Understanding the Role of Virtual Anchor-Brand Image Fit in Virtual Live Streaming

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Abstract

We explore the influence of matching the virtual anchor's image, voice, and language style with brand image on consumers' purchase intentions. Furthermore, we identify two key mediators (i.e., processing fluency and perceived affinity) that impact the relationship between the virtual anchor-brand image fit and purchase intentions. We find that virtual anchor image and brand image fit, virtual anchor voice and brand image fit both have a positive influence on purchase intentions. Figurative language causes a higher purchase intention for a warm brand image, while literal language does not lead to a higher purchase intention for a competent brand image. Processing fluency and perceived affinity mediate the relationship between virtual anchor image and brand image fit, virtual anchor voice and brand image fit, and purchase intentions. Perceived affinity mediates the effects of language style and brand image fit on purchase intention, whereas no mediating effect of processing fluency is found.

Keywords: Virtual live streaming, Brand image, Language style, Processing fluency, Perceived affinity.

1. Introduction

With the continuous advancement of artificial intelligence and virtual reality technologies, virtual anchors have emerged prominently. Increasingly, consumers are embracing e-commerce virtual live streaming as a preferred method of shopping. According to a report by iResearch, the virtual anchor market in China reached a size of approximately CNY 300 million in 2021, exhibiting a remarkable year-on-year growth rate of 103.1%. It is projected that the overall virtual anchor market size in China will surpass CNY 2,500 million by 2024 (iResearch, 2022). This data illustrates that e-commerce virtual live streaming has entered a stage of rapid growth. However, within the existing literature on e-commerce live streaming (Gong et al., 2023), large attention has been dedicated to real-person live streaming, while little attention has been paid to virtual live streaming.

Employing a real-person anchor whose characteristics perfectly match a brand can be challenging and expensive. However, controllable virtual anchors can address this issue. Virtual anchors can be tailored to match different brands' characteristics, unlike real-person anchors who cannot easily change their inherent attributes. Although the question of match/fit has been widely discussed in influencer marketing (Janssen et al., 2021), the existing literature about the fit under the context of e-commerce live streaming is very scarce. Park and Lin (2020) explored the effect of Wanghong-product fit on consumers' intention to buy, they mainly focused on the match between the anchor image and the product and did not investigate other characteristics of the anchor. Lu and Chen (2021) examined the similarity between the customer and the broadcaster's physical characteristics and value from the perspective of anchor-consumer fit. Our work conducts a more comprehensive study, investigating three characteristics of virtual anchors (i.e., image, voice, and language style), and the influences of virtual anchor-brand image fit on consumer purchase intention. Prior research generally views anchor and brand as whole concepts and overlooks anchors' language styles (Fei et al., 2021), we divide the virtual anchor and brand image into two types: warmth and competence, based on the stereotype content model (Cuddy et al., 2002). And we also distinguish anchors' language style into literal style and figurative style according to prior

research (Ye & Mattila, 2022).

Consumers' decision-making process involves both cognition and emotion, with cognitive and emotional systems working together (Peng et al., 2020). Congruent information influences processing fluency, which subsequently affects consumer responses (Chan & Northey, 2021). Perceived affinity, representing a feeling of liking, positively influences purchase intention (Guo et al., 2018). This study considers processing fluency in the cognitive dimension and perceived affinity in the affective dimension. As the mechanisms of processing fluency and perceived affinity in the context of virtual live streaming are not well understood, it is important to explore their mediating roles in the relationship between virtual anchor-brand image fit and purchase intention.

Taken together, this study aims to address the research gaps by investigating the following research questions: How does the image, voice, and language style of the virtual anchor-brand image fit affect consumer purchase intention? How do processing fluency and perceived affinity mediate the effects of the virtual anchor-brand image fit on purchase intention? To answer the questions, we conduct a between-subject lab experiment to check our assumptions.

2. Literature Review

2.1. E-commerce virtual live streaming

E-commerce live streaming is a relatively novel marketing tool, which has aroused scholars' attention, resulting in growing literature. However, most of the literature focuses on real-person live streaming, and little literature is about virtual live streaming. Nowadays, there are already many sellers and brands using virtual anchors for live streaming, especially during the late night hours after the real-person anchors are offline, such as L'Oreal, Lancome, and so on. To the best of our knowledge, only a handful of scholars have studied virtual live streaming from different perspectives like designing the systems of virtual live streaming, comparing human streamers with virtual streamers, or the impact of virtual streamers' characteristics on purchase intention. For instance, Li et al. (2021) designed a system that centered on the product broadcasting part for an AI avatar in e-commerce live streaming. Liu et al. (2022) studied the relationship between live-streaming strategy, product sales, and return rate, discovering that avatar streamers and human streamers have different effects on product sales and return rates. Gao et al. (2023) examined the influences of virtual streamers' likeability, animacy, and responsiveness on purchase intention from the

perspective of presence. Different from previous research, we explore the matching effects of virtual anchors' image, voice, language style, and brand image on purchase intention, simultaneously exploring the mediating mechanism of processing fluency and perceived affinity.

2.2. The stereotype content model

The stereotype content model (SCM) was proposed by Cuddy et al. (2002). The SCM theoretical framework was first applied to characterize different social groups in social psychology. It identifies two stereotyping dimensions–warmth and competence, which can account for most of the variance in assessing different social behaviors. The perceived intentions of other persons/groups are interpreted as warmth, whereas competence is the ability to enact the intentions. Warmth is related to traits such as being good-natured, sincere, friendly, and kind, while competence includes descriptors such as being intelligent, capable, efficient, and competent. In some studies, warmth is also labeled as communion, morality, or intention, while competence is also labeled as agency or ability (Kervyn et al., 2012). Although the stereotype content model was initially used for social judgment in social psychology, later literature has expanded the research topic to marketing and consumer behavior, including brands (Chang et al., 2019) and entrepreneurship (Johnson et al., 2018). Research has confirmed that the two dimensions (i.e., warmth and competence) have an impact on consumers' attitudes and cognition (Huang et al., 2022).

2.3. The match-up hypothesis

"The match-up hypothesis" refers to the fit or congruence between the endorser and the brand/product (Till & Busler, 1998). Studies have shown that the degree of congruence between the characteristics of the endorser and the brand has an impact on consumers' brand evaluations, purchase intentions, and attitudes toward the advertisement (Till & Busler, 2000). If consumer perceptual incongruence exists, a mismatch will emerge and result in an unfavorable attitude toward the product advertised (Janssen et al., 2021). The work on the match-up hypothesis has gradually evolved from focusing on the "match-up" factor of physical attractiveness (Kamins, 1990) initially to investigating expertise congruence (Till & Busler, 1998), personality congruence (Pradhan et al., 2016), or any other key dimensions. Academical scholars have identified the importance of selecting a suitable endorser (spokesperson, model, or celebrity) for a brand to enhance advertising effectiveness. The

brands whose endorsers fit the brands on some relevant attributes will evoke stronger endorsement effects (Janssen et al., 2021). Following previous work, we speculate that the virtual anchor acts as the role of endorser under the circumstance of live streaming and a match will occur if the features of the virtual anchor fit the perceptions of the brand, thus, motivating favorable attitudes and intentions toward the brand advertised.

2.4. Processing fluency and perceived affinity

Processing fluency refers to the degree of ease or difficulty an individual perceives when processing external information (Schwarz, 2004). Information that is easy to process and requires less cognitive effort will bring about subjective feelings of fluency (Reber et al., 2004). In contrast, things that need systematic processing and take a longer time to understand can be labeled as disfluency. Evidence indicates that consumers' responses are more positive when there is consistency between the product information being processed and the concepts or expectations in consumers' minds at the time (Huang et al., 2022). Previous literature has also shown that consumers' perceived processing fluency affects brand attitude (Lee & Labroo, 2004), and purchase intention (Chan & Northey, 2021). Affinity involves positive emotional feelings, such as liking, sympathy, and even attachment to someone or something else (Oberecker et al., 2008). A definition of affinity is that forces that cause one person to be drawn to, and seek a relationship with another based on the latter's attributes (Hartz et al., 2005). As a spontaneous or natural feeling of liking, affinity has been examined in different contexts. For instance, consumer affinity impacts consumers' behavioral intentions (Oberecker & Diamantopoulos, 2011), consumer affinity acts as a proactive tool in destination branding and tourism (Asseraf & Shoham, 2017), affinity plays a role in prosumption experiences and values (Wolf et al., 2022).

3. Research model and hypotheses development

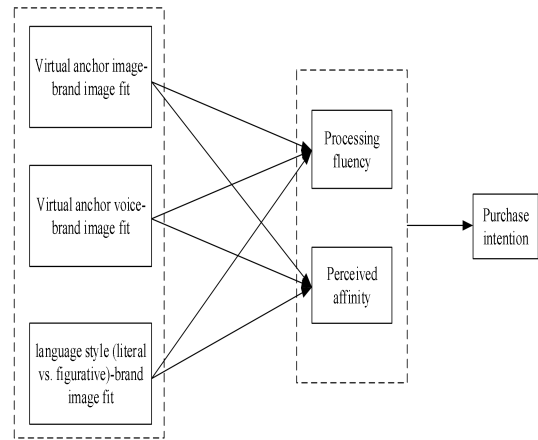Based on the above literature review, we build the following research model (see Figure 1).

Figure 1. Research model

Previous research has shown that a fit between the endorser and the product can positively impact consumer attitudes and purchase intentions (Janssen et al., 2021). This fit can be based on various dimensions such as image, gender, personality, and values (Ju & Lou, 2022). In the context of virtual anchors, the congruence between the virtual anchor's image and the brand image can result in higher purchase intentions. Specifically, when the virtual anchor's image aligns with the warm or competent traits associated with the brand, consumers are more likely to form a positive attitude and show greater purchase intention. Hence, we propose the following hypotheses:

H1 The match of the virtual anchor image and brand image leads to a higher consumer purchase intention.

H1a Compared to a competent virtual anchor image, a warm virtual anchor image leads to a higher consumer purchase intention for a warm brand image.

H1b Compared to a warm virtual anchor image, a competent virtual anchor image leads to a higher consumer purchase intention for a competent brand image.

Voice is a significant cue in forming first impressions and can impact feelings and acceptance. Different voice characteristics, such as gender, age, and personality, convey warmth or competence, influencing perceptions (Chang et al., 2018). The match-up hypothesis suggests that when an endorser's traits align with the brand image, it elicits positive consumer responses (Till & Busler, 2000). Therefore, we propose that the match between the virtual anchor's voice and the brand image will result in higher purchase intentions. Specifically, a warm brand image paired with a virtual anchor possessing a warm voice will increase purchase intentions. Similarly, a competent brand image paired with a virtual anchor possessing a competent voice will also lead to higher purchase intentions. Hence, we propose that:

H2 The match of the virtual anchor voice and

brand image leads to a higher consumer purchase intention.

H2a Compared to a competent virtual anchor voice, a warm virtual anchor voice leads to a higher consumer purchase intention for a warm brand image.

H2b Compared to a warm virtual anchor voice, a competent virtual anchor voice leads to a higher consumer purchase intention for a competent brand image.

Literal language can be analyzed word by word, conveying factual and objective statements (Wu et al., 2017). On the contrary, figurative language refers to the use of a variety of linguistic techniques, such as simile, metaphor, wordplay, or hyperbole to deliver additional implications beyond its literal meaning. For instance, "drink a cup before going to bed, the mellow milk is like a magic wand, bringing you into a warm dreamland" is more figurative than the literal expression "drink a cup before going to bed, rich nutrition care, bring you warmth and tranquility". It has been well-documented in the existing literature that figurative language conveys more emotional intensity and is suitable for expressing emotional experiences (Wu et al., 2017). Instead, literal language communicates more objective facts by using scientific and factual statements (Ye & Mattila, 2022). Kronrod and Danziger (2013) found that figural language is more appropriate when the consumption object is hedonic rather than utilitarian. Conversely, literal language is considered to be more fitted when describing utilitarian consumption experiences. We contend that a warm brand image which emphasizes love and care provides more emotional support for consumers, and figurative language is affect-rich. Therefore, when the virtual anchor uses figural language to introduce the warm brand, a favorable reaction such as purchase intention will be formed. On the other hand, a competent brand image establishes high-quality and highly capable characteristics, which is suitable for using objective literal language to convey. Therefore, we hypothesize that:

H3 The match of language style and brand image leads to a higher consumer purchase intention.

H3a Compared to literal language, figurative language leads to a higher consumer purchase intention for a warm brand image.

H3b Compared to figurative language, literal language leads to a higher consumer purchase intention for a competent brand image.

Processing fluency refers to the ease with which information is processed and has been shown to positively impact consumer responses, including purchase intention (Chan & Northey, 2021). Previous research has established that congruence enhances processing fluency, which, in turn, influences purchase

intention (Huang et al., 2022). Therefore, we propose that processing fluency mediates the relationship between virtual anchor (image, voice, language style) and brand image fit and purchase intention. Affinity, a positive emotional liking towards a subject, is shown to be influenced by the match between the image and voice of a virtual human (Higgins et al., 2022), and it has been shown to impact purchase intentions (Guo et al., 2018). Perceived affinity has also been found to mediate the effect of the perception of an object on consumer behavior (Yang et al., 2021). Therefore, we suggest that perceived affinity plays a mediating role in the relationship between virtual anchor (image, voice, language style) and brand image fit and consumers' purchase intention. In sum, we propose the hypothesis:

H4a Processing fluency and perceived affinity mediate the effects of virtual anchor image-brand image fit on consumers' purchase intention.

H4b Processing fluency and perceived affinity mediate the effects of virtual anchor voice-brand image fit on consumers' purchase intention.

H4c Processing fluency and perceived affinity mediate the effects of virtual language style-brand image fit on consumers' purchase intention.

4. Methodology

4.1. Experiment design

This study adopted a 2 × 2 × 2 × 2 between-subjects lab experiment to check the matching effects between virtual anchors (i.e., images, voice, language styles) and brand image on purchase intention and the underlying mechanism by examining the mediating roles of processing fluency and perceived affinity. Participants were randomly assigned to one of 16 groups. The live videos of each group are different in terms of anchor image, anchor voice, or language style. Each participant watched a live video within one minute. Also, brand images are different in the live streaming videos which are manipulated into two types: warm and competent. Then they answered questions on 7-point Likert scales.

4.2. Materials

We utilized virtual human-making software called "LAIPIC", which is a professional digital human creation platform, and text-to-speech software "iFLYTEK", famous for its intelligent voice technology, to create the experimental stimuli. The final stimulus pool was designed based on five main criteria. First, milk was chosen as the product, milk is a daily food for college students, and the scene of buying

milk is relatively familiar to them and easy to make a purchase decision. Existing milk brands indeed emphasize warm and competent images in their advertising campaigns. Therefore, manipulating the brand image of milk to evoke warmth and competence aligns well with reality. The brand image was manipulated through the virtual anchor's discourse in the live streaming (Chang et al., 2019). A fictitious brand called "Sunshine" was used to avoid familiarity bias. Second, each brand image was presented in two language styles: figurative and literal language, with the same meaning and length (Wu et al., 2017). Third, we created virtual anchor images of warmth and competence by adjusting eye size, eyebrow shape, chin type, and head proportion (Liu et al., 2022) (see Figure 2, screenshot of virtual anchor image). Fourth, warm and competent voices were generated using "iFLYTEK", with a baby-like voice for warmth and an adult-like voice for competence (Lv et al., 2021). Fifth, we used the virtual human-making tool "LAIPIC" to create complete live videos of virtual anchors, integrating their images, voices, and scripted lines. A total of 16 videos were generated, with each video lasting approximately 1 minute. Pre-tests were conducted to validate the manipulation of the characteristics of virtual anchors.

Figure 2. Virtual anchor image, the left is the competent virtual anchor, right is the warm virtual anchor.

4.3. Participants and procedure

This study adopted a 2 (brand image: warm vs. competent) × 2 (virtual anchor image: warm vs. competent) × 2 (virtual anchor voice: warm vs. competent) × 2 （language style: literal vs. figurative） between-subjects design. A total of 523 subjects were recruited from a university in central China and were paid CNY 15 for their participation. Among them, nine subjects were excluded because they never drank milk and said that they would not be influenced by the live

streaming to change their purchase intention. Therefore, data analysis was conducted using data from 514 valid subjects (279 females, 235 males; mean age = 21.35, ranging from 17 to 26 years).

After entering the lab, the subjects were introduced to the basic information about the experiment and then were randomly assigned to one of 16 groups. Each subject watched a virtual anchor's live video that was created before, on a laptop computer. The live video was played in full screen and uniformly at 70 dB. After they watched the video, a post-experiment questionnaire was assigned to them, asking for their evaluations of the brand image and the virtual anchor's characteristics (anchor image, voice, language style). And the subjects' purchase intention, processing fluency, perceived affinity, brand attitude, perceived realism, and trust were also measured through the questionnaire. We controlled their brand attitude, perceived realism, and trust in the virtual anchor because there is evidence that these factors may impact the intention to buy (Chang et al., 2019; Higgins et al., 2022; Lu & Chen, 2021). Demographic questions were also asked at the end. The full experiment lasted about 15 minutes per subject.

4.4. Measures

We used three measurement items for warmth and three for competence to assess subjects' perceptions of brand image, adapted from (Chang et al., 2019). For the anchor's voice, image, and language style, we used single questions on a 7-point Likert scale, following Lv et al. (2021) and Ye and Mattila (2022). Purchase intention was evaluated with three items from Pavlou and Gefen (2004). Processing fluency and perceived affinity were measured with three items each, adapted from Fürst et al. (2021) and Higgins et al. (2022), respectively. Control variables included brand attitude toward Sunshine Milk, perceived realism toward virtual anchor Xiaoqing, and trust for the virtual anchor. Brand attitude was measured using three items adapted from (Chang et al., 2019), realism from Higgins et al. (2022), and trust measured with three items from Lu and Chen (2021). All questions were rated on a 7-point Likert scale.

5. Data analysis and results

5.1. Manipulation check

In the post-experiment questionnaire, we asked the subjects to judge brand image and virtual anchors' characteristics (image, voice, and language style) using the 7-point Likert scale. Results demonstrate that the

warm brand image of Sunshine Milk is perceived as warmer (M_{warmth} = 5.846, SD = 0.820) than the competent brand image (M_{warmth} = 4.349, SD = 1.436, F (1,512) = 211.434, p < 0.001) and the competent brand image is judged as more competent ($M_{competent}$ = 5.416, SD = 1.178) than the warm brand image ($M_{competent}$ = 4.053, SD = 1.213, F (1,512) = 166.947, P < 0.001).

As for the virtual anchors' images, the results illustrated that the warm anchor image is judged warmer (M_{warmth} = 5.141, SD = 1.538) than the competent anchor image (M_{warmth} = 3.985, SD = 1.735, F (1,512) = 63.868, P < 0.001) and the competent anchor image is perceived as more competent ($M_{competent}$ = 4.322, SD = 1.669) than the warm anchor image ($M_{competent}$ = 3.355, SD = 1.595, F (1,512) = 45.000, P < 0.001). The warm voice of the virtual anchor is perceived as warmer (M_{warm} = 5.698, SD = 1.285) than the competent voice of the virtual anchor (M_{warm} = 3.262, SD = 1.623, F (1,512) = 356.239, P < 0.001). The literal language is judged significantly more literal ($M_{literal}$ = 5.074, SD = 1.741) than figurative language ($M_{literal}$ = 2.494, SD = 1.447, F (1,512) = 333.775, P < 0.001). In contrast, figurative language is judged more figurative ($M_{figurative}$ = 6.198, SD = 0.958) than literal language ($M_{figurative}$ = 3.393, SD = 1.751, F (1,512) = 507.572, P < 0.001). The results indicate successful manipulation.

5.2. Hypothesis testing

To test H1, we ran a 2 (virtual anchor image) × 2 (brand image) ANOVA on consumers' purchase intention. The results with brand attitude, realism, and trust as covariates reveal that the interaction effect between brand image and virtual anchor image is significant (F (1,507) = 55.021, p < 0.001). No other main effects are significant (p > 0.10). Thus, H1 is supported. Simple effects analysis demonstrates that the warm virtual anchor image leads to higher purchase intention ($M_{warm\ anchor\ image}$ = 4.930, SD = 0.971) toward the warm brand image than the competent virtual anchor image ($M_{competent\ anchor\ image}$ = 4.410, SD = 1.076, F (1,257) = 15.537, p < 0.001). Therefore, H1a is supported. For the competent brand, the competent virtual anchor image brings higher purchase intention ($M_{competent\ anchor\ image}$ = 5.062, SD = 0.983) than the warm virtual anchor image ($M_{warm\ anchor\ image}$ = 4.286, SD = 1.024, F (1,253) = 38.144, p < 0.001). Consequently, H1b is supported.

The results of a 2 (virtual anchor voice) × 2 (brand image) ANOVA on consumers' purchase intention with brand attitude, realism, and trust as covariates indicate a significant interaction effect (F(1,507) = 68.377, p < 0.001), and the main effects of voice type

and brand image are not significant (p > 0.05). Thus, H2 is supported. Further analysis shows that, for the warm brand, the warm virtual anchor voice causes higher purchase intention ($M_{warm\ voice}$ = 5.102, SD = 0.803) than the competent virtual anchor voice ($M_{competent\ voice}$ = 4.227, SD = 1.111, F (1,257) = 52.979, p < 0.001). The results demonstrate that H2a is supported. For the competent brand, the competent virtual anchor voice leads to higher purchase intention ($M_{competent\ voice}$ = 4.914, SD = 0.967) than the warm voice ($M_{warm\ voice}$ = 4.436, SD =1.127, F (1, 253) = 13.262, p < 0.001). Hence, H2b is supported.

To verify H3, we conducted 2 (language style) × 2 (brand image) ANOVA on consumers' purchase intention with brand attitude, realism, and trust as covariates. The results suggest a significant interaction effect between language style and brand image (F (1,507) = 4.066, p = 0.044 < 0.05). Therefore, H3 is supported. The main effect of language style is significant (F (1,517) = 8.457, p < 0.05), but the effect of brand image is not (F (1,517) = 1.454, p = 0.228). For the warm brand image, the figurative language leads to higher purchase intention ($M_{figurative\ language}$ = 4.910, SD = 0.992) than the literal language ($M_{literal\ language}$ = 4.462, SD = 1.081, F (1,257) = 12.066, p < 0.001), supporting H3a. For the competent brand image, no significant differences are found between the effects of figurative language ($M_{figurative\ language}$ = 4.694, SD = 1.182) and the literal language ($M_{literal\ language}$ = 4.583, SD = 0.993, F (1,253) = 0.645, p = 0.433 > 0.05) on purchase intentions. Hence, H3b is not supported.

To test the mediation effect, we ran a bootstrapping analysis with the covariates of brand attitude, realism, and trust (Hayes, 2018). Specifically, Model 4 of the PROCESS macro for SPSS (version 3.4) with 5000 bootstrap samples was used. First, we checked the underlying mechanism of processing fluency and the perceived affinity in the relationship of virtual anchor image-brand image fit and purchase intention. Results demonstrate that virtual anchor image-brand image fit impacts purchase intention via processing fluency (indirect effect = 0.033; 95% CI = [0.0024; 0.0725]). Also, we find the mediating effect of perceived affinity (indirect effect = 0.158; 95% CI = [0.087; 0.239]). The findings suggest that H4a is confirmed. Second, we checked the mediating roles of processing fluency and perceived affinity in the impact of virtual anchor voice-brand image fit on purchase intention with the covariates of brand attitude, realism, and trust. The same bootstrapping analysis method as testing H4a before was used. Indeed, we find that through processing fluency (indirect effect = 0.118; 95% CI = [0.050;0.181]) and perceived affinity (indirect effect = 0.137; 95% CI = [0.079; 0.204]), virtual anchor voice-brand image fit ultimately impacts purchase intention,

approving H4b. Third, we conducted the same mediation analysis with the covariates of brand attitude, realism, and trust to examine mediating effects of processing fluency and perceived affinity in the influences of language style-brand image fit on purchase intention. Results show that perceived affinity mediates the relationship between language style-brand image fit and purchase intention (indirect effect = 0.079; 95% CI = [0.027; 0.137]). Nevertheless, we did not find the mediating effect of processing fluency (indirect effect = -0.025; 95% CI = [-0.082; 0.032]). The results partially support H4c.

6. Discussion

6.1. Results and implications

Our study found that the match between virtual anchor image and brand image significantly influences consumer purchase intention. A warm virtual anchor image increases purchase intention for a warm brand, while a competent virtual anchor image enhances purchase intention for a competent brand. Similar effects were observed for virtual anchor voice-brand image fit. However, language style-brand image fit only has a significant effect when figurative language is matched with warm brands. Mediating analyses showed that processing fluency and perceived affinity mediate the impact of virtual anchor image-brand image fit on purchase intention. Virtual anchor voice-brand image fit had a stronger influence on processing fluency and perceived affinity compared to virtual anchor image-brand image fit. Perceived affinity was found to mediate the relationship between language style-brand image fit and purchase intention, while processing fluency does not.

Our findings contribute to the virtual live streaming literature by examining the effects of virtual anchor-brand image fit and extending the stereotype content model. For sellers, it is important to prioritize virtual anchor image/voice-brand image fit to enhance purchase intentions. Language style should be carefully designed to match warm brands, while competent brands should focus on emphasizing inherent attributes, such as quality and functions. Designing virtual anchors that align with the brand image is recommended. E-commerce platforms and sellers should ensure virtual anchor image/voice-brand image fit to promote processing fluency and perceived affinity. Kind language and words that create affinity can enhance perceived affinity and subsequent purchase intention in virtual live streaming.

6.2. Limitations and future research

Our study has limitations that suggest areas for future research. These include exploring moderating factors on the virtual anchor-brand image fit and its impact on purchase intention, considering additional virtual anchor traits such as actions, and examining different product categories beyond milk. Field experiments can also be conducted to test the external validity of our findings. These directions would enhance our understanding of virtual live streaming and consumer behavior.

7. Conclusion

This study investigates the impact of the virtual anchor-brand image fit on purchase intention in virtual live streaming. The results reveal that the virtual anchor image-brand image fit and virtual anchor voice-brand image fit lead to higher purchase intention for both warm and competent brands. Additionally, language style-brand image fit influences purchase intention for warm brands, but not for competent brands. The mediating effects of processing fluency and perceived affinity are observed in the relationship between virtual anchor image/voice-brand image fit and purchase intention. However, processing fluency does not mediate the effect of language style-brand image fit, while perceived affinity does.

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8. References

Asseraf, Y., & Shoham, A. (2017). Destination branding: The role of consumer affinity. *Journal of Destination Marketing & Management*, *6*(4), 375-384.

Chan, E. Y., & Northey, G. (2021). Luxury goods in online retail: How high/low positioning influences consumer processing fluency and preference. *Journal of Business Research*, *132*, 136-145.

Chang, R. C.-S., Lu, H.-P., & Yang, P. (2018). Stereotypes or golden rules? Exploring likable voice traits of social robots as active aging companions for tech-savvy baby boomers in Taiwan. *Computers in Human Behavior*, *84*, 194-210.

Chang, Y., Li, Y., Yan, J., & Kumar, V. (2019). Getting more likes: the impact of narrative person and brand image on customer–brand interactions. *Journal of*

the *Academy of Marketing Science*, *47*(6), 1027-1045.

Cuddy, S. T. F. a. A. J. C., Glick, P., & Xu, J. (2002). A Model of (Often Mixed) Stereotype Content: Competence and Warmth Respectively Follow From Perceived Status and Competition. *Journal of Personality and Social Psychology*, *82*(6), 878–902.

Fei, M., Tan, H., Peng, X., Wang, Q., & Wang, L. (2021). Promoting or attenuating? An eye-tracking study on the role of social cues in e-commerce livestreaming. *Decision Support Systems*, *142*, 113466.

Fürst, A., Pečornik, N., & Binder, C. (2021). All or Nothing in Sensory Marketing: Must All or Only Some Sensory Attributes Be Congruent With a Product's Primary Function? *Journal of Retailing*, *97*(3), 439-458.

Gao, W., Jiang, N., & Guo, Q. (2023). How do virtual streamers affect purchase intention in the live streaming context? A presence perspective. *Journal of Retailing and Consumer Services*, *73*, 103356.

Gong, M., Bao, X., & Wagner, C. (2023). Why viewers send paid gifts: The role of social influence on massively multiplayer online games live streaming. *Information Processing & Management*, *60*(4), 103371.

Guo, G., Tu, H., & Cheng, B. (2018). Interactive effect of consumer affinity and consumer ethnocentrism on product trust and willingness-to-buy: a moderated-mediation model. *Journal of Consumer Marketing*, *35*(7), 688-697.

Hartz, A., Watson, D., Noyes, R. J. S. B., & journal, P. a. i. (2005). Applied study of affinities for personal attributes using an epidemiological model. *33*(7), 635-650.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Higgins, D., Zibrek, K., Cabral, J., Egan, D., & McDonnell, R. (2022). Sympathy for the digital: Influence of synthetic voice on affinity, social presence and empathy for photorealistic virtual humans. *Computers & Graphics*, *104*, 116-128.

Huang, Y., Lin, Z., & Yang, L. (2022). Complements are warm and substitutes are competent: the effect of recommendation type on focal product evaluation. *Internet Research*, *32*(4), 1168-1190.

iResearch. (2022). Research Report on the Ecology of China's Virtual Anchor Industry. https://report.iresearch.cn/report_pdf.aspx?id=4078

Janssen, L., Schouten, A. P., & Croes, E. A. J. (2021). Influencer advertising on Instagram: product-influencer fit and number of followers affect advertising outcomes and influencer evaluations via credibility and identification. *International Journal of Advertising*, *41*(1), 101-127.

Johnson, M. A., Stevenson, R. M., & Letwin, C. R. (2018). A woman's place is in the… startup! Crowdfunder judgments, implicit bias, and the stereotype content model. *Journal of Business Venturing*, *33*(6), 813-831.

Ju, I., & Lou, C. (2022). Does Influencer–Follower Relationship Matter? Exploring How Relationship Norms and Influencer–Product Congruence Affect Advertising Effectiveness across Product Categories. *Journal of Interactive Advertising*, *22*(2), 157-177.

Kamins, M. A. (1990). An Investigation into the "Match-up" Hypothesis in Celebrity Advertising: When Beauty May Be Only Skin Deep. *Journal of Advertising*, *19*(1), 4-13.

Kervyn, N., Fiske, S. T., & Malone, C. (2012). Brands as Intentional Agents Framework: How Perceived Intentions and Ability Can Map Brand Perception. *Journal of Consumer Psychology*, *22*(2), 166-176.

Kronrod, A., & Danziger, S. (2013). "Wii Will Rock You!" The Use and Effect of Figurative Language in Consumer Reviews of Hedonic and Utilitarian Consumption. *Journal of Consumer Research*, *40*(4), 726-739.

Lakoff, G., & Johnson, M. (1980). *Metaphors We Live By*. Universtity of Chicago.

Lee, A. Y., & Labroo, A. A. J. o. M. R. (2004). The effect of conceptual and perceptual fluency on brand evaluation. *Journal of Marketing Research*, *41*(2), 151-165.

Li, F.-L., Zhao, Z., Lu, Q., Lin, X., Chen, H., Chen, B., . . . Chen, H. (2021). AliMe Avatar: Multi-modal Content Production and Presentation for Live-streaming E-commerce. *Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval.*

Liu, A. X., Xie, Y., & Zhang, J. (2019). It's Not Just What You Say, But How You Say It: The Effect of Language Style Matching on Perceived Quality of Consumer Reviews. *Journal of Interactive Marketing*, *46*, 70-86.

Liu, X., Yi, X., & Wan, L. C. (2022). Friendly or competent? The effects of perception of robot appearance and service context on usage intention. *Annals of Tourism Research*, *92*, 103324.

Liu, Y., Wang, L., Yang, S., & Wang, Y. (2022). Gamified Live-streaming: Is Avatar Better than Human Being. *ICIS 2022 Proceedings.6.*

Lu, B., & Chen, Z. (2021). Live streaming commerce and consumers' purchase intention: An uncertainty reduction perspective. *Information & Management*, *58*(7), 103509.

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.

Oberecker, E. M., & Diamantopoulos, A. (2011). Consumers' emotional bonds with foreign countries: does consumer affinity affect behavioral intentions? *Journal of International Marketing*, *19*(2), 45-72.

Oberecker, E. M., Riefler, P., & Diamantopoulos, A. J. J. o. i. m. (2008). The consumer affinity construct: Conceptualization, qualitative investigation, and research agenda. *Journal of International Marketing*, *16*(3), 23-56.

Park, H. J., & Lin, L. M. (2020). The effects of match-ups on the consumer attitudes toward internet celebrities and their live streaming contents in the context of product endorsement. *Journal of Retailing and Consumer Services*, *52*, 101934.

Pavlou, P. A., & Gefen, D. (2004). Building Effective Online Marketplaces with Institution-Based Trust. *Information Systems Research*, *15*(1), 37-59.

Peng, C.-H., Yin, D., & Zhang, H. (2020). More than Words in Medical Question-and-Answer Sites: A Content-Context Congruence Perspective. *Information Systems Research*, *31*(3), 913-928.

Pradhan, D., Duraipandian, I., & Sethi, D. (2016). Celebrity endorsement: How celebrity–brand–user personality congruence affects brand attitude and purchase intention. *Journal of Marketing Communications*, *22*(5), 456-473.

Reber, R., Schwarz, N., Winkielman, P. J. P., & Review, S. P. (2004). Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience? *Personality and Social Psychology Review*, *8*(4), 364-382.

Schwarz, N. (2004). Metacognitive Experiences in Consumer Judgment and Decision Making. *Journal of Consumer Psychology*, *14*(4), 332-348.

Till, B. D., & Busler, M. (1998). Matching products with endorsers: attractiveness versus expertise. *Journal of Consumer Marketing*, *15*(6), 576-586.

Till, B. D., & Busler, M. (2000). The Match-Up Hypothesis: Physical Attractiveness, Expertise, and the Role of Fit on Brand Attitude, Purchase Intent and Brand Beliefs. *Journal of Advertising*, *29*(3), 1-13.

Wolf, M., Ritz, W., & McQuitty, S. (2022). The role of affinity for prosumption experiences and values. *Journal of Consumer Behaviour*, *22*(1), 43-55.

Wu, L., Shen, H., Fan, A., & Mattila, A. S. (2017). The impact of language style on consumers′ reactions to online reviews. *Tourism Management*, *59*, 590-596.

Yang, L., Bian, Y., Zhao, X., Liu, X., & Yao, X. (2021). Drivers' acceptance of mobile navigation applications: An extended technology acceptance model considering drivers' sense of direction, navigation application affinity and distraction perception. *International Journal of Human-Computer Studies*, *145*, 102507.

Ye, T., & Mattila, A. S. (2022). The impact of environmental messages on consumer responses to plant-based meat: Does language style matter? *International Journal of Hospitality Management*, *107*, 103298.