and 3 further refine this theoretical model by assessing the interplay of appearance with humor (presence vs. absence) and persuasion (health-oriented vs. beauty-oriented), respectively.

Findings – Results suggest that avatars resembling supermodels evoke stronger aspirational appeal and positive social comparison due to their attractiveness. Thus, bolstering healthier choices and customer satisfaction. Moreover, humor moderates the relationship between appearance and attractiveness, while persuasion moderates the effects of appearance on social comparison and aspirational appeal.

Research implications – This research bridges the Halo Effect Theory and Social Comparison Theory, offering insights enriching the academic discourse on technology's role in hospitality.

Practical implications – The findings provide actionable insights for managers, tech developers, and health advocates.

Originality/value – Despite its significance, avatar design research in the hospitality sector has been overlooked. This study addresses this gap, offering a guideline for crafting attractive and persuasive avatars.

Keywords: Hospitality technology, avatar, healthy food, persuasion, Halo Effect Theory, Social Comparison Theory

Paper type: Research paper

Introduction

In the current global health landscape, the urgent need to promote healthier food choices aligns with the United Nations' Sustainable Development Goal 3, aimed at ensuring good health and well-being. This is particularly pertinent given the rising incidence of diet-related health issues such as obesity, heart disease, and diabetes, highlighting the restaurant industry's pivotal role in public health (Shafieizadeh et al., 2023). Restaurants are in a unique position to shape dietary habits and consumer behavior towards healthier options (Zhang et al., 2023; Park et al., 2023), and the integration of advanced technologies like artificial intelligence (AI) in this sector represents an innovative strategy to support health-conscious dining, thereby contributing to the achievement of the UN's health and wellness objectives (Choi et al., 2020). Notably, avatars offer a promising avenue for influencing consumer behavior by personalizing interactions and guiding diners toward nutritious food choices, thus enhancing the dining experience (Ali, 2022). Research shows that avatars can positively affect health habits, including encouraging exercise, addressing weight-related issues, and managing chronic conditions like diabetes, by modeling healthy eating behaviors and providing nutritional advice (Weimann et al., 2022). In the evolving landscape of the restaurant industry, avatars have been identified as groundbreaking technological innovations, offering a multifunctional approach to enhance healthy eating practices (Choi et al., 2020).

Avatars, acting as virtual counterparts, bridge the gap between the real-world and digital realms, thus redefining interactive customer service by assuming diverse roles from concierge to waiter services, tailored for a personalized dining experience (Buhalis et al., 2023; Kim et al., 2023). Unlike service robots, avatars integrate human-like interactivity with artificial intelligence efficiency, offering a level of adaptability and round-the-clock service that effectively addresses labor shortages and elevates service delivery standards in the hospitality sector (Cain et al., 2019; Kim et al., 2023; Li et al., 2019). Their superior flexibility and digital nature allow for swift customization to consumer preferences and seamless integration across various platforms, enhancing customer accessibility and engagement (Gonzales-Chávez & Vila-Lopez, 2021). As such, avatars emerge as a pivotal innovation in promoting healthier dining options, underscoring a significant shift towards more efficient and customer-centric service models in the restaurant industry (Wong et al., 2023). However, despite these advancements, there is a noticeable research gap regarding avatars' full potential and impact within the hospitality industry, marking a significant area for future investigation (Nicolau et al., 2020).

The design of avatars plays a crucial role in shaping customer perceptions and interactions, with the attractiveness of an avatar, humor in its dialogue, and its persuasive communication being key elements. The attractiveness of an avatar, as explored by Gonzales-Chávez & Vila-Lopez (2021) and Li et al. (2019), significantly influences customer engagement, supported by the Social Comparison Theory (Festinger, 1954). Attractive avatars are known to evoke health and wellness aspirations, while those with a more commonplace appearance may foster relatability and body positivity. Additionally, incorporating humor enhances an avatar's appeal and persuasiveness, as suggested by the Halo Effect Theory (Nicolau et al., 2020) and observations of Foster et al. (2022). Importantly, the integration of persuasive communication, crucial for shaping effective customer responses as noted by Zhang et al. (2020), complements these elements by directly influencing consumer behavior towards healthier choices. This strategic blend of appearance, humor, and persuasive messaging in avatar design, despite its potential, underscores a significant research gap regarding their combined impact on the effectiveness and persuasiveness of avatars, indicating a critical area for future investigation.

Therefore, this study explores several key aspects: (1) The impact of avatar appearance (supermodel-looking vs. normal-looking) on perceived attractiveness; (2) The relationship between perceived attractiveness, social comparison, and aspirational appeal; (3) The influence of social comparison and aspirational appeal on customer satisfaction and healthy food choices; (4) The moderating role of humor (presence vs. absence) in the relationship between appearance and attractiveness; (5) The moderating effect of persuasion focus (beauty-oriented vs. health-oriented). This manuscript meticulously unfolds across three experimental studies. Initially, Study 1 delves into the effects of avatar appearance—contrasting supermodel-like figures with ordinary-looking counterparts—on their perceived attractiveness and its ripple effect on consumer behavior. Subsequently, Studies 2 and 3 expand this inquiry by examining how humor and persuasion, when intertwined with avatar appearance, respectively, sway the psychological mechanisms of social comparison and aspirational desires, thereby impacting customer satisfaction and propelling choices towards healthier dining options.

This research enriches the theoretical landscape by seamlessly integrating Halo Effect Theory and Social Comparison Theory, illustrating how avatars' attractiveness and role as aspirational figures can significantly shape customer behaviors and preferences in the context of healthy eating. It advances the discourse on the Halo Effect Theory, providing empirical evidence

of how the aesthetic design of avatars can impact customer satisfaction and influence dietary choices, thereby underscoring the critical role of visual appeal in consumer persuasion. Furthermore, the study breaks new ground in understanding the combined effects of visual aesthetics and communication strategies, such as humor and persuasive messaging, in avatar design, offering novel insights into the dynamics of human-avatar interaction. Managerially, this research provides practical insights and actionable strategies for technology developers, restaurant managers, and health advocates. It guides the development of avatars that enhance customer satisfaction and encourage health-conscious choices, thereby contributing to broader societal health and environmental sustainability goals.

Literature Review

Attractiveness

The Halo Effect Theory, originated by Edward Thorndike and further explored in social psychology, describes a cognitive bias where a single trait significantly influences the overall perception of a person, product, or brand (Nicolau *et al*., 2020). This theory is particularly relevant in understanding how an avatar's appearance can drastically affect its perceived attractiveness and the efficacy of its message, especially in the context of promoting healthy eating habits (Xue *et al*., 2022). The theory suggests that positive perceptions of one attribute, such as attractiveness, can positively color the overall impression of the avatar, extending to its persuasive capabilities.

Attractiveness refers to the degree to which an individual is seen as appealing and desirable to others based on both physical and non-physical characteristics (Li *et al*., 2019). While physical appearance, including facial symmetry, body proportions, and overall aesthetics, is commonly associated with attractiveness (Chaiken, 2022), it is important to note that attractiveness extends beyond physical attributes. It also incorporates personality traits, behaviors, and other characteristics individuals find appealing. Attributes like kindness, intelligence, and humor are often considered attractive (Kim & Kim, 2021). The complexity of attractiveness lies in its combination of physical and non-physical elements, contributing to an individual's overall appeal.

Avatar design, encompassing a spectrum from supermodel-like to average appearances, plays a crucial role in customer perception and engagement. Studies indicate a marked preference for avatars that resemble supermodels (Li *et al*., 2019). This preference, correlating with the physical attractiveness effect, suggests a strong link between beauty and attractiveness.

Furthermore, research by Fang *et al*. (2020) demonstrates that the appearance and attractiveness of service employees, whether human or avatar, significantly influence customer engagement and decision-making. Hence, this makes it essential to include the relationship between appearance and attractiveness in this study. According to the Halo Effect Theory and previous literature, the following hypothesis is proposed:

> ***H1***: The appearance of avatar has a significant impact on attractiveness. Customers perceive a supermodel-looking avatar as more attractive.

Attractiveness encompasses more than physical features; humor emerges as a significant factor in determining it. According to the Halo Effect Theory, humor, recognized as a commendable trait, substantially enhances an avatar's attractiveness, contributing to an overall positive perception. Foster *et al*. (2022) highlights the correlation between humor and increased attractiveness, indicating that avatars equipped with humorous communication are perceived as more attractive, thereby improving relational outcomes. Further, Foster *et al*. (2022) suggest that humorous avatars not only elevate customer engagement but also amplify satisfaction, creating a positive and rapport-enhancing atmosphere. This suggests that humor significantly enhances an avatar's perceived attractiveness and influences customer decision-making. Therefore, the following hypothesis is proposed:

> ***H2:*** Humor (presence vs. absence) moderates the impact of appearance on attractiveness.

Social comparison

Social Comparison Theory, as formulated by Festinger, posits that individuals evaluate themselves against others to gauge their own opinions, achievements, and decisions (Festinger, 1954). This process is more than passive observation; it is a strategic means of enhancing self-awareness, refining self-evaluations, and aiding informed decision-making (Festinger, 1957). Importantly, Festinger highlighted the propensity for upward social comparisons, where individuals compare themselves with those perceived as superior in abilities and achievements, fostering personal growth and improvement (Festinger, 1954). Within the context of this research, Social Comparison

Theory elucidates how avatars can impact customer behavior and aspirations, particularly in making healthier decisions.

The relationship between avatar appearance and social comparison is evidenced in previous studies. Dion (1972) introduced the "what is beautiful is good" stereotype, positing that attractive individuals are often attributed with more favorable personality traits and perceived to lead more successful lives. This concept is reinforced by Li *et al*. (2022), who observed that attractive individuals generally receive more positive evaluations in social comparisons. Additionally, Schaefer & Blodgett Salafia (2014) highlighted the influential role of social comparison in contexts related to eating and body image, noting its significant impact on individuals' eating habits. Similarly, Donovan & Uhlmann (2022) explored how idealized appearances mediate dietary decisions through social comparison. Based on Social Comparison Theory and existing literature, the following hypothesis is proposed:

> ***H3***: The appearance of avatar has a significant impact on social comparison. A supermodel-looking avatar leads to a more positive social comparison.

Attractive individuals often receive favorable views and exert substantial influence on social comparison processes (Li *et al*., 2022). Li *et al*. (2019) found that greater attractiveness in service representatives positively impacts customer responses, primarily through social comparison. This occurs because attractiveness induces various degrees of social comparison, influencing customer perceptions and behaviors. When customers compare themselves with attractive avatars, they may be inspired to emulate such traits, potentially leading to healthier choices. This aligns with the physical attractiveness effect, where individuals are naturally drawn to beauty and associate it with positive attributes (Li *et al*., 2019). Therefore, the following hypothesis is proposed:

> ***H4:*** Attractiveness has a positive impact on social comparison.

The role of persuasion focus in shaping consumer behavior is vital, particularly in message framing's effectiveness. Zhang *et al*. (2020) and Garg *et al*. (2021) demonstrated that different message framings, particularly in health contexts, variably influence consumer behavior, with negative framings often having a stronger impact on dietary choices. This is pertinent in healthy eating contexts, where benefits span both health and beauty. Perloff (2014) explored how media portrayals, especially concerning beauty standards, affect body image perceptions and eating behaviors, emphasizing the importance of how benefits are communicated. The way an avatar frames these benefits, whether focusing on health or beauty, can significantly influence audience perceptions and decisions. Hausenblas & Fallon (2006) further underscored the imperative to comprehend the media's influence on body image, suggesting that the approach avatars use to convey the advantages of healthy eating might substantially affect social comparison mechanisms. In light of these insights, we propose the following hypothesis:

> ***H5***: Persuasion focus (health-oriented vs. beauty-oriented) moderates the impact of avatars' appearance on social comparison.

Aspirational appeal

Aspirational appeal, particularly when avatars epitomize healthy eating, signifies the attractiveness of entities with desirable traits or values (Osei-Frimpong *et al*., 2019). This allure, hinging on the avatar's capacity to foster identification and drive consumers towards healthier lifestyles, enables avatars to effectively promote healthier food choices. Research indicates heightened engagement with avatars exuding aspirational charm (Navarro *et al*., 2022) and a greater propensity for physical activity and health-conscious behaviors in response to such avatars (Durau *et al*., 2022). Sharda & Bhat (2019) further reinforce the influence of aspirational appeal in shaping consumer decisions and receptivity to messages. Therefore, this study proposes:

> ***H6***: The appearance of avatar has a significant impact on aspirational appeal. A supermodel-looking avatar leads to a more positive aspirational appeal.

Attractiveness is intrinsically linked to aspirational appeal. Luxury brands, often employ attractive models to craft an aspirational image, resonating with consumers' desires for a particular lifestyle (Sreejesh, 2015). In the case of avatars, their attractiveness can significantly influence customer behaviors, potentially inspiring healthier eating habits (Durau *et al*., 2022; Navarro *et al*., 2022). Parmar & Mann (2020) state that an aspirational figure can facilitate customers in establishing a required self-image, which is what the avatar is designed to achieve in this study. Singh & Banerjee (2021) further find that a positive aspirational can lead to engaging customers in meaningful relational behavior and better evaluation. Therefore, an attractive model or avatar is employed. Therefore, the study posits the following hypothesis:

H7: Attractiveness has a positive impact on aspirational appeal.

Similarly, the synergy between an avatar's appearance and its aspirational appeal, when modulated by persuasion-focus, warrants exploration. Hou & Kankham (2023) posited that an avatar's message structure profoundly influences individuals' trust, disposition, and reactions. Lin (2022) studied the moderating role of message framing, and how it influences appeal and customer behavior. Their findings prove the significance of this moderation effect and they found that positive messaging increased the appeal, which in turn produced favorable customer behavior. Hence, previous literature provides evidence that different message framing, named persuasion-focus in this study, holds the potential to alter results and behaviors. Given that an avatar's aesthetics offer pivotal non-verbal cues about its health and beauty benchmarks, the moderating role of persuasion-focus accentuates or tempers these cues. Therefore, it is hypothesized:

H8: Persuasion focus (health-oriented vs. beauty-oriented) moderates the impact of avatars' appearance on aspirational appeal.

Customer satisfaction

Customer satisfaction is a critical metric reflecting customers' contentment with services or products and is pivotal for an establishment's profitability and longevity (Buhalis *et al*., 2023). It

manifests in customer loyalty, repeat business, and positive referrals, all crucial for expanding the customer base and revenue (Lee *et al*., 2020). This study, utilizing Social Comparison Theory, proposes that customer satisfaction is influenced by customers' perceptions of avatars exemplifying ideal healthy eating behaviors. As Li *et al*. (2019) suggest, positive social comparisons with these avatars not only impact immediate perceptions but also overall satisfaction. Favorable comparisons with aspirational avatars can enhance customers' self-evaluation and motivation, thus positively influencing their satisfaction levels. Therefore, the study hypothesizes:

H9: Social comparison has a positive impact on customer satisfaction.

An avatar's aspirational appeal, defined by its ability to resonate with and inspire customers, proves significant in shaping behavioral inclinations. Empirical studies underscore that avatars exuding a pronounced aspirational appeal tend to foster deeper customer engagement and elicit stronger inspiration (Navarro *et al*., 2022; Osei-Frimpong *et al*., 2019). Social Comparison Theory suggests that individuals are motivated by comparisons with aspirational figures, impacting their self-perception and behavior (Festinger, 1954). Building on this, the current research hypothesizes that avatars with heightened attractiveness amplify aspirational appeal and act as catalysts, steering customers towards healthier dining choices at restaurants. Hence, we propose:

H10: Aspirational appeal has a positive impact on customer satisfaction.

Healthy food choice

In the consumer-behavior landscape, the choice of healthy food is increasingly seen as a reflection of the extent to which individuals' decisions are influenced by external cues, encouraging them to opt for healthier dietary options (Huang et al., 2022). Within the hospitality sector, comprehending these decision-making processes is essential for evaluating the effectiveness of innovative interventions like avatars in guiding customers towards more nutritious meal choices. As articulated by Social Comparison Theory, customers are likely to respond positively to avatars that exemplify healthy eating behaviors, driven by the aspiration to emulate such dietary practices

(Festinger, 1954). This alignment of eating habits with the avatar's portrayal intensifies its role in shaping customers' food choices, as discussed by Li et al. (2019) and Zhang et al. (2020). Therefore, we propose the following hypothesis:

H11: Social comparison has a positive impact on healthy food choice.

Furthermore, the aspirational essence of an avatar, representing an idealized vision of healthful consumption, can deeply resonate with and inspire those seeking dietary enhancements. An avatar who portrays an enviable image of nutritious eating can profoundly connect with individuals, spurring them to refine their dietary habits. The interplay between the avatar's aspirational characteristics and food choices is anchored in the notion that adhering to the avatar's recommendations propels customers toward their health goals. Drawing support from the Halo Effect Theory as discussed by Nicolau *et al*. (2020) and the Social Comparison Theory as explored by Festinger (1954) and Li *et al*. (2019), this hypothesis integrates these theoretical perspectives to examine the avatar's influence.

H12: Aspirational appeal has a positive impact on healthy food choice.

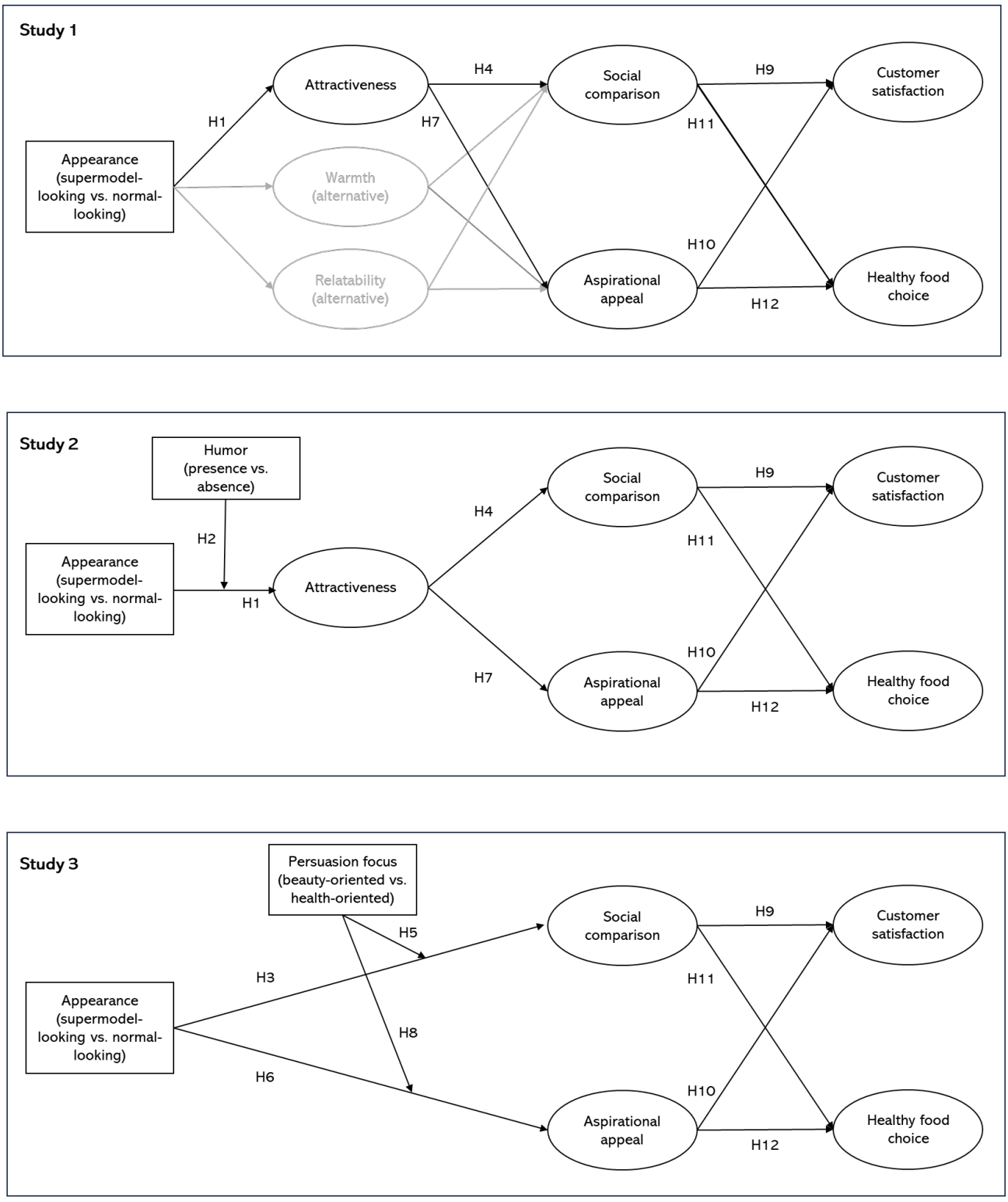

Figure 1: Conceptual models for three studies

Source: Authors own creation

Overview of the Studies

Three between-subject experiments were conducted to thoroughly explore the influence of avatars' appearance, humor, and persuasion on healthier choices and customer satisfaction. The conceptual models for three experimental studies are presented in Figure 1. A rigorous methodology inspired by Kaplan (2004) was adopted to ensure an impartial and thorough evaluation of avatars. Initially, a collaborative effort among nine researchers led to the careful selection of ten avatar pairs, ensuring each pair comprised avatars of identical gender. These avatars underwent a detailed evaluation by a panel of 40 participants. The participants rated the avatars on several criteria: perceived age (scale: 1 = very young to 7 = very old), realism (scale: 1 = very unrealistic to 7 = very realistic), emotional expression (scale: 1 = very negative to 7 = very positive), and appearance (scale: 1 = below-average looking, 5 = normal looking to 9 = supermodel looking).

From this diverse set, two distinct pairs of avatars (the 3rd and 5th pairs, as depicted in Figures 2 and 3) were selected for their differing appearance ratings while showing no significant differences in age perception, realism, and emotional expression. The supermodel-looking avatar in the 3rd pair had a mean appearance rating of 8.5 (SD = 0.96), compared to the normal-looking avatar, which scored 5.13 (SD = 1.26). Similarly, in the 5th pair, the supermodel-looking avatar rated 8.4 (SD = 0.98), whereas the normal-looking avatar received a rating of 5.60 (SD = 1.10). The statistical analysis indicated extremely significant differences in appearance ratings for both pairs (two-tailed P value < 0.0001), with mean differences of -3.38 (95% CI: -3.87 to -2.88, t = 13.4398, df = 78, SE = 0.251) and -2.80 (95% CI: -3.27 to -2.33, t = 11.9812, df = 78, SE = 0.234) between the supermodel-looking and normal-looking avatars, respectively.

This study utilized Prolific for data collection, primarily for its access to a diverse, high-quality respondent pool and its adherence to ethical research standards, which are crucial for ensuring the robustness and integrity of the data gathered. To ensure the relevance and quality of the data, participants had to meet specific eligibility criteria through a set of screening questions. Firstly, they had to be adults, aged 21 and above, ensuring informed consent. Secondly, they had visited a restaurant in the past three months, ensuring recent experience with making food choices. Thirdly, participants have prior experience or familiarity with avatars to comprehend and relate to the study's context. To prevent potential biases, participants affiliated with the research team, the institution, or any related avatar-designing company were excluded (Hao & Chon, 2022).

Once deemed eligible and consented, participants then viewed a video featuring an avatar. Each manipulation of the avatar was associated with a different copy of the questionnaire, so every participants were randomly assigned to only one experimental condition. A realism check was then administered to assess participants' perception of the video's authenticity and its applicability to real-life scenarios (Fan *et al*., 2020). Subsequently, participants were asked to fill out a questionnaire, which began with gathering demographic information. The remainder of the questionnaire pertained to the avatar video and related items, typically taking between 10 to 15 minutes to complete. An AI studio, leveraging deep-learning technology, was employed to generate videos featuring avatars based on a provided script. In the videos, avatar introduces healthier toppings and side dishes for a pizza, emphasizing the benefits for both personal health and the environment. Demo videos can be accessed via the online appendix.

To evaluate the effectiveness of the avatar manipulation, participants rated statements like "I think the avatar is good-looking" and "I think the avatar looks like a model" using a 7-point Likert scale, with 1 indicating strong disagreement and 7 signifying strong agreement. Control variables such as health consciousness, environmental awareness, and innovativeness were included to mitigate the influence of external factors on the results. Post-manipulation check, the questionnaire measured various constructs relevant to the study on a 7-point Likert scale, utilizing items from recognized literature. As shown in the Table 2 in the supplementary materials, these constructs encompassed Attractiveness (Cha, 2020), Warmth (Yoon *et al*., 2020), Relatability (Wang *et al*., 2019), Social Comparison (Jiang & Ngien, 2020), Aspirational Appeal (Dodoo, 2018), Customer Satisfaction (Jones *et al*., 2022), and Healthy Food Choice (Huang *et al*., 2022). Four attention-check questions, formulated according to Choi *et al*. (2020), were integrated into the survey to further validate the response quality.

The reliability of each construct was ascertained using Cronbach's alpha (α), with values above 0.7 denoting acceptable consistency among the scale items in measuring the underlying concept. For assessing construct validity, we evaluated both convergent and discriminant validity. Convergent validity was established through high Average Variance Extracted (AVE) values and Composite Reliability (CR) scores, while discriminant validity was confirmed by the square root of the AVE for each construct exceeding its correlation with other constructs, as detailed in Table 3 in the supplementary materials. Additionally, to address common method bias, we employed the

technique suggested by Kock (2015). Our analysis indicated the absence of common method bias, as evidenced by the collinearity statistics of the inner model not exceeding the threshold of 3.3.

Study 1

In Study 1, a single-factor experiment compared a supermodel-looking avatar to a normal-looking one to assess the influence of avatar appearance on attractiveness. The study further delved into the psychological underpinnings of social comparison and aspirational appeal, examining their roles in customer satisfaction and healthy food choice. This exploration investigates how appearance impacts customer perceptions and behaviors.

Figure 2: Supermodel-looking avatar *(left)* and normal-looking avatar *(right)*

Source: Authors own creation

Participants and procedure

In this between-subjects experiment, we recruited 302 participants, with a gender distribution of 52.3% female, as detailed in Table 1. Participants were randomly assigned to one of the two experimental conditions "supermodel-looking" versus "normal-looking" avatars: Each participant received an incentive of 2 USD for completing the survey. The sample size determination in the referenced studies adhered to the 10-Times Rule of PLS-SEM, as outlined by Hair *et al*. (2017). In Study 1, with the largest number of structural paths directed at a single construct being 3, and in Studies 2 and 3, where this number was 2, the sample sizes surpassed the minimum thresholds

of 30 and 20 for each experimental condition, respectively, thereby ensuring the statistical robustness of the findings. The studies achieved a high response rate of approximately 96%, with data collection spanning from May to July 2023.

Table 1. Participants' demographic characteristics

Source: Authors own creation

	Study 1		Study 2		Study 3	
Characteristics	***f***	**%**	***f***	**%**	***f***	**%**
Gender						
Male	143	47.4	238	67.2	270	49.2
Female	158	52.3	115	32.48	279	50.8
Other	1	0.3	1	0.32	0	0
Age						
Baby boomers (1946-1964)	9	3	9	2.54	16	2.9
Gen X (1965-1981)	39	12.9	73	20.6	117	21.3
Gen Y (1982-2000)	240	79.5	260	73.4	386	70.3
Gen Z (after 2000)	14	4.6	12	3.46	30	5.5
Income						
Less than USD 20,000	2	0.6	12	3.39	34	6.2
USD 20,000-29,999	49	16.2	45	12.7	51	9.3
USD 30,000-39,999	76	25.2	83	23.4	106	19.3
USD 40,000-49,999	84	27.8	108	30.5	170	31
USD 500,000 or more	91	30.2	106	30.01	188	34.2
Education						
High school	14	4.6	77	21.8	55	10
2-year technical college	10	3.3	18	4.98	13	2.36
4-year technical college	164	54.3	145	41	330	60.1
Master's degree	114	37.8	113	31.9	145	26.41
Doctorate degree	0	0	1	0.32	6	1.13
Dietary restrictions						
Presence	57	18.9	288	81.4	434	79.05
Absence	245	81.1	66	18.6	115	20.95

Results

The study was initiated by validating the avatar manipulation, utilizing independent-samples T-tests, demonstrating significant differences between the manipulations (manipulation check 1: F(300)=11.5, 95% CI=[-0.550,-0.245]; manipulation check 2: F(300)=8.02, 95% CI=[-0.615,-0.207]). These outcomes provided a strong foundation for the subsequent analyses. An independent-samples t-test confirmed the supermodel-looking avatar (M=5.86, SD=0.54) was more attractive than the normal-looking avatar (M=5.39, SD=0.66; F (289.5)=0.14, p<0.001).

PLS-SEM bootstrapping analysis with 5000 subsamples was conducted in SmartPLS4 for hypothesis test (Table 4), which proved the substantial influence of appearance on attractiveness (β=0.869, p<0.001), thus supporting hypothesis H1. The investigation into the impact of appearance on social comparison revealed a significant relationship (β=0.528, p<0.001), confirming hypothesis H3. Participants perceived the supermodel-looking avatar (M=5.81, SD=0.73) as eliciting a more favorable social comparison than the normal-looking avatar (M=5.48, SD=0.63). Furthermore, the study established that attractiveness exerted a positively significant impact on social comparison (β=0.259, p=0.007), lending support to H4. The investigation then extended its focus to aspirational appeal, wherein avatar appearance was found to have a substantial impact (β=0.589, p<0.001), endorsing hypothesis H6. The supermodel-looking avatar (M=5.84, SD=0.56) was associated with a more favorable aspirational appeal than the normal-looking avatar (M=5.49, SD=0.66).

Table 4. Hypotheses test for three studies

Source: Authors own creation

Study 1					
Hypotheses	*β*	SD	T	*p*	Results
H1: Appearance → Attractiveness	0.869***	0.071	12.203	0	Supported
H3: Appearance → Social comparison	0.528***	0.081	6.489	0	Supported
H4: Attractiveness → Social comparison	0.259**	0.096	2.687	0.007	Supported
H6: Appearance → Aspirational appeal	0.589***	0.078	7.568	0	Supported
H7: Attractiveness → Aspirational appeal	0.471***	0.083	5.679	0	Supported
H9: Social comparison → Satisfaction	0.295***	0.075	3.919	0	Supported
H10: Aspirational appeal → Satisfaction	0.532***	0.078	6.818	0	Supported

H11: Social comparison → Healthy choice	0.221*	0.092	2.395	0.017	Supported
H12: Aspirational appeal → Healthy choice	0.617***	0.085	7.282	0	Supported

Study 2

Hypotheses	*β*	SD	T	*p*	Results
H1: Appearance → Attractiveness	1.075***	0.106	10.13	0	Supported
H2: Appearance × Humor → Attractiveness	0.992***	0.152	6.533	0	Supported
H3: Appearance → Social comparison	0.762***	0.103	7.408	0	Supported
H4: Attractiveness → Social comparison	0.709***	0.052	13.612	0	Supported
H6: Appearance → Aspirational appeal	0.718***	0.103	6.961	0	Supported
H7: Attractiveness → Aspirational appeal	0.668***	0.065	10.253	0	Supported
H9: Social comparison → Satisfaction	0.227***	0.071	3.188	0.001	Supported
H10: Aspirational appeal → Satisfaction	0.600***	0.072	8.339	0	Supported
H11: Social comparison → Healthy choice	0.408***	0.06	6.821	0	Supported
H12: Aspirational appeal → Healthy choice	0.450***	0.064	6.997	0	Supported

Study 3

Hypotheses	*β*	SD	T	*p*	Results
H3: Appearance → Social comparison	0.877***	0.069	12.792	0	Supported
H5: Appearance × Persuasion focus → Social comparison	0.372**	0.121	3.077	0.002	Supported
H6: Appearance → Aspirational appeal	0.522***	0.085	6.151	0	Supported
H8: Appearance × Persuasion focus → Aspirational appeal	0.678***	0.132	5.141	0	Supported
H9: Social comparison → Satisfaction	0.304***	0.062	4.911	0	Supported
H10: Aspirational appeal → Satisfaction	0.499***	0.059	8.461	0	Supported
H11: Social comparison → Healthy choice	0.301***	0.058	5.14	0	Supported
H12: Aspirational appeal → Healthy choice	0.475***	0.059	8.018	0	Supported

Note(s): β=Path coefficient, SD=Standard deviation, P value: *P≤0.05, **P≤0.01, ***P≤0.001

Attractiveness significantly influenced aspirational appeal (β=0.471, p<0.001), affirming H7. Concurrently, significant paths were found from social comparison to customer satisfaction (β=0.295, p<0.001) and from aspirational appeal to customer satisfaction (β=0.532, p<0.001), supporting H9 and H10. Significant relationships were also observed between social comparison and healthy food choice (β=0.221, p=0.017), endorsing H11, and between aspirational appeal and healthy food choice (β=0.617, p<0.001), confirming H12. The R-square values of 0.571 for customer satisfaction and 0.604 for healthy food choice indicate that the model explains 57.1%

and 60.4% of the variance in these outcomes, respectively, demonstrating a substantial explanatory power.

Alternative explanation

The initial model integrated the constructs of warmth and relatability, recognizing their role in customer-avatar interactions. Asch (1946) defined warmth as perceiving benevolence and affability in others, enhancing positive interactions, and fostering trust (Huang & Ha, 2020). It was posited that an avatar's warmth, potentially influenced by its appearance as per the Halo Effect Theory (Li *et al*., 2023), would positively affect social comparison and aspirational appeal, particularly in the context of promoting healthier dining (Yoon *et al*., 2020). Conversely, relatability involves the extent to which users connect personally with the avatar, embodying shared experiences and emotions (Wang *et al*., 2019). While the Halo Effect Theory suggested that an avatar's appearance might enhance relatability, research indicated that normal-looking avatars often evoke greater relatability (Wang *et al*., 2019). Hence, it was initially assumed that while supermodel-looking avatars would be perceived as warm, normal-looking avatars might be seen as more relatable, each significantly impacting social comparison and aspirational appeal.

The analysis revealed significant differences in how avatar appearance affects warmth and relatability. Supermodel-looking avatars ($M=5.91$, $SD=0.52$) were rated higher in warmth than normal-looking avatars ($M=5.63$, $SD=0.58$), with a substantial relation between appearance and warmth ($F(296.3)=0.014$, $p<0.001$; $\beta=0.630$, $p<0.001$). Similarly, supermodel-looking avatars ($M=5.85$, $SD=0.59$) were perceived as more relatable compared to normal-looking avatars ($M=5.49$, $SD=0.61$), confirming a significant difference ($F(299.6)=0.412$, $p<0.001$) and a strong relationship between appearance and relatability ($\beta=0.606$, $p<0.001$). However, while warmth significantly influenced social comparison ($\beta=0.275$, $p=0.001$), relatability's effect on social comparison was not significant ($\beta=0.215$, $p=0.054$). Contrarily, warmth's impact on aspirational appeal was not significant ($\beta=0.062$, $p=0.438$), but relatability significantly affected aspirational appeal ($\beta=0.233$, $p=0.007$). Those findings disrupt traditional beliefs, showing that while attractiveness significantly correlates with social comparison and aspirational appeal, relatability and warmth do not demonstrate expected relationships with these outcomes. This suggests that attractiveness, often linked with success and desirability, is a more influential factor in how individuals perceive and aspire to emulate avatars.

Study 2

Study 2 aims to investigate the moderating impact of humor (presence vs. absence) on the relationship between avatar appearance (supermodel-looking vs. normal-looking) and attractiveness (testing H2) through a 2x2 between-subject experimental design.

Participants and procedure

In a between-subjects experiment involving 354 participants (67.2% male, as detailed in Table 1), they were randomly allocated to one of four scenarios: normal-looking avatar with humor (80 participants), without humor (80 participants), supermodel-looking avatar with humor (97 participants), and without humor (97 participants). The data collection and questionnaire were consistent with Study 1. This study extended the avatar manipulation by incorporating variations in humor (presence vs. absence). In the presence condition, an avatar delivered a humorous speech, incorporating witty remarks, playful comments, and humorous anecdotes related to healthy eating and food choices; while in the absence condition, the avatar presented a more straightforward speech, offering factual and nutritional information about healthy foods and habits. Approximately 60% of the script content was consistent between both speeches to ensure similar overall information. To validate the presence and absence of humor, participants were asked manipulation check questions, including "I think the avatar has a good sense of humor" and "I think the avatar talks in a humorous way".

Results

Independent-samples T-tests confirmed the supermodel-looking avatar (M=6.04, SD=0.49) as significantly more attractive than the normal-looking avatar (M=5.68, SD=0.84; $F(352)=9.15$, $p<0.001$), and the humor-included avatar (M=6.08, SD=0.48) more attractive than without humor (M=5.67, SD=0.8; $F(287.5)=5.54$, $p<0.001$), validating H1 and H2. The PLS-SEM analysis (see Table 4) showed avatar appearance significantly affecting social comparison ($\beta=0.762$, $p<0.001$) and aspirational appeal ($\beta=0.718$, $p<0.001$), confirming H3 and H6. Attractiveness positively influenced social comparison ($\beta=0.709$, $p<0.001$) and aspirational appeal ($\beta=0.668$, $p<0.001$), supporting H4 and H7. Significant relationships were also found from social comparison to customer satisfaction ($\beta=0.227$, $p=0.001$) and from aspirational appeal to satisfaction ($\beta=0.600$, $p<0.001$), endorsing H9 and H10, as well as between social comparison and healthy food choice ($\beta=0.408$, $p<0.001$), and aspirational appeal and healthy food choice ($\beta=0.450$, $p<0.001$),

supporting H11 and H12. The R-square values for customer satisfaction (0.617) and healthy food choice (0.646) indicated substantial explanatory power.

Study 3

The aim of Study 3 is to examine the moderating effect of the focus of persuasion (beauty-oriented vs. health-oriented) on the association between appearance (supermodel-looking vs. normal-looking) and two key variables: social comparison (H3) and aspirational appeal (H6). Importantly, this study does not incorporate the construct of attractiveness, as the focus of persuasion is not expected to exert a significant influence on the avatar's attractiveness. Rather, the investigation focuses on social comparison and aspirational appeal, which are more closely aligned with the verbal persuasive strategies employed by the avatar.

Participants and procedure

A total of 549 participants (50.8% female, as detailed in Table 1) were enrolled and randomly allocated to one of four experimental conditions: normal-looking beauty-oriented avatar (133 participants), normal-looking health-oriented avatar (137 participants), supermodel-looking beauty-oriented avatar (137 participants), and supermodel-looking health-oriented avatar (142 participants). The data collection protocol and questionnaire mirrored those in Study 1 and 2.

In addition to altering the avatar's appearance, this study introduced a variation in the avatar's persuasive messaging. In the beauty-oriented condition, avatar was programmed to highlight the beauty-related benefits associated with consuming healthy foods, such as improvements in skin quality, hair health, and physical appearance; whereas in the health-oriented condition, avatar emphasized health-related benefits, including enhancements in heart health, muscle development, hydration, and anti-inflammatory effects. While both avatars shared approximately 70% of their script content, the primary distinction was their respective focus areas. These persuasion manipulations were applied to both avatar appearances (see Figure 3), resulting in four distinct avatar design scenarios. To ensure the effectiveness of the persuasion manipulation, participants responded to the following manipulation check questions: "I believe the avatar emphasizes the health-related benefits of healthy foods" and "I believe the avatar emphasizes the beauty-related benefits of healthy foods".

Figure 3: Supermodel-looking avatar *(left)* and normal-looking avatar *(right)*

Source: Authors own creation

Results

Independent-samples T-tests were conducted to validate the effectiveness of appearance ($F(547)=6.04$, 95% CI=[-0.455,-0.146]) and persuasion focus ($F(545.5)=8.46$, $p<0.001$, 95% CI=[0.305,0.600]) manipulations. Additionally, it was found that the supermodel-looking avatar ($M=5.93$, $SD=0.61$) was significantly more attractive than the normal-looking avatar ($M=5.60$, $SD=0.94$; $F(547)=14.88$, $p<0.001$), providing support for hypothesis H1. Subsequently, the analysis explored the impact of avatar appearance on social comparison, revealing a significant relationship ($\beta=0.877$, $p<0.001$), robustly confirming hypothesis H3.

Beauty-oriented persuasion resulted in higher social comparison levels than health-oriented persuasion ($M=5.99$ vs. $M=5.26$, $SD=0.77$ vs. 0.98; $F(547)=13.7$, $p<0.001$, 95% CI=[0.59,0.89]). PLS-SEM bootstrapping confirmed significant relationships between appearance, persuasion focus, and social comparison (appearance→social comparison: $p<0.001$; persuasion→social comparison: $p<0.001$; appearance×persuasion→social comparison: $p=0.002$), supporting H5. Appearance significantly affected aspirational appeal ($\beta=0.522$, $p<0.001$), endorsing H6. Beauty-oriented persuasion also yielded greater aspirational appeal than health-oriented ($M=5.94$ vs. $M=5.19$, $SD=0.8$ vs. 1.03; $F(547)=20.9$, $p<0.001$, 95% CI=[0.596,0.905]).

Further PLS-SEM results substantiated significant relationships between appearance, persuasion focus, and aspirational appeal, endorsing H8.

Subsequently, the study confirmed significant paths from social comparison to customer satisfaction (β=0.304, $p<0.001$) and aspirational appeal to customer satisfaction (β=0.499, $p<0.001$), supporting H9 and H10. Significant relationships were also found between social comparison and healthy food choice (β=0.301, $p<0.001$), endorsing H11, and between aspirational appeal and healthy food choice (β=0.475, $p<0.001$), substantiating H12. The R-square values for customer satisfaction and healthy food choice are 0.586 and 0.547, respectively. Results from Study 3, along with Studies 1 and 2, show that appearance and persuasion focus significantly impact customer satisfaction and healthy food choices.

Conclusion and discussions

The findings from three experimental studies offer a nuanced understanding of the impact of avatar design in the hospitality industry. Study 1 aligns with the transformative perspective on artificial intelligence in service delivery in hospitality as discussed by Choi *et al*. (2020). This study extends the insights of Li *et al*. (2019) by emphasizing the critical impact of avatar appearance on customer perceptions and decisions. The profound influence of attractiveness over traditional qualities like warmth and relatability, which Crolic *et al*. (2022) has previously explored, marks a significant shift in understanding customer engagement with technology-assisted services. Furthermore, this study challenges the conventional wisdom, echoed in the works of Lv *et al*. (2021), about the relative importance of different avatar characteristics, by placing a stronger emphasis on the role of attractiveness in shaping customer behavior and decision-making processes.

Our research enriches the theoretical framework of the Halo Effect Theory and Social Comparison Theory in the context of hospitality technology, addressing a research gap identified by Cain *et al*. (2019). The study reveals that attractiveness, as opposed to warmth or relatability, holds more sway in influencing customer decisions. This is primarily attributed to the human tendency to aspire towards qualities associated with success and desirability, a theme that resonates with the findings of Kim *et al*. (2023), who highlighted the importance of visual aesthetics in user engagement. This insight diverges from the perspectives of Crolic *et al*. (2022), suggesting a nuanced understanding of customer engagement with anthropomorphic avatars in various emotional states.

Studies 2 and 3 build upon these findings, introducing humor and persuasion focus as additional moderating factors. These elements align with the work of Gonzales-Chávez & Vila-Lopez (2021), who underscored the importance of relational communication strategies in customer engagement. Furthermore, our findings resonate with Foster *et al*. (2022), highlighting the effectiveness of humor in enhancing the attractiveness and appeal of avatars. Additionally, the studies explore the aspirational appeal of avatars in line with insights from Nicolau *et al*. (2020), demonstrating how strategic communication can shape customer behavior and preferences.

A novel aspect of our research is the discovery that a beauty-oriented persuasion focus is more effective than a health-oriented one in influencing customer choices. This insight adds a new dimension to the existing literature on avatar design in the hospitality industry. By showing that specific aspects of avatar design, such as aesthetic appeal and persuasive messaging, can significantly shape consumer behaviors in the context of healthy eating, our research addresses a critical gap in the field. Furthermore, our study challenges the conventional focus on warmth and relatability, as highlighted in the work of Lv *et al*. (2021), by demonstrating the paramount importance of attractiveness in the context of avatar-assisted dining experiences.

In summary, our studies not only corroborate but also extend existing theories and findings in the realm of AI and hospitality, offering new insights into the critical role of avatar design in influencing customer behavior and satisfaction. This comprehensive approach provides a richer understanding of the interplay between avatar aesthetics and customer psychology, offering valuable implications for future research and practical applications in hospitality technology.

Theoretical implications

This study makes several theoretical contributions. Firstly, it combines the Halo Effect Theory and the Social Comparison Theory by demonstrating how avatars can serve as role models and influence customer behavior through positive social comparison processes. Customers are motivated to adopt healthier eating habits when they perceive the avatar as an aspirational figure. This aligns with previous research that emphasizes the impact of social comparison on behavior change (Festinger, 1954).

Secondly, the study contributes to understanding of the Halo Effect Theory by examining how avatar appearance influences customer satisfaction and healthy food choice. Consistent with the literature, the results show that a supermodel-looking avatar is perceived as more attractive,

leading to higher levels of customer satisfaction and a greater likelihood of following the avatar's recommendations (Li *et al*., 2019). This finding highlights the importance of visual appeal in persuasive communication and supports attractiveness can positively impact customer attitudes and behaviors.

Thirdly, this research offers insights into the design of avatars as persuasive tools. By manipulating both appearance and speech, the study explores the combined effects of visual appeal and humor on avatar attractiveness. The findings demonstrate that incorporating humor in the avatar's speech enhances its attractiveness. The effects of focus of persuasion are examined to show which type of benefits of healthy foods are more valued by people. Thereby providing valuable guidance for avatar design strategies in promoting health-conscious behaviors. This aligns with Garg *et al*., (2021) highlighting the persuasive impact of humor and persuasion focus on various communication contexts.

Interestingly, this study offers a viewpoint that diverges from the body positivity movement. It uncovers a trend where customers tend to favor avatars that resemble supermodels over those with a more ordinary appearance. This observation implies that, within the sphere of avatar design and effectiveness, the allure of physical attractiveness may wield a stronger influence on customer preferences compared to traits such as warmth and approachability. This aligns with the findings of Grabe *et al*. (2008), who noted that media portrayals of idealized body types can significantly sway consumer attitudes and behaviors. Particularly in contexts of persuasive communication, such as marketing or health promotion, an avatar's visual appeal seems to be a more decisive factor in guiding customer choices and behaviors. This preference for aesthetically appealing avatars, even in an age that champions body positivity, highlights the persistent and profound effect of physical aesthetics in shaping consumer psychology. This trend continues to influence customer reactions and choices, despite an increasing recognition and embrace of a variety of bodies.

Managerial implications

In the contemporary global context, the shift towards healthy food choices is gaining momentum, reflecting a broader commitment to enhancing quality of life as underscored by the United Nations Department of Economic and Social Affairs' Sustainable Development Goals (SDGs). This commitment to good health and well-being is increasingly evident in initiatives like the EatSmart Restaurant programme in Hong Kong and the Healthier Dining Programme in Singapore. These

programs exemplify the concerted efforts to increase the availability and accessibility of healthier food and drink options, fundamentally transforming consumer habits. This trend underscores the pivotal role that restaurants play in shaping public dietary choices and promoting a culture of health and nutrition.

Restaurants and culinary businesses stand to benefit immensely from this shift, as aligning with health-conscious trends can augment customer appeal and drive business growth. By integrating healthier menu options and embracing programs that promote nutritional cooking, these establishments can cater to the growing demand for nutritious food, thereby expanding their customer base and enhancing market positioning. Concurrently, consumers gain from having greater access to healthier food choices in restaurants, contributing to improved health outcomes and alignment with personal wellness goals. This shift not only caters to individual health needs but also resonates with broader public health objectives.

Furthermore, health advocacy groups and nutritionists find an effective platform in restaurants to promote healthier eating habits. Collaborating with culinary establishments allows these groups to develop and advocate for menus that align with dietary guidelines, effectively reaching a wider audience with their health messages. Governments and policymakers, in supporting initiatives that encourage healthier restaurant offerings, can work towards national health objectives and SDGs, leading to improved public health statistics and community well-being.

Innovators and entrepreneurs in the food industry are presented with new market opportunities in this evolving landscape. Developing products and services that support the trend towards healthier eating in restaurants taps into a growing consumer segment keen on health-conscious dining experiences. This not only fosters innovation in the food sector but also opens up avenues for economic growth and development.

Environmental advocates also find alignment with this trend, as healthier food choices often overlap with sustainable practices. By advocating for health-focused menus, these groups can promote eco-friendly agriculture and food production methods, contributing to environmental sustainability and responsible consumption.

Limitations and future research

A limitation of our study is the exclusive focus on the United States for data collection, which may limit the generalizability of our findings globally; future research could expand to include diverse international populations to explore cultural variations in the perception and effectiveness of virtual avatars in the restaurant industry. Future research should employ longitudinal designs to assess long-term effects, incorporate objective behavioral measures, explore individual differences' impact, investigate spillover effects on other health behaviors, and address ethical implications of avatar design and manipulation for a more comprehensive understanding and responsible implementation of avatar-based interventions.

References

Ali, F. (2022). Augmented reality enhanced experiences in restaurants: Scale development and validation. *International Journal of Hospitality Management*, *102*, 103180.

Asch, S. (1946). Forming impressions of personality. *The Journal of Abnormal and Social Psychology*, *41*(3), 258.

Buhalis, D., Lin, M., & Leung, D. (2023). Metaverse as a driver for customer experience and value co-creation: Implications for hospitality and tourism management and marketing. *International Journal of Contemporary Hospitality Management*, *35*(2), 701-716.

Cain, L., Thomas, J., & Alonso Jr, M. (2019). From sci-fi to sci-fact: The state of robotics and AI in the hospitality industry. *Journal of Hospitality and Tourism Technology*, *10*(4), 624-650.

Cha, S. (2020). Customers' intention to use robot-serviced restaurants in Korea: Relationship of coolness and MCI factors. *International Journal of Contemporary Hospitality Management*, *32*(9), 2947-2968.

Chaiken, S. (2022). Physical appearance and social influence. *Physical appearance, stigma, and social behavior* (pp. 143-178). Routledge.

Choi, Y., Mehraliyev, F., & Kim, S. (2020). Role of virtual avatars in digitalized hotel service. *International Journal of Contemporary Hospitality Management*, *32*(3), 977-997.

Crolic, C., Thomaz, F., Hadi, R., & Stephen, A. (2022). Blame the bot: Anthropomorphism and anger in customer–chatbot interactions. *Journal of Marketing*, *86*(1), 132-148.

Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, *24*(3), 285–290.

Dodoo, N. (2018). Why consumers like Facebook brands: The role of aspirational brand personality in consumer behavior. *Journal of Promotion Management*, *24*(1), 103-127.

Donovan, C., & Uhlmann, L. (2022). Looking at me, looking at you: The mediating roles of body surveillance and social comparison in the relationship between fit ideal internalisation and body dissatisfaction. *Eating Behaviors*, *47*, 101678.

Durau, J., Diehl, S., & Terlutter, R. (2022). Motivate me to exercise with you: The effects of social media fitness influencers on users' intentions to engage in physical activity and the role of user gender. *Digital Health*, *8*. https://doi.org/10.1177/20552076221102769

Fan, A., Wu, L., Miao, L., & Mattila, A. (2020). When does technology anthropomorphism help alleviate customer dissatisfaction after a service failure?. *Journal of Hospitality Marketing & Management*, *29*(3), 269-290.

Fang, S., Zhang, C., & Li, Y. (2020). Physical attractiveness of service employees and customer engagement in tourism industry. *Annals of Tourism Research*, *80*, 102756.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*(2), 117-140.

Festinger, L. (1957). Social comparison theory. *Selective Exposure Theory*, *16*, 401.

Foster, J., McLelland, M., & Wallace, L. (2022). Brand avatars: Impact of social interaction on consumer–brand relationships. *Journal of Research in Interactive Marketing*, *16*(2), 237-258.

Garg, N., Govind, R., & Nagpal, A. (2021). Message framing effects on food consumption: A social marketing perspective. *Australian Journal of Management*, *46*(4), 690-716.

Gonzales-Chávez, M., & Vila-Lopez, N. (2021). Designing the best avatar to reach millennials: Gender differences in a restaurant choice. *Industrial Management & Data Systems*, *121*(6), 1216-1236.

Hair, J., Hult, G., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Sage Publications.
Hao, F., & Chon, K. (2022). Contactless service in hospitality: Bridging customer equity, experience, delight, satisfaction, and trust. *International Journal of Contemporary Hospitality Management*, *34*(1), 113-134.
Hausenblas, H., & Fallon, E. (2006). Exercise and body image: A meta-analysis. *Psychology and Health*, *21*(1), 33-47.
Hou, J., & Kankham, S. (2023). Follow and spread the word: The effects of avatars and message framing in promoting fact checking posts on social media. *Information Technology & People*, *ahead-of-print*. https://doi.org/10.1108/ITP-10-2022-0793
Huang, R., & Ha, S. (2020). The effects of warmth-oriented and competence-oriented service recovery messages on observers on online platforms. *Journal of Business Research*, *121*, 616-627.
Huang, Z., Zhu, Y., Deng, J., & Wang, C. (2022). Marketing healthy diets: The impact of health consciousness on Chinese consumers' food choices. *Sustainability*, *14*(4), 2059.
Jiang, S., & Ngien, A. (2020). The effects of Instagram use, social comparison, and self-esteem on social anxiety: A survey study in Singapore. *Social Media + Society*, *6*(2). https://doi.org/10.1177/2056305120912488
Jones, C., Hancock, T., Kazandjian, B., & Voorhees, C. (2022). Engaging the avatar: The effects of authenticity signals during chat-based service recoveries. *Journal of Business Research*, *144*, 703-716.
Kim, D., & Kim, H. (2021). Trust me, trust me not: A nuanced view of influencer marketing on social media. *Journal of Business Research*, *134*, 223-232.
Kim, D., Lee, H., & Chung, K. (2023). Avatar-mediated experience in the metaverse: The impact of avatar realism on user-avatar relationship. *Journal of Retailing and Consumer Services*, *73*, 103382.
Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, *11*(4), 1-10.
Lee, S., Han, H., Radic, A., & Tariq, B. (2020). Corporate social responsibility (CSR) as a customer satisfaction and retention strategy in the chain restaurant sector. *Journal of Hospitality and Tourism Management*, *45*, 348-358.
Li, J., Huang, J., & Li, Y. (2023). Examining the effects of authenticity fit and association fit: A digital human avatar endorsement model. *Journal of Retailing and Consumer Services*, *71*, 103230.
Li, Y., Zhang, C., & Fang, S. (2022). Can beauty save service failures? The role of recovery employees' physical attractiveness in the tourism industry. *Journal of Business Research*, *141*, 100-110.
Li, Y., Zhang, C., & Laroche, M. (2019). Is beauty a premium? A study of the physical attractiveness effect in service encounters. *Journal of Retailing and Consumer Services*, *50*, 215-225.
Lin, Y. (2022). Moderating reference group and message framing influences on sustainable surplus food consumption advertising appeals. *Journal of Marketing Management*, *38*(11-12), 1218-1244.
Lv, X., Liu, Y., Luo, J., Liu, Y., & Li, C. (2021). Does a cute artificial intelligence assistant soften the blow? The impact of cuteness on customer tolerance of assistant service failure. *Annals of Tourism Research*, *87*, 103114.

Navarro, J., Peña, J., Cebolla, A., & Baños, R. (2022). Can avatar appearance influence physical activity? User-avatar similarity and proteus effects on cardiac frequency and step counts. *Health Communication*, *37*(2), 222-229.

Nicolau, J., Mellinas, J., & Martín-Fuentes, E. (2020). The halo effect: A longitudinal approach. *Annals of Tourism Research*, *83*, 102938.

Osei-Frimpong, K., Donkor, G., & Owusu-Frimpong, N. (2019). The Impact of Celebrity Endorsement on Consumer Purchase Intention: An Emerging Market Perspective. *Journal of Marketing Theory and Practice*, *27*(1), 103-121.

Park, H., Lee, M. & Back, KJ. (2023), "A critical review of technology-driven service innovation in hospitality and tourism: current discussions and future research agendas", *International Journal of Contemporary Hospitality Management*, Vol. 35 No. 12, pp. 4502-4534.

Parmar, Y., & Mann, B. (2020). Exploring the relationship between celebrity worship and brand equity: The mediating role of self-brand connection. *Journal of Creative Communications*, *16*(1), 61-80.

Perloff, R. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex roles*, *71*(11-12), 363-377.

Schaefer, M., & Blodgett Salafia, E. (2014). The connection of teasing by parents, siblings, and peers with girls' body dissatisfaction and boys' drive for muscularity: The role of social comparison as a mediator. *Eating Behaviors*, *15*(4), 599-608.

Shafieizadeh, K., Alotaibi, S. & Tao, C. (2023), "Information processing of food safety messages: what really matters for restaurant customers?", *International Journal of Contemporary Hospitality Managemen*t, Vol. 35 No. 10, pp. 3638-3661.

Sharda, N., & Bhat, A. (2019). Role of consumer vanity and the mediating effect of brand consciousness in luxury consumption. *Journal of Product & Brand Management*, *28*(7), 800-811.

Singh, R., & Banerjee, N. (2021). The mediating role of brand credibility on celebrity credibility in building brand equity and immutable customer relationship. *IIMB Management Review*, *33*(2), 119-132.

Sreejesh, S. (2015). Consumers' perceived brand aspiration and its impact on intention to pay price premium: Moderating role of brand jealousy. *Theoretical Economics Letters*, *5*(2), 273-284.

Wang, I., Smith, J., & Ruiz, J. (2019). Exploring virtual agents for augmented reality. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems,

Weimann, T., Fischer, M., & Schlieter, H. (2022). Peer buddy or expert?–On the avatar design of a virtual coach for obesity patients. http://hdl.handle.net/10125/79803

Wong, L., Tan, G., Ooi, K. and Dwivedi, Y. (2023), "Metaverse in hospitality and tourism: a critical reflection", *International Journal of Contemporary Hospitality Management*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJCHM-05-2023-0586.

Xue, K., Li, Y., & Jin, H. (2022). What do you think of AI? Research on the influence of AI news anchor image on watching intention. *Behavioral Sciences*, *12*(11), 465.

Yoon, D., Kim, Y., & Fu, R. (2020). How can hotels' green advertising be persuasive to consumers? An information processing perspective. *Journal of Hospitality and Tourism Management*, *45*, 511-519.

Zhang, X., Jeong, E., Olson, E., & Evans, G. (2020). Investigating the effect of message framing on event attendees' engagement with advertisement promoting food waste reduction practices. *International Journal of Hospitality Management*, *89*, 102589.

Zhang, X., Jeong, E., Shao, X. & Jang, S. (2023), "Plant-based food is unhealthy—that's not true! How can corrective messages help promote plant-based menus in quick-service restaurants?", *International Journal of Contemporary Hospitality Management*, Vol. 35 No. 9, pp. 3216-3234.