



ARTICLE



<https://doi.org/10.1057/s41599-025-05363-0>

OPEN

What motivate consumers' purchase intention and the intention to continue watching in livestream shopping

Pei Li¹, Charles Spence²✉ & Chunmao Wu³✉

A growing number of companies are adopting livestream shopping as a means of recommending their products to consumers. However, the question of whether the purchase intention for sustainable clothing amongst consumers can be increased by livestream shopping remains unclear. Therefore, the present study was designed to clarify the relationship between cognitive reactions (vividness, attractiveness, flow, and multisensory cues), emotion (arousal, pleasure), and behaviour (intention to continue watching, purchase intention) during livestream shopping for sustainable clothing. Factor analysis and structural equation model are adopted to analyse the data. The effect of social sharing, 'stickiness', and social presence are also explored in a research model. In this study, people's cognitive reactions were found to have positive impacts on the emotion that consumers associate with sustainable clothing in the context of livestreaming shopping. Moreover, both arousal and pleasure mediated the relationship between cognitive reactions and behavioural intention, while stickiness mediated the relationship between cognitive reactions and purchase intention, and social presence positively impacts people's intention to continue watching. Social sharing significantly affects purchase intention. These results therefore provide brands and companies with a number of actionable insights to adopt appropriate marketing strategies in the context of livestream shopping.

¹Department of Fashion Design and Engineering, School of Textiles and Fashion, Shanghai University of Engineering Science, Shanghai, PR China.

²Crossmodal Research Laboratory, Department of Experimental Psychology, University of Oxford, Oxford, United Kingdom. ³Department of Product Design, College of Fashion and Design, Donghua University, Shanghai, PR China. ✉email: charles.spence@psy.ox.ac.uk; cmwu@dhu.edu.cn

Introduction

Over the past few years, livestream shopping has developed rapidly as the main approach to conveying product information globally (Ma 2023; Ni and Ueichi 2024; Tong et al. 2022). A growing number of users would like to watch livestreams on various social media platforms. With the support of the technology, multisensory stimulation is increasingly being adopted by retailers and brand managers so as to encourage consumers to purchase their products (Li et al. 2023). Livestream shopping provides an internet-based approach to communication and can be operated on mobile phones and computers (Johnson and Woodcock 2019). Livestream shopping can facilitate real-time interaction, but the background of the livestreaming as well as a perceived streamers' physical attractiveness may also indirectly affect consumers' emotions and their responses to the products that are promoted (Tong et al. 2022; Zhou et al. 2019). Amazon and Alibaba Group are currently the two largest e-commerce platforms in the world (Statista.com 2024). In livestream shopping, product features are recommended to consumers, who may, as a result, come to acquire a better understanding of the products.

People engage in live streaming via the internet (Lu et al. 2021). Live streaming also represents a social media platform for retailers to promote their products online. Livestream shopping is regarded as an important tool in marketing strategy (Luo et al. 2024; Ma 2021). Retailers tend to provide good shopping experiences and recommend qualified products for consumers via livestream (Ma 2024; Wei and Xi 2024). In 2021, the market for livestream shopping increased to 300 billion dollars in China alone (Douglas 2022). Livestream empowers retailers and managers who tend to promote their products and add it to marketing strategies, such as Amazon Live, TikTok live, T-Mall, Instagram Live, Facebook Live, and Taobao. Consumers can join the session and get product information and advice via streamers and other peers (Chen et al. 2022). Livestream shopping increases real-time interaction between retailers and consumers (Park and Lin 2020). When consumers make a purchase, they tend to be influenced by their peers and the suggestions that they make (Cavusoglu and Atik 2021). Most consumers are attracted by recommended, up-to-date product information and spend their time on livestream shopping. Therefore, retailers face a problem concerning how to improve consumers' cognitive reactions and purchase intention in livestream shopping.

Sustainable products are related to social and environmental development that preserves the environment and improves people's lives (Agarwall et al. 2025). Circularity, organic materials, longevity, and eco-protection are the main features of the sustainable products, which contribute to both human development and environmental protection (Camilleri et al. 2023). The sharing, reusing, and recycling of materials is commonly adopted in the context of sustainable products so as to prolong the lifespan of materials (Elhoushy and Jang 2023). The United Nations has established the 2030 Sustainable Development Goals to address these issues (United Nations 2024). Consumers, especially those in Generation Z, are increasingly sensitive to environmental problems and pollution reduction (Mammadli 2023). Many retailers have adopted different marketing strategies to encourage consumers' purchase behaviour: Some retailers recommend product information via images or descriptions, while others adopt live video. To date, little is known concerning the effects of cognitive reactions and emotion on sustainable products in the context of livestream shopping. Additionally, a growing number of studies have focused on people's buying intention and behaviour in relation to sustainable products (Baier et al. 2020; Kautish and Khare 2022; Li et al. 2023). Consumers' purchase behaviour in relation to sustainable products has been assessed in

terms of consumption values theory, the theory of planned behaviour, and the theory of reasoned action (Brandão and Costa 2021; Kamalanon et al. 2022; Taufique and Vaithianathan 2018; Yarimoglu and Binboga 2018). However, there have not been sufficient studies on consumers' cognitive reactions, emotional responses toward, and behaviour in relation to sustainable products in the context of livestream shopping. In order to fill the gaps in the existing research, the present study was designed to explore the following research questions: (1) How do streamers and/or online retailers efficiently provide sustainable product information to consumers? (2) How can consumers' cognitive reactions and emotion in response to sustainable products be enhanced so as to get people to buy while livestream shopping? To solve the above-mentioned problems, this study is arranged as follows: Section "Theoretical background and hypotheses development" presents the theoretical background and hypotheses developed, and the proposed model is presented. Section "Methodology" conducts the methodology, and the valid data of this study are examined. Section "Results" presents the results of this study. Section "Discussion and implications" explores the discussion and implications. Finally, the article concludes with some limitations and directions for future research.

The main contributions of the present study can be summarized as follows. First, a research model on sustainable clothing purchase intention in the context of livestream shopping is presented and the influential factors are explored by considering the theoretical foundation of cognitive reactions-emotion-behaviour theory and pleasure-arousal-dominance theory. Second, while the majority of previous studies focus on consumers' purchase intention and behaviour (Chou et al. 2022; Zhang et al. 2024), there are few researchers who consider the mediating effects of arousal and pleasure in livestreaming. The influential factors affecting people's consumption behavioural intention are analysed and a framework in which to consider sustainable clothing purchase intention in the context of livestream shopping is established.

Theoretical background and hypotheses development

Cognition-emotion-behaviour theory. In marketing theory, researchers state that the engagement of consumers is related to their cognition and affect (Vakratsas and Ambler 1999). Cognition refers to an individual's cognitive processed which may influence their emotional responses (Zhao et al. 2023). Wu et al. (2024) developed the cognition-emotion-behaviour model to examine how stimuli affect consumer purchase intention in cause-related sports marketing. Social media engagement significantly affects consumers' purchase intention on second-hand clothing (Sharma et al. 2024). Additionally, subjective well-being is composed by three dimensions of cognition, emotion, and behaviour (Nima et al. 2024). Therefore, a comprehensive understanding of cognition, emotion and behaviour is essential for studying sustainable products in live streaming shopping.

Pleasure-arousal-dominance theory. The pleasure-arousal-dominance theory is widely considered as an effective approach to explore the effects on individuals' emotion (Mehrabian and Russell 1974). Arousal refers to an organism's state of excitement, while pleasure refers to people's feeling, such as happiness. According to the pleasure-arousal-dominance theory, an individual's emotions can be stimulated by their surroundings and environments. Emotion also impacts consumers' purchase behaviour in online shopping contexts (Agarwal et al. 2025). Yu et al. (2024) showed that perceived pleasure and arousal are related to a consumer's emotional perceptions that influence their intention

to purchase green products. Additionally, Alam et al. (2023) demonstrated that consumers' emotional state can be represented in terms of their arousal and pleasure, with their findings indicating that pleasure positively affects impulsive consumption behaviours in live streaming.

Consumption behavioural intention

Sustainable consumption and purchase intention. Recent research has increasingly examined the intersection of sustainable consumption and live-streaming shopping, highlighting how live-streaming platforms can reshape sustainability-conscious consumer behaviour (Clement et al. 2020; Huo et al. 2024). Characterized by real-time engagement, visual impact, and storytelling, live-streaming shopping has emerged as a powerful tool for the promotion of sustainable apparel by increasing consumer trust and emotional connection (Lee et al. 2025). Livestream shopping amplifies sustainable apparel consumption by blending emotional engagement, real-time interaction, and shopping drives (Ho et al. 2022). When sustainability is demonstrated interactively, consumers are more likely to adopt sustainable products (Long et al. 2024). For example, eco-fashion brands such as Patagonia and Reformation use live streaming to explain the recycling process and foster consumer confidence in sustainable clothing (Khandual and Pradhan 2019). Wu and Huang (2023) found that more than half of viewers reported that after watching live streams featuring behind-the-scenes sustainable manufacturing processes, they tended to have a positive attitude toward sustainable products.

With the development of digital technology and marketing, people's intention to purchase sustainable clothing has been studied in various research (Dai and Sheng 2022; Dobbelsstein and Lochner 2023; Li et al. 2023b; Huang et al. 2024a; Wang 2024). The development of sustainable consumption and sustainable products have also been advocated by researchers, governments and businesses to help protect the environment and society (Syed et al. 2024). Purchase intention is a personal judgment that may predict a consumer's subsequent purchase behaviour (Morwitz 2014). Purchase intention is an important factor in purchase behaviour (Li and Jaharuddin 2021). According to a report from Vogue Business (2022), more than half of Generation Z would prefer to buy products from those brands that support environmental protection and afford social responsibility.

Social sharing. The social sharing of consumer experiences has increased with the rise of online shopping (Pauw 2023). According to Nadeem et al. (2020), social sharing is where people share their experiences with groups or related individual (e.g., friends, family) so as to experience a social connection. People are inclined to share their experiences when they come across products and/or services that meet their needs (Pauw et al. 2022). Meanwhile, when consumers perceive positive information about sustainable products, they are more willing to share the information (Choi and Ahn 2023; Yang et al. 2024). Consumers tend to share products, images, articles, links, or product promotions (Choi and Toma 2014; Wang et al. 2022). When people see the shared content in online shopping, they may be attracted by the product information or services. Online retailers may also provide benefits to consumers who share their experiences in social media (Wang et al. 2022). Additionally, social sharing can be regarded as a recommendation approach in the context of online shopping, which is more effective than product advertisement by retailers (Liu et al. 2018; Zhao et al. 2019). Consumers' willingness to share sustainable products on social media can influence the implementation of sustainable development by fashion brands (Yang et al. 2024). Consumers' social activities (e.g., sharing) enhance

their enjoyment and support their purchase intention (Kang and Park-Poaps 2011). The consumer's purchasing decision often relies on the communication and sharing of information from friends, family members and other related persons (Bailey and Mimoun 2024).

Thus, the following hypotheses are proposed,

H1. In the context of livestream shopping, social sharing has a positive effect on purchase intention.

The intention to continue watching. The intention to continue watching content is related to viewers' attention and preference for live streaming (Hou et al. 2020). Consumers tend to continue watching live streams so as to satisfy their needs and simply for its entertainment value (Hilvert-Bruce et al. 2018). Yang and Wang (2015) found that time spent on social media and the intention to continue watching positively predicted consumers' sharing intention on online videos. Social sharing promotes consumers' responses which may help support their well-being and construct some form of shared reality (Rimé et al. 2020). The engagement of YouTube and TikTok video viewers with sustainable clothing can help to promote sustainable product practices and services in different businesses (Haines et al. 2023). Hou et al. (2020) found that the intention to continue watching livestreaming content is affected by interactivity and value perception during the communication process. Furthermore, Liu et al. (2023) indicated that consumers experience positive emotions when watching an engaging live stream. When people would like to spend more time live streaming, their purchase intention typically increases (Sun et al. 2019). Once the consumer trusts a retailer, they tend to engage in sharing which increases their purchase intention (Gvili and Levy 2023). Moreover, the way in which consumers' social sharing in the context of live streaming mediate the relationship between the intention to continue watching livestreaming and the intention to buy is ambiguous.

Thus, the following hypotheses are proposed,

H2a. In the context of livestream shopping, the intention to continue watching has a positive effect on social sharing.

H2b. In the context of livestream shopping, social sharing mediates the relationship between the intention to continue watching and purchase intention.

Emotion

Arousal. Some people find live online shopping both memorable and immersive (Gu et al. 2023; Sun et al. 2019). Consumers' decisions and behaviour are influenced by their emotional arousal, which indicates that arousal may be one of the important factors affecting their buying intention (Yan et al. 2016). Arousal is affected by the surroundings (Mehrabian and Russell 1974). In the context of livestream shopping, arousal is regarded by researchers as an emotional reaction that consumers feel (Zhang et al. 2023). In the context of online livestream shopping, people get the information concerning products via videos, which may affect their emotion and contribute to their level of arousal (Sun et al. 2019). Previous studies consider arousal and pleasure as emotions (Tong et al. 2022; Varshneya and Das 2017). Arousal influences a consumer's sustainable behaviour, their recycling intentions, and subsequent actions that depend on their experiences (Yan and Murray 2023). Thus, the following hypotheses are proposed,

H3. In the context of livestream shopping, arousal has a positive effect on consumers' intention to continue watching.

Pleasure. Live steaming has been adopted by online retailers so as to provide product information to consumers via the live video (Ford and Gross 2019). Positive emotion and responses can be

stimulated in the context of live streaming (Sun et al. 2019). People also seek happiness through consumption (Maseeh et al. 2022). Streamers recommend sustainable products that create an emotional relationship between the consumers and the product that encourage the consumers to buy it (Long et al. 2024). When consumers engage in live events, they may find it both fun and pleasurable (Cuny et al. 2015). Asante et al. (2024) found that when people were involved in live streaming, they tended to be satisfied with the experience. When consumers were aroused and when they enjoyed online consumption, their purchase intentions increased (Eroglu et al. 2001). Liu et al. (2023) conducted a study on 486 participants with prior livestreaming shopping experience, and found that consumers' intention to continue watching was influenced by their enjoyment of live-streaming.

Thus, the following hypotheses are proposed,

H4. In the context of livestream shopping, pleasure has a positive effect on consumers' intention to continue watching.

Cognitive reactions

Vividness. In the context of livestream shopping, vividness refers to the sensorial environment in which the product recommendation occurs. Consumers' emotion and attention can be affected by vividness (Nowlis et al. 2004). Researchers have found that streamers provide consumers with vivid information, helping them to reduce their uncertainty before making a purchase (Lu and Chen 2021). The vividness of shopping involves an individual's thoughts and feelings (Liu et al. 2023). Vividness is mainly related to the recommended products presented by streamers (Liu et al. 2023). Specially, streamers' explanations on sustainable products enhance consumers' interests in sustainable products (Long et al. 2024). Usually, vividness refers to the sensorial environment and the products that are presented in the context of livestream shopping (Steuer 1993). Consumers' emotions, attention, and imagination can all be influenced by the vividness of livestream shopping (Escalas 2004). The vividness of the products presented to consumers can lead to increased pleasure (Liu et al. 2023).

Thus, the following hypotheses are proposed,

H5a-b. In the context of livestream shopping, vividness has a positive effect on consumers' arousal (H5a) and pleasure (H5b).

Attractiveness of live-streamers. The styles of live streaming have also influenced consumers' perception and purchase intention (Meng et al. 2021; Chen and Yang 2023). In the context of livestreaming, the consumers' intention and behaviour largely depend on streamers' performance (Guan et al. 2022; Zheng et al. 2023). The attractiveness of the streamer (e.g., their physical characteristics, personality, intelligence, communicating ability, kindness) can positively affect consumers' purchase behaviour (Torres et al. 2019; Zheng et al. 2023). Researchers also found that a streamer's attractiveness contributes to the emotional relationship between consumers (Li et al. 2023a). Having an appealing visual appearance (e.g., clothing, makeup) has also been shown to impact purchase intention (Madina and Kim 2021). Consumers can experience emotional arousal that stimulated by the attractiveness of live-streamers (Xu et al. 2021).

Streamers in livestream shopping usually have their own unique appearance and style (Liu et al. 2023). Consumers are attracted by the dynamic information and virtual social activities, and can feel relaxed while livestreaming (Chen and Lin 2018; Sjöblom and Hamari 2017). The streamers' environmental knowledge affect consumers' green perceived value and purchase intention in live-streaming platforms (Wu et al. 2024). Most streamers have a pleasant appearance and strive to create a

comfortable atmosphere, aiming to evoke people's emotional engagement and drive product sales in livestream shopping (Meng et al. 2021). The attractiveness of the streamer may influence consumers' shopping enjoyment (Huang et al. 2024b). People like to interact with attractive streamers who they find pleasant and this can motivate their purchase behaviour (Hu et al. 2017; Liu 2020; Wongkitrungrueng and Assarut 2020; Wongkitrungrueng et al. 2020).

Thus, the following hypotheses are proposed,

H6a-b. In the context of livestream shopping, attractiveness of live-streamers has a positive effect on consumers' arousal (H6a) and pleasure (H6b).

Flow. Flow is the state that people realize that they devote themselves to activities (Chen and Lin 2018; Csikszentmihalyi 2020). The main characteristics of flow are psychological enjoyment and concentration (Ghani and Deshpande 1994). Furthermore, Pelet et al. (2017) stated that flow contains four dimensions, namely immersion, perceived control, alternation in time perception, and enjoyment. People would perceive stronger usefulness and tangibility on the immersion of the sustainable fashion consumption in the context of 3-dimensional virtual reality condition than 2-dimension condition (Won et al. 2024). Flow is also adopted to explore customers' engagement in online shopping (Kim and Kim 2022). In the context of livestreaming, flow is regarded as a cognitive state in which consumers are absorbed and relaxed while immersed in watching a live streaming (Paraman et al. 2022). Ettis (2017) stated that the number and duration of visits to a webpage increased significantly after people had a flow state of mind. Flow is a sense of enjoyment and concentration, which consumers tend to buy when they enjoy themselves (Kim and Kim 2022). After analysing samples from 313 participants, Chen and Lin (2018) found that when young people got a sense of flow in live streaming, they tend to be happy and pleasure. Consumers may feel pleasure since they have a state of flow in livestream shopping (Zheng et al. 2023).

Thus, the following hypotheses are proposed,

H7a-b. In the context of livestream shopping, flow has a positive effect on consumers' arousal (H7a) and pleasure (H7b).

Multisensory cues. In the context of livestreaming, multisensory cues include the various combinations of visual information, background music, video, verbal information, emojis, and any descriptive information (Ma 2021). Both verbal and visual information are mainly adopted to introduce products in the context of livestream shopping (Ma 2024): Verbal information tends to be the main approach used to convey product information to consumers (Wongkitrungrueng and Assarut 2020). Background music during online shopping can stimulate consumers' purchase intention as well as capturing their attention (Iwanaga and Ito, 2002; Li et al. 2022a; Li et al. 2022b). Wright (2002) stated that video communication is an effective approach to convey product information and provide emotional support to consumers. Additionally, multisensory perception positively affects consumers' positive emotions and engagement in social media (Han et al. 2024; Li et al. 2020; Mardhatilah et al. 2023). For example, visual information and the perceived intelligence of voice assistants positively affect consumers attitude to sustainable clothing and purchase behaviour (Li et al. 2023). While livestream shopping, consumers can communicate with streamers and other online individuals via written message, emojis, and voice information (Li et al. 2022b; Ma 2024). In this process, multisensory cues may affect consumers' emotional arousal and pleasure.

Thus, the following hypotheses are proposed,

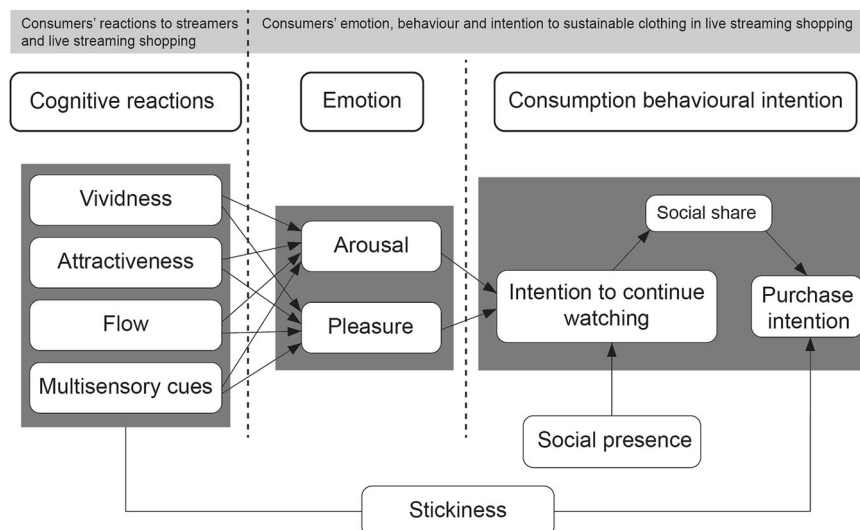


Fig. 1 Proposed conceptual model.

H8a-b. In the context of livestream shopping, multisensory cues have a positive effect on consumers' arousal (H8a) and pleasure (H8b).

Stickiness. Stickiness refers to the extent to which social commerce platforms can retain their customers (Hsu and Lin 2016). High stickiness indicates the long time spent on the platform and consumers' continuous use of the media (Hus and Liao 2014). In the context of livestream shopping, stickiness is considered as a key predictor of consumers' behaviour and buying intentions (Lin et al. 2019). When consumers spend more time on the platforms or revisit them, they show high stickiness (Hsu and Liao 2014). Some researchers have reported that stickiness has a close relationship with consumers' online shopping experiences as well as their purchase behaviour (Ma 2023). According to Yan et al. (2020), stickiness means that users are more likely to continue using the platform and also to recommend it to others.

Vividness can provide realistic experiences to consumers and facilitate them to assess the product effectively in livestream shopping (Liu et al. 2023). Supported by artificial neural network and structural equation modelling, Wang et al. (2024) found that attractiveness of the streamers can predicts consumers' stickiness to live streaming in an e-commerce setting. Flow experience impact consumers engagement and increase their stickiness on short video platforms (Jia et al. 2024). Multisensory cues of livestream shopping contribute to consumers' assessment of the products and stickiness that they may spend a long time in the live streaming (Ma 2023). Consumers' stickiness is considered as an indicator of purchase behaviour in the context of livestream shopping (Qu et al. 2023). In livestream shopping, consumer stickiness is an important factor that can keep consumers watching and thereby enhance their purchase intention (Shen et al. 2022b). To the best of our knowledge, very few studies have focused on the effect of stickiness to sustainable clothing in online live streaming shopping. There is still a research gap on the mediating effect of stickiness on consumers' cognition and purchasing intentions.

Thus, the hypothesis is proposed as follows,

H9a-d. In the context of livestream shopping, stickiness mediates the relationship between cognitive reactions (vividness-H9a, attractiveness-H9b, flow-H9c, multisensory cues-H9d) and purchase intention.

Social presence. Social presence is a motivation that is affected by multiple cues (Tseng et al. 2019). Kim et al. (2020) found that the sense of social presence may connect with the interaction with other users in online platform. Social presence is related to individual's awareness of the relationship with others, especially in the communicating process. Even consumers' purchase intention is affected by social presence in online shopping (Lu et al. 2016). In the context of livestream shopping, consumers' social presence is developed by the interaction with streamers, visual information, and communication with other viewers (Sun et al. 2019). Additionally, social presence reduces consumers' uncertainty and hesitation during their online shopping (Wongkitrungrueng and Assarut 2020). Social presence positively affects consumers purchase intention to sustainable products (Frensel et al. 2025). Moreover, consumers' sense of belonging is also increased while livestreaming (Sun et al. 2019). Previous findings show that social presence is the main indicator of the intention to continue watching and of purchase intention on the livestreaming platform (Hou et al. 2020; Zheng et al. 2023).

Therefore, the following hypothesis is proposed,

H10. In the context of livestream shopping, social presence has a positive effect on consumers' intention to continue watching.

On the basis of cognition-emotion-behaviour theory and pleasure-arousal-dominance theory, the conceptual model is proposed on the basis of that cognitive reactions (vividness, attractiveness, flow, multisensory cues) might influence arousal and pleasure in sustainable clothing livestream shopping (see Fig. 1). Meanwhile, it is proposed that stickiness will mediate the relationship between cognitive reactions and purchase intention. The effects of emotion (arousal, pleasure) may influence consumers' intention to continue watching in the context of livestream shopping.

Methodology

Data collection. Participants were recruited via the online surveying tools of Wenjuanxing (<https://www.sojump.com>), a questionnaire platform. The platform has similar functionality to SurveyMonkey. The data collection process was as follows. First, the definition and the four sustainable products were presented to the participants. Second, the participants were asked to fill out the questionnaires on the platform. Third, the demographic information was collected in the last section of the questionnaires. Fourth, they were entered into a lucky draw after they finished the

Table 1 Demographic characteristics of participants.

Variable	Characteristics	Frequency	Percentage
Gender	Female	1207	51.2%
	Male	1151	48.8%
Age (Years)	Under 18	170	7.2%
	18–23	820	34.8%
	24–29	459	19.5%
	30–35	400	17.0%
	36–41	298	12.6%
	Above 41	211	8.8%
Education	High school and below degree	288	12.2%
	Associate degree	663	28.1%
	Bachelor degree	1169	49.6%
	Master and PhD degree	238	10.1%
Occupation	Government-sponsored institution	278	11.8%
	Private sector	838	35.5%
	State-owned sector	254	10.8%
	Self-employed sector	354	15.0%
	Student	504	21.4%
	Others	130	5.5%
	Monthly spend on clothing	733	31.1%
Monthly spend on clothing	499 Chinese yuan and below	552	23.4%
	500–999 Chinese yuan	577	24.5%
	1000–1499 Chinese yuan	244	10.3%
	1500–1999 Chinese yuan	117	5.0%
	2000–2499 Chinese yuan	78	3.3%
	2500–2999 Chinese yuan	57	2.4%
	Over 3000 Chinese yuan		

online questionnaires. 2358 valid samples were collected and thereafter analysed. The participants were composed of men ($n = 1207$, 51.2%) and women ($n = 1151$, 48.8%). The majority of the participants completed higher education (e.g., bachelor's degree, $n = 1169$, 49.6%). The participants' demographic information is presented in Table 1.

Measurement of construct. The questionnaire was composed of eleven constructs, measured with forty-four items. All questionnaires were adopted from previous studies. The five items of vividness were adopted from Barhorst et al. (2021). The four items related to the attractiveness of live-streamers were adopted from Torres et al. (2019). The four items concerning flow were revised from Chen and Lin (2018). The three items related to multisensory cues were revised from Tseng et al. (2019). The three items concerning arousal were adopted from Meng et al. (2021). The four items related to pleasure were revised from Holmqvist and Lunardo (2015). The six social presence items were revised from Ni and Ueichi (2024). The three items concerning social sharing were adopted from Bock et al. (2005) and Maxham (2001). The five items concerning stickiness were revised from Li et al. (2021). The intention to continue watching was measured by three items taken from a study by Hu et al. (2017). Purchase intention was assessed using four items modified from Aghekyan-Simonian et al. (2012), and Ko and Jin (2017). The questionnaires were translated into Mandarin Chinese by a professional English-Chinese translator to ensure their accuracy. The items were rated using a 5-point Likert scale (from "1 = strongly disagree" to "5 = strongly agree").

Analysis. The valid data were analysed by SPSS 26.0 and AMOS 24.0 in the following steps. First, the values of factor loadings and Cronbach's alpha were analysed. The threshold value of factor loadings and Cronbach's alpha were higher than 0.70, respectively (Chin 1998; Hair et al. 2010; Nunnally and Larcker 1994). Second, reliability and validity were analysed, which were supported by the value of Average variance extracted (AVE), composite reliability (CR), and Kaiser-Meyer-Olkin (KMO). The thresholds value of the AVE, CR, and KMO were above 0.50, 0.70, and 0.70, respectively (Fornell and Larcker 1981; Nunnally and Larcker 1994). Third, the correlation was analysed via the root of the AVE of constructs, which should be higher than the correlation of the constructs (Chin 1998). Fourth, the mediating effect was tested, and the valid confidence intervals did not overlap zero (Charlton et al. 2021).

Results

Reliability and validity. Hulland (1999) suggest that weak factor loading (below 0.70) can be adopted in social science research, including the new scale development. The threshold value of factor loading was recommended above 0.7 (Chin 1998). In this study, the factor loading of all items was above 0.70. Thus, the value of factor loading can be accepted (see Table 2). The findings of the model had a good reliability and discriminant validity (see Tables 2 and 3).

Structural model. The model fit was tested by AMOS 24.0. The model had a good fit ($\chi^2/df = 2.831$, GFI = 0.954, AGFI = 0.948, CFI = 0.967, IFI = 0.967, NFI = 0.950, RMSEA = 0.028). The results of the model test with significant path coefficients are shown in Fig. 2. The direct and mediating effects are presented in the sections that follow.

Direct effects. The relationship between the variables are significant ($p < 0.001$). Social sharing positively influences purchase intention ($\beta = 0.265$, $p < 0.001$). The intention to continue watching positively influences social sharing ($\beta = 0.387$, $p < 0.001$). Thus, H1 and H2a are both supported (see Table 4).

Arousal has a positive effect on consumers' intention to continue watching ($\beta = 0.235$, $p < 0.001$). Pleasure has a positive effect on consumers' intention to continue watching ($\beta = 0.190$, $p < 0.001$). Social presence has a positive effect on consumers' intention to continue watching ($\beta = 0.171$, $p < 0.001$). Thus, H3, H4, and H10 are all supported.

In livestream shopping, vividness has a positive influence on arousal ($\beta = 0.183$, $p < 0.001$) and pleasure ($\beta = 0.196$, $p < 0.001$). Attractiveness of live-streamers has a significant positive impact on arousal ($\beta = 0.197$, $p < 0.001$) and pleasure ($\beta = 0.224$, $p < 0.001$). The results also show that flow has a positive impact on arousal ($\beta = 0.154$, $p < 0.001$) and pleasure ($\beta = 0.287$, $p < 0.001$). Multisensory cues have a positive influence on arousal ($\beta = 0.171$, $p < 0.001$) and pleasure ($\beta = 0.122$, $p < 0.001$). Thus, H5a, H5b, H6a, H6b, H7a, H7b, H8a, and H8b are supported (see Table 4). The result of the structural model is presented in Fig. 2.

Mediating effects. The bootstrap was operated to test the path coefficients by Model 4 of the PROCESS program of SPSS 26.0. The results are operated by using 1,000 bootstrap samples with the 95% confidence interval variance in the purchase intention to sustainable clothing in livestream shopping. The findings of this study indicate that social sharing mediates the relationship between the intention to continue watching and purchase intention ($\beta = 0.004$, $p < 0.001$, CI = [0.002, 0.006]), thus, H2b is supported (see Table 5).

Table 2 Reliability and validity analysis.					
Constructs	Items	Loadings	Cronbach's alpha	CR	AVE
Vividness	VIV1	0.731	0.870	0.870	0.573
	VIV2	0.742			
	VIV3	0.764			
	VIV4	0.782			
	VIV5	0.765			
Attractiveness of live-streamers	ATT1	0.770	0.853	0.853	0.592
	ATT2	0.792			
	ATT3	0.766			
	ATT4	0.749			
Flow	FLO1	0.728	0.863	0.863	0.613
	FLO2	0.794			
	FLO3	0.785			
	FLO4	0.821			
Multisensory cues	MTC1	0.741	0.832	0.837	0.633
	MTC2	0.871			
	MTC3	0.769			
Arousal	ARL1	0.705	0.78	0.780	0.543
	ARL2	0.720			
	ARL3	0.783			
Pleasure	PLE1	0.732	0.831	0.832	0.553
	PLE2	0.728			
	PLE3	0.748			
	PLE4	0.765			
Social presence	SP1	0.796	0.895	0.895	0.588
	SP2	0.722			
	SP3	0.786			
	SP4	0.752			
	SP5	0.781			
	SP6	0.760			
Stickiness	STICK1	0.761	0.88	0.880	0.595
	STICK2	0.784			
	STICK3	0.774			
	STICK4	0.769			
	STICK5	0.769			
Social sharing	SS1	0.728	0.775	0.775	0.535
	SS2	0.709			
	SS3	0.756			
The intention to continue watching	ICW1	0.727	0.783	0.783	0.546
	ICW2	0.761			
	ICW3	0.728			
Purchase intention	PI1	0.749	0.860	0.861	0.607
	PI2	0.803			
	PI3	0.793			
	PI4	0.770			

VIV vividness, ATT attractiveness of live-streamers, FLO flow, MTC multisensory cues, ARL arousal, PLE pleasure, SP social presence, SS social sharing, STICK stickiness, ICW the intention to continue watching, PI purchase intention.

In the context of livestream shopping, stickiness mediated the relationship between vividness and purchase intention ($\beta = 0.069$, $p < 0.001$, $CI = [0.052, 0.088]$). Stickiness also mediated the relationship between attractiveness of live-streamers and purchase intention ($\beta = 0.070$, $p < 0.001$, $CI = [0.053, 0.088]$), between flow and purchase intention ($\beta = 0.073$, $p < 0.001$, $CI = [0.056, 0.092]$), and between multisensory cues and purchase intention ($\beta = 0.049$, $p < 0.001$, $CI = [0.032, 0.067]$), thus, H9a, H9b, H9c, and H9d are supported. The path coefficients are shown in Table 5.

Table 3 Discrimination validity test.											
	SP	VIV	ATT	FLO	MTC	ARL	PLE	STICK	SS	ICW	PI
SP	0.767***										
VIV	0.341***	0.757***									
ATT	0.404***	0.387***	0.769***								
FLO	0.404***	0.386***	0.417***	0.783***							
MTC	0.278***	0.275***	0.278***	0.222***	0.796***						
ARL	0.326***	0.350***	0.363***	0.321***	0.296***	0.737***					
PLE	0.446***	0.413***	0.435***	0.466***	0.287***	0.388***	0.743***				
STICK	0.413***	0.369***	0.403***	0.404***	0.283***	0.355***	0.442***	0.731***			
SS	0.391***	0.447***	0.335***	0.340***	0.328***	0.401***	0.421***	0.416***	0.739***		
ICW	0.282***	0.301***	0.251***	0.273***	0.258***	0.307***	0.296***	0.309***	0.320***	0.739***	
PI	0.418***	0.385***	0.440***	0.426***	0.270***	0.369***	0.439***	0.404***	0.379***	0.304***	0.779***

All values are significant at *** $p < 0.01$.
VIV vividness, ATT attractiveness of live-streamers, FLO flow, MTC multisensory cues, ARL arousal, PLE pleasure, SP social presence, SS social sharing, STICK stickiness, ICW the intention to continue watching, PI purchase intention.

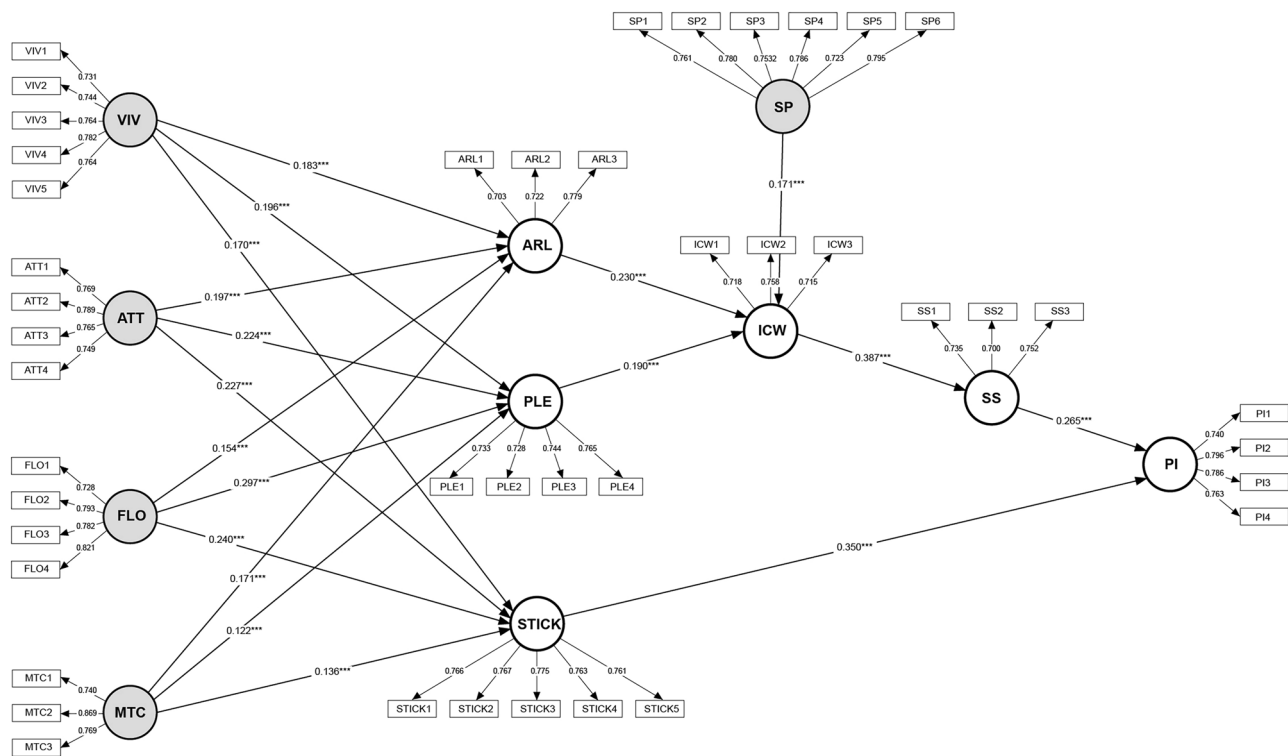


Fig. 2 Structural model results (*** $p < 0.001$).

Table 4 Hypotheses testing (direct effects).					
Explanatory variable	β	t (>1.96)	p	Hypothesis	result
SS -> PI	0.265	10.826	***	H1	Supported
ICW -> SS	0.387	13.879	***	H2a	Supported
ARL -> ICW	0.235	8.493	***	H3	Supported
PLE -> ICW	0.190	7.038	***	H4	Supported
VIV -> ARL	0.183	6.751	***	H5a	Supported
ATT -> ARL	0.197	7.034	***	H6a	Supported
FLO -> ARL	0.154	5.674	***	H7a	Supported
MTC -> ARL	0.171	6.830	***	H8a	Supported
VIV -> PLE	0.196	7.923	***	H5b	Supported
ATT -> PLE	0.224	8.712	***	H6b	Supported
FLO -> PLE	0.287	11.298	***	H7b	Supported
MTC -> PLE	0.122	5.357	***	H8b	Supported
SP -> ICW	0.171	6.696	***	H10	Supported
VIV -> STICK	0.170	7.006	***	-	Supported
ATT -> STICK	0.227	8.964	***	-	Supported
FLO -> STICK	0.240	9.698	***	-	Supported
MTC -> STICK	0.136	6.041	***	-	Supported
STICK -> PI	0.350	14.857	***	-	Supported

VIV vividness, ATT attractiveness of live-streamers, FLO flow, MTC multisensory cues, ARL arousal, PLE pleasure, SP social presence, SS social sharing, STICK stickiness, ICW the intention to continue watching, PI purchase intention.
*** $p < 0.001$.

Discussion and implications

The present study was designed to investigate the relationship between variables in the context of livestream shopping. Based on the cognitive reactions-emotion-behaviour theory, relevant factors that are associated with cognitive reactions (i.e., vividness, attractiveness, flow, multisensory cues) and emotion response (i.e., arousal, pleasure) were identified. The variables and their effects on behavioural intention (i.e., the intention to continue

watching, social sharing, and purchase intention) were also examined. Data were collected to support the conceptual framework. Stickiness had a mediating effect between cognitive reactions and sustainable clothing purchase intention. The intention to continue watching in the context of livestreaming was affected by arousal, pleasure, and social presence. Purchase intention was significantly affected by social sharing when people buy sustainable clothing in the context of livestream shopping.

Theoretical contribution. The current study has several theoretical contributions in the field of livestream shopping and sustainable clothing purchase behaviour. First, it contributes to the literature on livestream shopping in that it extends the research model to cognition, emotion and behaviour. This study reveals consumers' emotion and behaviour responses in the sustainable products livestream shopping process, with the stimuli from live streamers and the process of livestream shopping. The variable of vividness, attractiveness, flow, and multisensory cues are adopted in this study to explore their effects on consumers purchase behaviour, that is integrated the previous theoretical findings and cognition-emotion-behaviour theory.

Second, the findings support the existing research on arousal and pleasure. Although pleasure-arousal-dominance theory has been adopted in the measurement of online shopping, there is no sufficient study on the effect of arousal and pleasure in livestream shopping. Additionally, the mediate effect of arousal and pleasure in livestream shopping is still lacking. The current research provides evidence with which to explore the effects of cognitive reactions on sustainable clothing consumption behavioural intention. According to the findings reported here, arousal and pleasure would appear to enhance consumers' consumption behavioural intention, which contributes to the related studies on sustainable products and livestream shopping.

Third, this current research extends the findings in livestream shopping regarding the role of sustainable products. While much

Table 5 Path coefficients and confidence interval.

Path	Hypo-thesis	Type of effect	Effect	Standard error	95% Confidence Interval		Relationships
					LLCI	ULCI	
ICW -> SS -> PI	H2b	Indirect effect	0.004***	0.001	0.002	0.006	Partial mediated
		Direct effect	0.110***	0.020	0.072	0.149	
VIV -> STICK -> PI	H9a	Indirect effect	0.069***	0.009	0.052	0.088	Partial mediated
		Direct effect	0.157***	0.020	0.119	0.195	
ATT -> STICK -> PI	H9b	Indirect effect	0.070***	0.009	0.053	0.088	Partial mediated
		Direct effect	0.185***	0.020	0.147	0.224	
FLO -> STICK -> PI	H9c	Indirect effect	0.073***	0.009	0.056	0.092	Partial mediated
		Direct effect	0.173***	0.020	0.134	0.211	
MTC -> STICK -> PI	H9d	Indirect effect	0.049***	0.009	0.032	0.067	Partial mediated
		Direct effect	0.079***	0.019	0.041	0.117	
SP -> ICW -> SS	-	Indirect effect	0.036***	0.007	0.023	0.050	Partial mediated
		Direct effect	0.202***	0.020	0.163	0.241	
VIV -> ARL -> ICW	-	Indirect effect	0.042***	0.007	0.029	0.057	Partial mediated
		Direct effect	0.141***	0.020	0.101	0.181	
ATT -> ARL -> ICW	-	Indirect effect	0.044***	0.007	0.031	0.059	Partial mediated
		Direct effect	0.071***	0.020	0.031	0.111	
FLO -> ARL -> ICW	-	Indirect effect	0.036***	0.007	0.025	0.050	Partial mediated
		Direct effect	0.111***	0.020	0.072	0.151	
MTC -> ARL -> ICW	-	Indirect effect	0.036***	0.007	0.024	0.050	Partial mediated
		Direct effect	0.114***	0.020	0.074	0.153	
VIV -> PLE -> ICW	-	Indirect effect	0.049***	0.008	0.034	0.067	Partial mediated
		Direct effect	0.134***	0.020	0.094	0.174	
FLO -> PLE -> ICW	-	Indirect effect	0.058***	0.010	0.041	0.078	Partial mediated
		Direct effect	0.089***	0.021	0.049	0.130	
ATT -> PLE -> ICW	-	Indirect effect	0.053***	0.009	0.037	0.071	Partial mediated
		Direct effect	0.063***	0.021	0.022	0.103	
MTC -> PLE -> ICW	-	Indirect effect	0.030***	0.007	0.018	0.044	Partial mediated
		Direct effect	0.120***	0.020	0.080	0.159	
ARL -> ICW -> SS	-	Indirect effect	0.043***	0.020	0.030	0.060	Partial mediated
		Direct effect	0.266***	0.008	0.228	0.305	
PLE -> ICW -> SS	-	Indirect effect	0.042***	0.007	0.029	0.057	Partial mediated
		Direct effect	0.295***	0.020	0.256	0.333	

All values significant at *** $p < 0.001$.

VIV vividness, ATT attractiveness of live-streamers, FLO flow, MTC multisensory cues, ARL arousal, PLE pleasure, SP social presence, SS social sharing, STICK stickiness, ICW the intention to continue watching, PI purchase intention.

of the previous research on consumer behaviour in the context of livestream shopping has explored consumers purchase intentions, our research fills some of the gaps and demonstrates the mediate effect of emotion and stickiness between cognitive reactions and behaviour. Overall, the research conceptual model proposes the further understanding of the effects of cognition and emotion contributing to sustainable development, livestream shopping and literatures in sustainable consumption.

Practical contribution. First, social sharing had a positive effect on purchase intention, which is consistent with previous findings in the literature (Hajli 2020; Tajvidi et al. 2020). Social sharing is also affected by the intention to continue watching, consistent with previous findings in the literature (Wang et al. 2020). Additionally, it has been suggested that social sharing mediates the relationship between the intention to continue watching and purchase intention that can motivate consumers to purchase the products (Kim et al. 2015). As hypothesized, consumers' willingness to pay is influenced by social sharing while livestream shopping. This finding indicates that consumers are involved in social sharing when recommending or sharing sustainable clothing information with others. When people perceive that the experience of buying sustainable clothing meets their requirements, they tend to share their experiences with friends, relatives, and/or strangers online. Thus, the managers and retailers of sustainable clothing companies and/or brands should focus on

encouraging consumers to engage in social sharing rather than merely recommending product information from streamers. This could be affected by streamers who provide knowledge regarding sustainability, green information, eco-friendly stories, and/or share rewards in the context of livestream shopping for sustainable clothing.

Second, the results of the present study also demonstrate that both arousal and pleasure exert positive effects on the intention to continue watching livestreaming related to sustainable clothing, consistent with the findings from previous research (Wu et al. 2020; Yan et al. 2016). Specifically, positive emotions and/or feelings of pleasure can change an individual's attitude and behaviour (Kim and Kim 2020; Shen et al. 2022a). This can be attributed to the fact that when consumers experience pleasure while livestream shopping, they tend to spend more time doing it. This finding confirms that managers and retailers in sustainable fashion companies and streamers should pay attention to enhancing consumers' positive emotions during livestream shopping. For example, congruent background music should be considered with the product information by online retailers and/or streamers. Meanwhile, streamers should broadcast sustainable product information in a friendly manner. This is because if consumers have a positive reaction to livestreaming, they are more likely to keep watching it and hence tend to buy sustainable clothing.

Third, the results of the present study indicate that vividness has a positive effect on consumers' arousal and pleasure,

consistent with the findings from Nisbett and Ross (1980) that the vividness of live video evokes viewers' emotions and enhances their involvement (Li et al. 2001; Liu et al. 2023). The findings also indicate that emotion mediates the relationship between vividness and the intention to continue watching. Detailed information about sustainability which is related to cognitive reactions should be provided to consumers in the context of livestream shopping in order to stimulate their purchase behaviour. In this way, fashion companies may be able to present clear and detailed livestreaming about sustainable clothing, which can in turn trigger consumers' positive emotions and thus promote their purchase intentions. If consumers are unable to get sufficient green information nor information that is well-defined enough, they may not enjoy the shopping process or else switch to another livestreaming retailer. Thus, detailed and clear information about sustainable clothing should be provided to consumers by brand managers, retailers and streamers in the context of livestream shopping.

Fourth, our results show that the attractiveness of live-streamers has a positive impact on consumers' arousal and pleasure, consistent with previous findings (Guo et al. 2022; Kim and Kim 2022; Li et al. 2023a). This indicates that the viewer's reactions to the attractiveness, professionalism, and passion of live-streamers have significant relationships with positive emotion on sustainable clothing consumption. According to Ozkara et al. (2017), popular streamers should be engaging in order to capture consumers' attention thus motivating them to buy. The current study was conducted in China, but the findings reported here may nevertheless offer suggestions to retailers and streamers in other countries where livestreaming is currently less developed.

Concerning the relationship between the attractiveness of live-streamers and consumer emotions it is appropriate to provide suggestions to online retailers to improve the knowledgeability and articulateness of the streamers. This finding also indicates that the streamers should be encouraged to adopt effective tools and enhance their communication skills in order to provide highly qualified information about sustainable clothing to consumers. Streamers might be suggested to learn about sustainability issues in their spare time so as to enrich themselves, solve consumer's problems, and thus increase interactivities in the process of livestreaming shopping. They also need to get new information about sustainability and broadcast them efficiently.

Fifth, the present results highlight how flow has a positive impact on consumers' arousal and pleasure, consistent with previous findings in the literature (Kim and Kim 2022). This finding may be attributed to the fact that when consumers spend more time immersed in livestream shopping, they may find information about sustainable clothing more interesting, engaging, and enjoyable. Perceived flow can attract people to escape from the real world, improve interactions, and relax themselves in the livestreaming experience (Paraman et al. 2022). It is evident that if consumers perceive the state of flow while shopping for sustainable clothing, they are likely to be enjoying themselves and that will likely affect their decision-making. This is mainly because consumers are stimulated by livestreaming and are thus simply not aware of the passage of time. Thus, streamers, online retailers and platform operators should try to create a good and interactive livestreaming experience to maintain the sense of flow and thus increase the positive responses of consumers.

Sixth, the present results show that multisensory cues increased consumers' arousal and pleasure in the context of livestream shopping, consistent with previous findings in the literature (Li et al. 2020; Meng et al. 2021; Wright 2002). When consumers express their ideas and questions via verbal and voice messages, their positive emotions can be evoked by perceived visual and sensory stimulation in the livestream (Koo and Lee 2011).

Sustainable clothing information should be recommended to consumers via icons, verbal and video efficiently (Ma 2021). In this regard, fashion brands managers and retailers can focus on the visual and audio cues associated with sustainable clothing while livestream shopping so as to enhance their consumers' emotion (e.g., arousal, pleasure). Sustainable clothing information, which is supported by the different visual and audio stimuli, can be broadcast via short-playing video. Streamers can try on sustainable clothing to show the characteristics of fabric and multiple functions of the products. Thus, novel multisensory cues should be provided in livestream shopping to enrich the consumers' multisensory experiences.

Seventh, the findings demonstrated that stickiness mediated the relationship between cognitive reactions (vividness, attractiveness, flow, and multisensory cues) and purchase intention, consistent with previous findings (Lin et al. 2010, 2019; Ma 2023). When consumers stay on the livestream platform for a long time, they are more likely to buy the products shown. For example, online activities can be organized by streamers so as to enhance consumer engagement and the stickiness of the experience. Streamers can also provide information concerning sustainable clothing through sensory cues (e.g., emojis, tempo of background music, etc.) to enrich the livestreaming experience of consumers. Clothing information (e.g., water use, emissions, and recyclability) can be presented to consumers by means of a creative icon, which may attract them to learn more about sustainability issues. Thus, it is important for online retailers to keep their consumers engaged in sustainable clothing online shopping by encouraging them to spend more time livestreaming.

Eighth, the results reported here also confirm that social presence has a positive effect on consumers' intention to continue watching, in line with previous findings (Hou et al. 2019; Sun et al. 2019; Zheng et al. 2023). With the popularity of the social media and livestream shopping, people have a strong social connection in terms of their interpersonal relationships, which contributes to consumer behaviour intentions (Jin et al. 2017; Xu et al. 2021). Company managers should therefore focus on improving consumers' connections with others during livestream shopping. When consumers find sustainable clothing information, their questions should be addressed efficiently, so as to reduce consumers' perceived risk and hesitation. More specifically, when consumers feel close to the streamer, they will start to feel comfortable and so want to stay on the livestreaming platform. Thus, sustainable clothing retailers and streamers may decrease consumers' feeling of alone and provide platforms for people to communicate with strangers in a good way.

Limitations and future research

There are some limitations associated with the present research that may provide suggestions for future research. First, there are many stimuli that can affect consumers' emotions and consumption behavioural intention, such as visual aesthetics, olfactory cues (Zhang and Spence 2023), touch (Spence and Gallace 2011), and taste. Future research should therefore focus on the relationship between multisensory perception and decision-making based on sustainable products and livestream shopping. In addition, given the popularity of virtual reality (VR) technology and mobile tools, future research could consider the effects of interaction in livestream and its application to VR tools. Finally, when consumers are attracted by livestream shopping and to buying products online, there might be a kind of impulsive purchase behaviour. Future research could explore the relationship between return/exchange of the products and impulsive purchase behaviour so as to lower risk and reduce behavioural regret.

Data availability

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

Received: 22 September 2024; Accepted: 17 June 2025;

Published online: 09 July 2025

References

- Agarwal P, Kumar D, Katiyar R (2025) Antecedents of continuous purchase behavior for sustainable products: an integrated conceptual framework and review. *J Consum Behav* 0:1–26. <https://doi.org/10.1002/cb.2487>
- Aghekyan-Simonian M, Forsythe S, Kwon WS, Chattaraman V (2012) The role of product brand image and online store image on perceived risks and online purchase intentions for apparel. *J Retail Consum Serv* 19(3):325–331. <https://doi.org/10.1016/j.jretconser.2012.03.006>
- Alam SS, Masukujjaman M, Makhbul ZKM, Ali MH, Omar NA, Siddik AB (2023) Impulsive hotel consumption intention in live streaming E-commerce settings: Moderating role of impulsive consumption tendency using two-stage SEM. *Int J Hospitality Manag* 115:103606. <https://doi.org/10.1016/j.ijhm.2023.103606>
- Asante IO, Jiang Y, Miao M (2024) Exploring the motivating factors for using live-streaming and their influence on consumers' hedonic well-being: the mediating effect of psychological engagement. *Psychol Mark* 41(1):27–44. <https://doi.org/10.1002/mar.21881>
- Baier D, Rausch TM, Wagner TF (2020) The drivers of sustainable apparel and sportswear consumption: a segmented Kano perspective. *Sustainability* 12:2788. <https://doi.org/10.3390/su12072788>
- Bailey AA, Mimoun MSB (2024) Social media sharing disposition (SMSD) as a driver of consumer information-sharing behavior. *J Consum Mark* 41(5):491–509
- Barhorst JB, McLean G, Mack R (2021) Blending the real world and the virtual world: Exploring the role of flow in augmented reality experiences. *J Bus Res* 122:423–436. <https://doi.org/10.1016/j.jbusres.2020.08.041>
- Bock G-W, Zmud RW, Kim Y-G, Lee J-N (2005) Behavioral intention formation in knowledge sharing: examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. *MIS Q* 29(1):87–111. <https://doi.org/10.2307/25148669>
- Brandão A, Costa AG (2021) Extending the theory of planned behaviour to understand the effects of barriers towards sustainable fashion consumption. *Eur Bus Rev* 33(5):742–744. <https://doi.org/10.1108/EBR-11-2020-0306>
- Camilleri MA, Cricelli L, Mauriello R, Strazzullo S (2023) Consumer perceptions of sustainable products: A systematic literature review. *Sustainability*, 15(11):8923. <https://doi.org/10.3390/su15118923>
- Cavusoglu L, Atik D (2021) Social credibility evaluation: trust formation in social commerce. *J Assoc Consum Res* 6(4):474–490. <https://doi.org/10.1086/716068>
- Charlton A, Montoya A, Price J, Hilgard J, Krefeld-Schwab A (2021) Noise in the process: an assessment of the evidential value of mediation effects in marketing journals. *Psy ArXiv*. <https://doi.org/10.31234/osf.io/ck2r5>
- Chen CC, Lin YC (2018) What drives live-stream usage intention? The perspectives of flow, entertainment, social interaction, and endorsement. *Telemat Inform* 35(1):293–303. <https://doi.org/10.1016/j.tele.2017.12.003>
- Chen H, Chen H, Tian X (2022) The dual-process model of product information and habit in influencing consumers' purchase intention: the role of live streaming features. *Electron Commer Res Appl* 53:101150. <https://doi.org/10.1016/j.elerap.2022.101150>
- Chen N, Yang Y (2023) The role of influencers in live streaming e-commerce: Influencer trust, attachment, and consumer purchase intention. *J Theor Appl Electron Commer Res* 18(3):1601–1618. <https://doi.org/10.3390/jtaer18030081>
- Chin WW (1998) The partial least squares approach to structural equation modeling. *Mod Methods Bus Res* 295(2):295–336. <https://doi.org/10.4324/9781410604385-10>
- Choi TR, Ahn J (2023) Roles of brand benefits and relationship commitment in consumers' social media behavior around sustainable fashion. *Behav Sci* 13(5):386. <https://doi.org/10.3390/bs13050386>
- Choi M, Toma CL (2014) Social sharing through interpersonal media: Patterns and effects on emotional well-being. *Comput Hum Behav* 36:530–541. <https://doi.org/10.1016/j.chb.2014.04.026>
- Chou CY, Chen JS, Lin SK (2022) Value cocreation in livestreaming and its effect on consumer-simulated experience and continued use intention. *Int J Consum Stud* 46(6):2183–2199. <https://doi.org/10.1111/ijcs.12777>
- Clement AP, Jiaming F, Li L (2020) Green advertising and purchase decisions in live-streaming B2C and C2C interactive marketing. *Int J Inf Manag Sci* 31(2):191. [https://doi.org/10.6186/IJIMS.20200631\(2\).0005](https://doi.org/10.6186/IJIMS.20200631(2).0005)
- Csikszentmihalyi M (2020) Finding flow: the psychology of engagement with everyday life. Hachette, UK
- Cuny C, Fornerino M, Helme-Guizon A (2015) Can music improve e-behavioral intentions by enhancing consumers' immersion and experience? *Inf Manag* 52(8):1025–1034. <https://doi.org/10.1016/j.im.2015.07.009>
- Dai J, Sheng G (2022) Advertising strategies and sustainable development: the effects of green advertising appeals and subjective busyness on green purchase intention. *Bus Strategy Environ* 31(7):3421–3436. <https://doi.org/10.1002/bse.3092>
- Dobbelstein T, Lochner C (2023) Factors influencing purchase intention for recycled products: a comparative analysis of Germany and South Africa. *Sustain Dev* 31(4):2256–2277. <https://doi.org/10.1002/sd.2504>
- Douglas R (2022) Embracing the path for livestreaming and eCommerce. <https://www.wundermanthompson.com/insight/embracing-the-path-for-livestreaming-and-e-commerce>
- Elhoushy S, Jang SC (2023) How to maintain sustainable consumer behaviours: a systematic review and future research agenda. *Int J Consum Stud* 47(6):2181–2211. <https://doi.org/10.1111/ijcs.12905>
- Eroglu SA, Machleit KA, Davis LM (2001) Atmospheric qualities of online retailing: a conceptual model and implications. *J Bus Res* 54(2):177–184. [https://doi.org/10.1016/S0148-2963\(99\)00087-9](https://doi.org/10.1016/S0148-2963(99)00087-9)
- Escalas JE (2004) Imagine yourself in the product: mental simulation, narrative transportation, and persuasion. *J Advertising* 33(2):37–48. <https://doi.org/10.1080/00913367.2004.10639163>
- Ettis SA (2017) Examining the relationships between online store atmospheric color, flow experience and consumer behavior. *J Retail Consum Serv* 37:43–55. <https://doi.org/10.1016/j.jretconser.2017.03.007>
- Ford BQ, Gross JJ (2019) Why beliefs about emotion matter: an emotion-regulation perspective. *Curr Directions Psychological Sci* 28(1):74–81. <https://doi.org/10.1177/0963721418806697>
- Fornell C, Larcker DF (1981) Evaluating structural equation models with unobservable variables and measurement error. *J Mark Res* 18:39–50. <https://doi.org/10.1177/002224378101800312>
- Frensel AM, Landmann E, Schönlitz M-S, Siems FU, Sharma P (2025) Influence of shame on young consumers' purchase intentions: a social sustainability perspective. *Young Consum* 26(7):126–141. <https://doi.org/10.1108/YC-10-2024-2276>
- Ghani JA, Deshpande SP (1994) Task characteristics and the experience of optimal flow in human-computer interaction. *J Psychol* 128(4):381–391. <https://doi.org/10.1080/00223980.1994.9712742>
- Gu Y, Cheng X, Shen J (2023) Design shopping as an experience: exploring the effect of the live-streaming shopping characteristics on consumers' participation intention and memorable experience. *Inf Manag* 60(5):103810. <https://doi.org/10.1016/j.im.2023.103810>
- Guan Z, Hou F, Li B, Phang CW, Chong AY (2022) What influences the purchase of virtual gifts in live streaming in China? A cultural context-sensitive model. *Inf Syst J* 32(3):653–689. <https://doi.org/10.1111/isj.12367>
- Guo Y, Zhang K, Wang C (2022) Way to success: understanding top streamer's popularity and influence from the perspective of source characteristics. *J Retail Consum Serv* 64:102786. <https://doi.org/10.1016/j.jretconser.2021.102786>
- Gvili Y, Levy S (2023) I share, therefore I trust: a moderated mediation model of the influence of eWOM engagement on social commerce. *J Bus Res* 166:114131. <https://doi.org/10.1016/j.jbusres.2023.114131>
- Haines S, Fares OH, Mohan M, Lee SH (2023) Social media fashion influencer eWOM communications: understanding the trajectory of sustainable fashion conversations on YouTube fashion haul videos. *J Fash Mark Manag* 27(6):1027–1046. <https://doi.org/10.1108/JFMM-03-2022-0029>
- Hair JF, Black WC, Babin BJ, Anderson RE (2010) Multivariate data analysis, a global perspective, 7th ed. Pearson, New Jersey
- Hajli N (2020) The impact of positive valence and negative valence on social commerce purchase intention. *Inf Technol People* 33(2):774–791. <https://doi.org/10.1108/ITP-02-2018-0099>
- Han B, Li P, Tan X (2024) The effects of quality perception and multisensory perception on purchase intention when consumers shop online. *Asia Pacific J Market Logist*. <https://doi.org/10.1108/APJML-03-2024-0360>
- Hilvert-Bruce Z, Neill JT, Sjöblom M, Hamari J (2018) Social motivations of live-streaming viewer engagement on Twitch. *Comput Hum Behav* 84:58–67. <https://doi.org/10.1016/j.chb.2018.02.013>
- Ho CI, Liu Y, Chen MC (2022) Factors influencing watching and purchase intentions on live streaming platforms: from a 7Ps marketing mix perspective. *Information* 13(5):239. <https://doi.org/10.3390/info13050239>
- Holmqvist J, Lunardo R (2015) The impact of an exciting store environment on consumer pleasure and shopping intentions. *Int J Res Mark* 32(1):117–119. <https://doi.org/10.1016/j.ijresmar.2014.12.001>
- Hou F, Guan Z, Li B, Chong AYL (2020) Factors influencing people's continuous watching intention and consumption intention in live streaming: evidence from China. *Internet Res* 30(1):141–163. <https://doi.org/10.1108/intr-04-2018-0177>

- Hsu CL, Liao YC (2014) Exploring the linkages between perceived information accessibility and microblog stickiness: the moderating role of a sense of community. *Inf Manag* 51(7):833–844. <https://doi.org/10.1016/j.im.2014.08.005>
- Hsu CL, Lin JCC (2016) Effect of perceived value and social influences on mobile app stickiness and in-app purchase intention. *Technol Forecast Soc Change* 108:42–53. <https://doi.org/10.1016/j.techfore.2016.04.012>
- Hu M, Zhang M, Wang Y (2017) Why do audiences choose to keep watching on live video streaming platforms? An explanation of dual identification framework. *Comput Hum Behav* 75:594–606. <https://doi.org/10.1016/j.chb.2017.06.006>
- Huang C, Chen C, Wang H (2024a) Effects of online customer reviews on sustainable clothing purchase intentions: the mediating role of perceived diagnosticity. *J Consum Behav* 23(5):2676–2692. <https://doi.org/10.1002/cb.2344>
- Huang Q, Dastane O, Cham TH, Cheah JH (2024b) Is 'she' more impulsive (to pleasure) than 'him' during livestream e-commerce shopping? *J Retail Consum Serv* 78:103707. <https://doi.org/10.1016/j.jretconser.2024.103707>
- Hulland J (1999) Use of partial least squares (PLS) in strategic management research: a review of four recent studies. *Strat Manag J* 20(2):195–204
- Huo D, Zhang X, Qiao L, Tang A, Wang Y (2024) Live streaming economy and green consumer behavior of farming products: a psycholinguistic forecasting by using social computation. *Technol Forecast Soc Change* 205:123531. <https://doi.org/10.1016/j.techfore.2024.123531>
- Iwanaga M, Ito T (2002) Disturbance effect of music on processing of verbal and spatial memories. *Percept Mot Skills* 94(3):1251–1258. <https://doi.org/10.2466/pms.2002.94.3c.1251>
- Jia Y, Zheng K, Liu X, Guo X (2024) How short video platforms retain customers: Focusing on the roles of user stickiness and flow experience. *Asia Pacific J Market Logist*. <https://doi.org/10.1108/APJML-05-2024-0645>
- Jin W, Sun YQ, Wang N, Zhang X (2017) Why users purchase virtual products in MMORPG? An integrative perspective of social presence and user engagement. *Internet Res* 27(2):408–427. <https://doi.org/10.1108/intr-04-2016-0091>
- Johnson MR, Woodcock J (2019) "And today's top donator is": How live streamers on Twitch.tv monetize and gamify their broadcasts. *Soc Media Soc*, 5(4). <https://doi.org/10.1177/2056305119881694>
- Kamalanon P, Chen J-S, Le T-T-Y (2022) Why do we buy green products? An extended theory of the planned behavior model for green product purchase behavior. *Sustainability* 14:689. <https://doi.org/10.3390/su14020689>
- Kang J, Park-Poaps H (2011) Social shopping for fashion: development and validation of a multidimensional scale. *Fam Consum Sci Res J* 39:339–358. <https://doi.org/10.1111/j.1552-3934.2011.02074.x>
- Kautish P, Khare A (2022) Antecedents of sustainable fashion apparel purchase behavior. *J Consum Mark* 39(5):465–487. <https://doi.org/10.1108/JCM-04-2020-3733>
- Khandual A, Pradhan S (2019) Fashion brands and consumers approach towards sustainable fashion. In Muthu S, (eds), *Fast fashion, fashion brands and sustainable consumption*. Textile Science and Clothing Technology, Springer, Singapore. <https://doi.org/10.1007/978-981-13-1268-73>
- Kim H, Ko E, Kim J (2015) SNS users' para-social relationships with celebrities: social media effects on purchase intentions. *J Glob Scholars Mark Sci* 25(3):279–294. <https://doi.org/10.1080/21639159.2015.1043690>
- Kim HS, Kim M (2020) Viewing sports online together? Psychological consequences on social live streaming service usage. *Sport Manag Rev* 23:869–882. <https://doi.org/10.1016/j.smr.2019.12.007>
- Kim M, Kim HM (2022) What online game spectators want from their twitch streamers: flow and well-being perspectives. *J Retail Consum Serv* 66:102951. <https://doi.org/10.1016/j.jretconser.2022.102951>
- Kim T, Sung Y, Moon JH (2020) Effects of brand anthropomorphism on consumer-brand relationships on social networking site fan page: the mediating role of social presence. *Telemat Inform* 51:101406. <https://doi.org/10.1016/j.tele.2020.101406>
- Ko SB, Jin B (2017) Predictors of purchase intention toward green apparel products: a cross-cultural investigation in the USA and China. *J Fash Mark Manag* 21(1):70–87. <https://doi.org/10.1108/JFMM-07-2014-0057>
- Koo D-M, Lee J-H (2011) Inter-relationships among dominance, energetic and tense arousal, and pleasure, and differences in their impacts under online vs. offline environment. *J Comput Hum Behav* 27(5):1740–1750. <https://doi.org/10.1016/j.chb.2011.03.001>
- Lee CC, Pan C, Song Y (2025) How live marketing affects green purchase in the age of artificial intelligence? *Emerg Mark Financ Trade* 61(1):1–20. <https://doi.org/10.1080/1540496X.2023.2300654>
- Li H, Daugherty T, Biocca F (2001) Characteristics of virtual experience in electronic commerce: a protocol analysis. *J Interact Mark* 15(3):13–30. <https://doi.org/10.1002/dir.1013>
- Li L, Feng Y, Zhao A (2023a) An interaction-immersion model in live streaming commerce: the moderating role of streamer attractiveness. *J Mark Anal* 12:701–716. <https://doi.org/10.1057/s41207-023-00225-7>
- Li P, Guo X, Wu C, Spence C (2022a) How multisensory perception promotes purchase intent in the context of clothing e-customisation. *Front Psychol* 13:1039875. <https://doi.org/10.3389/fpsyg.2022.1039875>
- Li P, Pan M, Qu H, Wu C (2022b) The effects of visual-audio merchandising elements on consumers' impulsive purchase intentions in apparel e-customization. *Text Res J* 92(23–24):4678–4694. <https://doi.org/10.1177/00405175221109626>
- Li P, Wu C, Spence C (2020) Multisensory perception and positive emotion: exploratory study on mixed item set for apparel e-customization. *Text Res J* 90(17–18):2046–2057. <https://doi.org/10.1177/0040517520909359>
- Li P, Wu C, Spence C (2023) Comparing the influence of visual information and the perceived intelligence of voice assistants when shopping for sustainable clothing online. *Humanit Soc Sci Commun* 10:727. <https://doi.org/10.1057/s41599-023-02244-2>
- Li S, Jaharuddin NS (2021) Influences of background factors on consumers' purchase intention in China's organic food market: assessing moderating role of word-of-mouth (WOM). *Cogent Bus Manag* 8(1):1876296. <https://doi.org/10.1080/23311975.2021.1876296>
- Li Y, Li X, Cai J (2021) How attachment affects user stickiness on live streaming platforms: a socio-technical approach perspective. *J Retail Consum Serv* 60:102478. <https://doi.org/10.1016/j.jretconser.2021.102478>
- Lin J, Luo Z, Cheng X, Li L (2019) Understanding the interplay of social commerce affordances and swift guanxi: An empirical study. *Inf Manag* 56(2):213–224. <https://doi.org/10.1016/j.im.2018.05.009>
- Lin L, Hu PJ-H, Sheng ORL, Lee J (2010) Is stickiness profitable for electronic retailers. *Commun ACM* 53:132–136. <https://doi.org/10.1145/1666420.1666454>
- Liu L-L (2020) Linear model predictive control for physical attractiveness and risk: application of cosmetic medicine service. *Mathematics* 8:975. <https://doi.org/10.3390/math8060975>
- Liu Y, Tan C-H, Sutanto J (2018) A media symbolism perspective on the choice of social sharing technologies. *Electron Commer Res Appl* 29(5–6):19–29. <https://doi.org/10.1016/j.elerap.2018.03.001>
- Liu Z, Li J, Wang X, Guo Y (2023) How search and evaluation cues influence consumers' continuous watching and purchase intentions: an investigation of live-stream shopping from an information foraging perspective. *J Bus Res* 168:114233. <https://doi.org/10.1016/j.jbusres.2023.114233>
- Long R, Yuan X, Wu M (2024) Consumers' green product purchase intention considering para-social interaction: an experimental study based on live-streaming e-commerce. *J Clean Prod* 481:144169. <https://doi.org/10.1016/j.jclepro.2024.144169>
- Lu B, Chen Z (2021) Live streaming commerce and consumers' purchase intention: an uncertainty reduction perspective. *Inf Manag* 58(7):103509. <https://doi.org/10.1016/j.im.2021.103509>
- Lu B, Fan W, Zhou M (2016) Social presence, trust, and social commerce purchase intention: an empirical research. *Comput Hum Behav* 56:225–237. <https://doi.org/10.1016/j.chb.2015.11.057>
- Lu S, Yao D, Chen X, Grewai R (2021) Do larger audiences generate greater revenues under pay what you want? Evidence from a live streaming platform. *Mark Sci* 40(5):964–984. <https://doi.org/10.1287/mksc.2021.1292>
- Luo X, Cheah J-H, Hollebeck LD, Lim X-J (2024) Boosting customers' impulsive buying tendency in live-streaming commerce: the role of customer engagement and deal proneness. *J Retail Consum Serv* 77:103644. <https://doi.org/10.1016/j.jretconser.2023.103644>
- Ma Y (2021) Elucidating determinants of customer satisfaction with live-stream shopping: an extension of the information systems success model. *Telemat Inform* 65:101707. <https://doi.org/10.1016/j.tele.2021.101707>
- Ma Y (2023) Effects of interactivity affordance on user stickiness in livestream shopping: identification and gratification as mediators. *Heliyon* 9:e12917. <https://doi.org/10.1016/j.heliyon.2023.e12917>
- Ma Y (2024) A socio-technical analysis of factors affecting consumer engagement in livestream shopping: evidence from structural equation modeling and fuzzy set qualitative comparative analysis. *Telemat Inform* 87:102094. <https://doi.org/10.1016/j.tele.2023.102094>
- Madina S, Kim HC (2021) Exploring the structural relationship among beauty influencers' attractiveness and homophily, emotional attachment, and live commerce stickiness. *Int J Adv Smart Conver* 10(4):149–157. <https://doi.org/10.7236/IJASC.2021.10.4.149>
- Mammadli M (2023) Factors driving sustainable consumption in Azerbaijan: comparison of generation X, generation Y and generation Z. *Sustainability* 15(20):15159. <https://doi.org/10.3390/su152015159>
- Mardhatilah D, Omar A, Thurasamy R, Juniarti RP (2023) Digital consumer engagement: examining the impact of audio and visual stimuli exposure in social media. *Inf Manag Bus Rev* 15(4(SI)):94–108. [https://doi.org/10.22610/imbr.v15i4\(SI\).3580](https://doi.org/10.22610/imbr.v15i4(SI).3580)
- Maseeh HI, Sangroya D, Jebarajakirthy C, Adil M, Kaur J, Yadav MP, Saha R (2022) Anti-consumption behavior: a meta-analytic integration of attitude behavior context theory and well-being theory. *Psychol Mark* 39(12):2302–2327. <https://doi.org/10.1002/mar.21748>
- Maxham III JG (2001) Service recovery's influence on consumer satisfaction, positive word-of-mouth, and purchase intentions. *J Bus Res* 54(1):11–24. [https://doi.org/10.1016/S0148-2963\(00\)00114-4](https://doi.org/10.1016/S0148-2963(00)00114-4)

- Mehrabian A, Russell JA (1974) An approach to environment psychology. MIT Press, Cambridge, MA
- Meng LM, Duan S, Zhao Y, Lü K, Chen S (2021) The impact of online celebrity in livestreaming E-commerce on purchase intention from the perspective of emotional contagion. *J Retail Consum Serv* 63:102733. <https://doi.org/10.1016/j.jretconser.2021.102733>
- Morwitz V (2014) Consumers' purchase intentions and their behavior. *Found Trends® Mark* 7(3):181–230. <https://doi.org/10.1561/17000000036>
- Nadeem W, Khani AH, Schultz CD, Adam NA, Attar RW, Hajli N (2020) How social presence drives commitment and loyalty with online brand communities? The role of social commerce trust. *J Retail Consum Serv* 55(7):102136. <https://doi.org/10.1016/j.jretconser.2020.102136>
- Ni S, Ueichi H (2024) Factors influencing behavioral intentions in livestream shopping: a cross-cultural study. *J Retail Consum Serv* 76:103596. <https://doi.org/10.1016/j.jretconser.2023.103596>
- Nima AA, Garcia D, Sikstrom S, Cloninger KM (2024) The ABC of happiness: Validation of the tridimensional model of subjective well-being (affect, cognition, and behavior) using Bifactor Polytomous Multidimensional Item Response Theory. *Heliyon* 10:e24386. <https://doi.org/10.1016/j.heliyon.2024.e24386>
- Nisbett RE, Ross L (1980) Human inference: strategies and shortcomings of social judgment. Prentice-Hall, Englewood Cliffs, NJ
- Nowlis SM, Mandel N, McCabe DB (2004) The effect of a delay between choice and consumption on consumption enjoyment. *J Consum Res* 31(3):502–510. <https://doi.org/10.1086/425085>
- Nunnally JC, Bernstein IH (1994) Psychometric theory. McGraw-Hill, New York, NY
- Ozkara BY, Ozmen M, Kim JW (2017) Examining the effect of flow experience on online purchase: a novel approach to the flow theory based on hedonic and utilitarian value. *J Retail Consum Serv* 37:119–131. <https://doi.org/10.1016/j.jretconser.2017.04.001>
- Paraman P, Annamalah S, Vlachos P, Ahmed S, Balasubramaniam A, Kadir B, Raman M, Hoo WC (2022) Dynamic effect of flow on impulsive consumption: evidence from southeast Asian live streaming platforms. *J Open Innov Technol Mark Complex* 8:212. <https://doi.org/10.3390/joitmc8040212>
- Park HJ, Lin LM (2020) The effects of match-ups on the consumer attitudes toward internet celebrities and their live streaming contents in the context of product endorsement. *J Retail Consum Serv* 52:101934. <https://doi.org/10.1016/j.jretconser.2019.101934>
- Pauw LS (2023) Support provision in a digitalized world: the consequences of social sharing across different communication channels. *Curr Opin Psychol* 52:101597. <https://doi.org/10.1016/j.copsyc.2023.101597>
- Pauw LS, Medland H, Paling SJ, Moerk EK, Greenaway KH, Kalokerinos EK, Hinton JD, Hollenstein T, Koval P (2022) Social support predicts differential use, but not differential effectiveness, of expressive suppression and social sharing in daily life. *Affect Sci* 3:641–652. <https://doi.org/10.1007/s42761-022-00123-8>
- Pelet JÉ, Ettis S, Cowart K (2017) Optimal experience of flow enhanced by telepresence: evidence from social media use. *Inf Manag* 54(1):115–128. <https://doi.org/10.1016/j.im.2016.05.001>
- Qu Y, Cieslik A, Fang S, Qing Y (2023) The role of online interaction in user stickiness of social commerce: the shopping value perspective. *Digital Bus* 3:100061. <https://doi.org/10.1016/j.digbus.2023.100061>
- Rimé B, Bouchat P, Paquot L, Giglio L (2020) Intrapersonal, interpersonal, and social outcomes of the social sharing of emotion. *Curr Opin Psychol* 31:127–134. <https://doi.org/10.1016/j.copsyc.2019.08.024>
- Sharma R, Sharma SS, Singh G (2024) Exploring customer engagement on Facebook marketplace for second-hand clothing. *Soc Responsib J* 20(10):2149–2173. <https://doi.org/10.1108/SRJ-10-2023-0588>
- Shen L, Zhang Y, Fan Y, Chen Y, Zhao Y (2022a) Improving consumer stickiness in livestream e-commerce: a mixed-methods study. *Front Psychol* 13:962786. <https://doi.org/10.3389/fpsyg.2022.962786>
- Shen H, Zhao C, Fan DXF, Buhails D (2022b) The effect of hotel livestreaming on viewers' purchase intention: exploring the role of parasocial interaction and emotional engagement. *Int J Hospitality Manag* 107:103348. <https://doi.org/10.1016/j.ijhm.2022.103348>
- Sjöblom M, Hamari J (2017) Why do people watch others play video games? An empirical study on the motivations of Twitch users. *Comput Hum Behav* 75:985–996. <https://doi.org/10.1016/j.chb.2016.10.019>
- Spence C, Gallace A (2011) Multisensory design: reaching out to touch the consumer. *Psychol Mark* 28(3):267–308. <https://doi.org/10.1002/mar.20392>
- Statista.com (2024) Amazon in the U.S., Alibaba in China in 2023. <https://www.statista.com/markets/413/topic/457/b2c-e-commerce/#statistic4>. Accessed in March, 2024
- Steuer J (1993) Defining virtual reality: dimensions determining telepresence. *J Commun* 42(4):73–93. <https://doi.org/10.1111/j.1460-2466.1992.tb00812.x>
- Sun Y, Shao X, Li X, Guo Y, Nie K (2019) How live streaming influences purchase intentions in social commerce: an IT affordance perspective. *Electron Commer Res Appl* 37:100886. <https://doi.org/10.1016/j.elerap.2019.100886>
- Syed S, Acquaye A, Khalfan MM, Obuobisa-Darko T, Yamoah FA (2024) Decoding sustainable consumption behavior: a systematic review of theories and models and provision of a guidance framework. *Resour Conserv Recycling Adv* 23:200232. <https://doi.org/10.1016/j.rcradv.2024.200232>
- Tajvidi M, Richard M-O, Wang Y, Hajli N (2020) Brand co-creation through social commerce information sharing: the role of social media. *J Bus Res* 121(12):476–486. <https://doi.org/10.1016/j.jbusres.2018.06.008>
- Taufique KMR, Vaithianathan S (2018) A fresh look at understanding green consumer behavior among young urban Indian consumers through the lens of Theory of Planned Behavior. *J Clean Prod* 183:46–55. <https://doi.org/10.1016/j.jclepro.2018.02.097>
- Tong X, Chen Y, Zhou S, Yang S (2022) How background visual complexity influences purchase intention in live streaming: the mediating role of emotion and the moderating role of gender. *J Retail Consum Serv* 67:103031. <https://doi.org/10.1016/j.jretconser.2022.103031>
- Torres P, Augusto M, Matos M (2019) Antecedents and outcomes of digital influencer endorsement: an exploratory study. *Psychol Mark* 36(12):1267–1276. <https://doi.org/10.1002/mar.21274>
- Tseng F-C, Cheng TCE, Yu P-L, Huang T-L, Teng C-I (2019) Media richness, social presence and loyalty to mobile instant messaging. *Ind Manag Data Syst* 119(6):1357–1373. <https://doi.org/10.1108/IMDS-09-2018-0415>
- United Nations (UN) (2024) Department of economic and social affairs sustainable development, “The 17 Goals”. United Nations, <https://sdgs.un.org/goals>
- Vakratsas D, Ambler T (1999) How advertising works: what do we really know? *J Mark* 63(1):26–43. <https://doi.org/10.2307/1251999>
- Varshneya G, Das G (2017) Experiential value: multi-item scale development and validation. *J Retail Consum Serv* 34:48–57. <https://doi.org/10.1016/j.jretconser.2016.09.010>
- Vogue Business. Decoding China's Gen Z sustainable fashion consumer [EB/OL] [2022-09-16]. https://www.voguebusiness.com/consumers/decoding-chinas-gen-z-sustainable-fashion-consumer?utm_source=chatgpt.com
- Wang LY, Hu HH, Wang L, Qin JQ (2022) Privacy assurance and social sharing in social commerce: the mediating role of threat-coping appraisals. *J Retail Consum Serv* 67:103028. <https://doi.org/10.1016/j.jretconser.2022.103028>
- Wang L, Zhu H, Li X, Zhao Y (2024) Formation mechanism of user stickiness in live e-commerce: the hybrid PLS-SEM and ANN approach. *Ind Manag Data Syst* 124(3). <https://doi.org/10.1108/IMDS-04-2023-0231>
- Wang P, Huang Q, Davison RM (2020) How do digital influencers affect social commerce intention? The roles of social power and satisfaction. *Inf Technol People* 34(3):1065–1086. <https://doi.org/10.1108/ITP-09-2019-0490>
- Wang R (2024) Influence of the fit between elements in livestreaming shopping on consumers' purchase intention: a dual-processing fluency perspective. *Telemat Inform Rep* 13:100123. <https://doi.org/10.1016/j.teler.2024.100123>
- Wei K, Xi W (2024) CEO vs. celebrity: the effect of streamer types on consumer engagement in brands' self-built live-streaming. *J Res Interact Mark* 18(4):631–647
- Won Y, Jung HJ, Lee Y (2024) Online VR store as a sustainable fashion retail space. *Int J Retail Distrib Manag* 52(13):31–46. <https://doi.org/10.1108/IJRDM-06-2023-0370>
- Wongkitrungruang A, Assarut N (2020) The role of live streaming in building consumer trust and engagement with social commerce sellers. *J Bus Res* 117:543–556. <https://doi.org/10.1016/j.jbusres.2018.08.032>
- Wongkitrungruang A, Dehouche N, Assarut N (2020) Live streaming commerce from the sellers' perspective: implications for online relationship marketing. *J Mark Manag* 36(5–6):488–518. <https://doi.org/10.1080/0267257x.2020.1748895>
- Wright K (2002) Social support within an on-line cancer community: an assessment of emotional support, perceptions of advantages and disadvantages, and motives for using the community from a communication perspective. *J Appl Commun Res* 30(3):195–209. <https://doi.org/10.1080/00909880216586>
- Wu I-L, Chiu M-L, Chen K-W (2020) Defining the determinants of online impulse buying through a shopping process of integrating perceived risk, expectation-confirmation model, and flow theory issues. *Int J Inf Manag* 52:102099. <https://doi.org/10.1016/j.ijinfomgt.2020.102099>
- Wu S, Hu Z, Li Y, Yuan Y (2024) How brand familiarity affects green product purchase intention: the moderating role of streamers' environmental knowledge. *Technol Soc* 77:102572. <https://doi.org/10.1016/j.techsoc.2024.102572>
- Wu Y, Huang H (2023) Influence of perceived value on consumers' continuous purchase intention in live-streaming e-commerce—mediated by consumer trust. *Sustainability* 15(5):4432. <https://doi.org/10.3390/su15054432>
- Wu Y, Kim E, Zhang JJ, Li F, Duan H (2024) A practice of reciprocity: How does cause-related sport marketing stimulate consumers' purchase intentions? *Asia Pacific J Market Logist*. <https://doi.org/10.1108/APJML-06-2024-0818>
- Xu X, Huang D, Shang X (2021) Social presence or physical presence? Determinants of purchasing behaviour in tourism live-streamed shopping. *Tour Manag Perspect* 40:100917. <https://doi.org/10.1016/j.timp.2021.100917>
- Yan HL, Yu J, Xiong H (2020) A study on the factors influencing user stickiness of mobile travelling apps: internet public opinion as a moderating variable. *Nankai Manag Rev* 23(1):18–27. <https://doi.org/10.3969/j.issn.1008-3448.2020.01.003>

- Yan L, Liu MT, Chen X, Shi G (2016) An arousal-based explanation of affect dynamics. *Eur J Mark* 50(7/8):1150–1184. <https://doi.org/10.1108/EJM-05-2015-0288>
- Yan L, Murray KB (2023) The motivational dynamics of arousal and values in promoting sustainable behavior: a cognitive energetics perspective. *Int J Res Mark* 40:679–699. <https://doi.org/10.1016/j.ijresmar.2022.12.004>
- Yang HC, Wang Y (2015) Social sharing of online videos: examining American consumers' video sharing attitudes, intent, and behavior. *Psychol Mark* 32(9):907–919. <https://doi.org/10.1002/mar.20826>
- Yang Y, Chen M, Meng H (2024) The drivers of sharing willingness regarding sustainable fashion brand image based on commitment theory. *Asia Pac J Mark Logist* 36(11):2831–2848. <https://doi.org/10.1108/APJML-10-2023-1035>
- Yarimoglu E, Binboga G (2018) Understanding sustainable consumption in an emerging country: the antecedents and consequences of the ecologically conscious consumer behavior model. *Bus Strategy Environ* 28(4):642–651. <https://doi.org/10.1002/bse.2270>
- Yu S, Zhong Z, Zhu Y, Sun J (2024) Green emotion: incorporating emotional perception in green marketing to increase green furniture purchase intentions. *Sustainability* 16(12):4935. <https://doi.org/10.3390/su16124935>
- Zhang S, Guo D, Li X (2023) The rhythm of shopping: how background music placement in live streaming commerce affects consumer purchase intention. *J Retail Consum Serv* 75:103487. <https://doi.org/10.1016/j.jretconser.2023.103487>
- Zhang T, Spence C (2023) Orthonasal olfactory influences on consumer food behaviour. *Appetite* 190:107023. <https://doi.org/10.1016/j.appet.2023.107023>
- Zhang Z, Fu L, Ma J, Chen C (2024) Social-oriented versus task-oriented streamer interaction styles on live streaming e-commerce: empirical research in China. *J Consum Behav* 23(4):1995–2008. <https://doi.org/10.1002/cb.2320>
- Zhao H, Yu M, Fu S, Cai Z, Lim ETK, Tan CW (2023) Disentangling consumers' negative reactions to impulse buying in the context of in-app purchase: insights from the affect-behavior-cognition model. *Electron Commer Res Appl* 62:101328. <https://doi.org/10.1016/j.elerap.2023.101328>
- Zhao J-D, Huang J-S, Su S (2019) The effects of trust on consumers' continuous purchase intentions in C2C social commerce: a trust transfer perspective. *J Retail Consum Serv* 50(9):42–49. <https://doi.org/10.1016/j.jretconser.2019.04.014>
- Zheng S, Chen J, Liao J, Hu HL (2023) What motivates users' viewing and purchasing behavior motivations in live streaming: a stream-streamer-viewer perspective. *J Retail Consum Serv* 72:103240. <https://doi.org/10.1016/j.jretconser.2022.103240>
- Zhou J, Zhou J, Ding Y, Wang H (2019) The magic of *danmaku*: a social interaction perspective of gift sending on live streaming platforms. *J Electron Commer Res Appl* 34:100815. <https://doi.org/10.1016/j.elerap.2018.11.002>

Acknowledgements

We are grateful to Bo Han, Zhangyi Qin, and Huan Ren for helping us with some of the data analysis.

Competing interests

The authors declare no competing interests.

Ethical approval

Approval was obtained from the ethics committee of the Shanghai University of Engineering Science (Ethics approval number: EST2023019; Date of approval: 27 June 2023). The procedures used in this study adhere to the tenets of the Declaration of Helsinki. Ethical approval was specifically granted for the investigation of cognitive responses, emotional reactions, behavioural intentions, and livestream shopping behaviours.

Informed consent

Written informed consent for participation was not required for this study in accordance with the national legislation (e.g., the *Regulations on the Administration of National Network and Data Security* stipulate that in the collection of network data, personal information shall be processed based on individual consent). For sensitive personal information, such as financial account information, written notifications shall be provided, and the institutional requirements (e.g., participants can select to fill out the questionnaires online, but if they do not agree, they can quit at any time without penalty). Date of obtained: 27 June 2023. There was an online informed consent for participation. The participants were informed that: (a) the collected data would contribute to academic research rather than to any commercial activities; and (b) the personal information would not be published. If the participants wished to consent, they clicked 'agree and continue' button. They were then able to fill-in the questionnaires.

Additional information

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1057/s41599-025-05363-0>.

Correspondence and requests for materials should be addressed to Charles Spence or Chunmao Wu.

Reprints and permission information is available at <http://www.nature.com/reprints>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2025