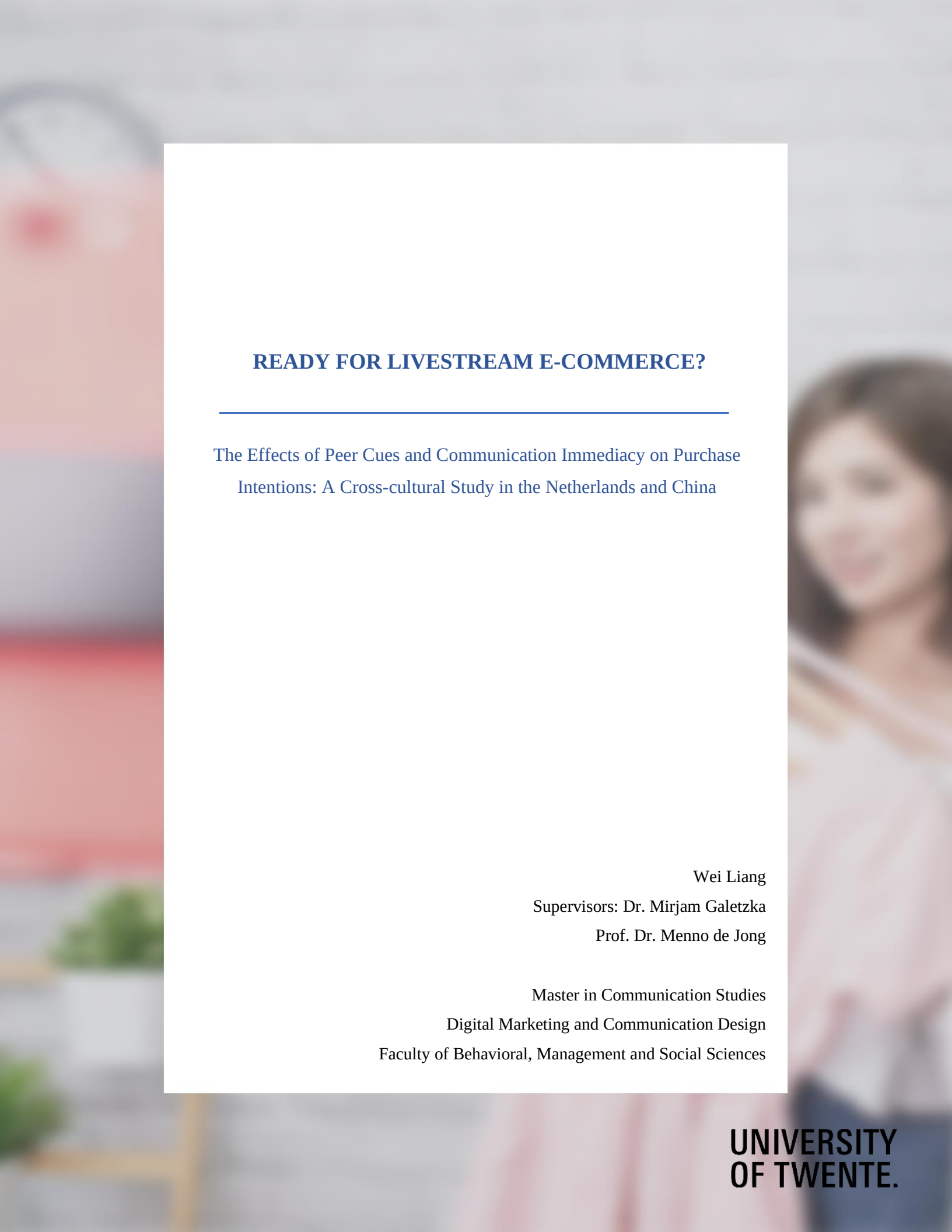

READY FOR LIVESTREAM E-COMMERCE?

The Effects of Peer Cues and Communication Immediacy on Purchase Intentions: A Cross-cultural Study in the Netherlands and China

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Preface

The attempt of this research project stemmed from identifying opportunities for Greenhouse B.V. to explore e-commerce new trends in China. This study offers in-depth insights into livestream e-commerce and inspires Greenhouse to localize Chinese e-commerce new trends in the Dutch market.

It is highly appreciated that school supervisor Dr. Mirjam Galetzka and Prof. Dr. Menno de Jong contribute feedback and guidance on this study. I would also like to take the opportunity to express my gratitude to Tim Deynen, he offers me this opportunity to connect my thesis with a practical project. Besides, I would like to thank Floor Genee and Sam van Lieshout for giving precious feedback and suggestions on the experiment stimuli design by using their media design expertise. Finally, I would like to thank my respondents for their cooperation with my research. It is grateful to have such a precious chance to integrate academic insights into the practical workplace.

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Abstract

Purpose - As an emerging form of social commerce, livestream e-commerce has been surging dramatically in China. Recent literature gives more attention to livestream shopping behaviors, but most of the empirical studies were conducted in China, this cross-cultural study aims at exploring Dutch and Chinese consumer behaviors in live streaming shopping under the influence of engagement stimuli. The main purpose of this study was to investigate how engagement stimuli (i.e., peer cues and communication immediacy) influence purchase intentions through perceived social support, as well as determining the role of individualism-collectivism at country-level and individual-level in the context of livestream shopping.

Method - To explore the effects mentioned above, a 2 (*individualistic vs. collectivistic background*) × 2 (*present vs. absence of peer cues*) × 2 (*high vs. low communication immediacy*) factor between-subject experimental design was conducted. Data was collected from Facebook, WhatsApp, Weibo, WeChat, LinkedIn and survey communities. This study empirically examined the model by mainly targeting Dutch and Chinese female consumers aged 19~45, respondents(N=307) were randomly assigned to one of the experimental conditions.

Findings – The results of this study revealed that communication immediacy had significant impact on purchase intentions, and perceived social support mediated the effect of engagement stimuli (i.e., peer cues and communication immediacy) on purchase intentions. The effect of country-level cultural differences was insignificant, however, individualism-collectivism at individual-level moderated the relationship between perceived social support and purchase intentions. Specifically, the effect of perceived social support on purchase intentions was stronger for consumers with collectivistic cultural traits than those with individualistic cultural traits.

Discussion – This study contributes to the literature in the field of livestream e-commerce by capturing the importance of engagement stimuli and individual-level cultural traits. Peer cues and communication immediacy are essential elements that can empower viewers to gain informational and emotional social support in livestream shopping. Moreover, marketers should attach importance to consumers' individual-level cultural traits, adopting tailored social engagement stimuli to better interact with different consumer segments in livestream shopping.

Keywords: *Livestream shopping, Livestream e-commerce, perceived social support, cross-cultural study, individualism- collectivism cultural traits, engagement stimuli, purchase intention*

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1. Introduction

Livestream commerce has remarkably revolutionized traditional social commerce. With the help of advanced technology, product demonstration on e-commerce platforms has shifted from tedious textual and graphical description to more vivid live streaming content (Fei et al., 2021). The emergence of livestream shopping enables vendors to provide more personalized services and vivid product presentation using real-time interaction features (Sun et al., 2019). To date, livestream e-commerce has experienced unprecedented growth in the Chinese e-commerce market. Taobao, the Chinese e-commerce giant, had pioneered a powerful marketing approach of livestream shopping in 2016, and it exponentially attracted huge numbers of users in the period of 2019 and 2020 (iResearch, 2020). Live e-commerce has amassed about 500 million users in China, the market size is estimated to reach RMB 961 billion by the end of 2020, accounting for almost 10% of the whole e-commerce market (Statista, 2020a).

Livestream shopping originated in China, it has gradually caught the attention of global brands and retailers owing to its popularity (Forrester, 2021). Even though western retailers are still behind China in the pursuit of live e-commerce, some early adopters are starting to take action (Mckinsey Digital, 2021). In recent times, livestream shopping is landing in the Netherlands, and some fashion brands opened the opportunity of live e-commerce. Figure 1 shows the example of livestream shopping on Dutch platform and Chinese Taobao platform. In this case, compared to Chinese live streaming platform, one of the noticeable differences is that Chinese livestream shopping has more engagement stimuli including peer cues (e.g., viewers can observe other peers' behaviors: add to shopping cart and like the product), while Dutch livestream shopping platform does not show such peer cues feature (See Figure 1).

According to Wang & Wu (2019), *communication immediacy*, *peer cues* and *product interactivity* are three main user engagement mechanisms in livestream shopping. These mechanisms offer rich media communication, making viewers more immerse themselves and freely interacting with the seller to obtain authentic sensory information, they can also observe other online consumers' activities by peer cues. Consumers can make use of social engagement stimuli to seek social support like recommendations, opinions, other consumers' activities and affective tendencies for decision-making. Such the role of social support has been adapted in social commerce context (Liang et al., 2011; Liu et al., 2019; Wang et al., 2020), when consumers perceive online peers or live streamers are caring and helpful in offering information, it further increases the intention to use social commerce. Hence, this study particularly put emphasis on social engagement stimuli including peer cues and communication immediacy in livestream shopping. Guided by the Stimulus-Organism-

Response (S-O-R) framework, this study tries to understand and capture how contextual stimuli influence consumer behaviors. In accordance with the in-store atmosphere and purchase intentions study by Donovan et al.(1994), a livestream e-commerce environment can be regarded as an online atmosphere containing numerous stimulating cues, which can trigger viewers' emotional and cognitive process and thus resulting in approaching behaviors (Donovan et al., 1994). Therefore, the social engagement stimuli (i.e., peer cues and communication immediacy) is identified as stimuli, perceived social support is viewed as a cognitive state, and purchase intention is an approaching response.

Despite the increasing popularity of livestream shopping in China, Dutch livestream e-commerce is still in a nascent stage, which remains unclear whether the role of cultural differences influence livestream shopping behaviors. Based and extended on the findings from Wang & Wu (2019), this study deep dives into Dutch and Chinese consumer behaviors under the influence of livestream shopping engagement stimuli. The Netherlands and China are two culturally distinctive countries (Minkov, 2010). Previous research has argued that consumers' attitudes, intentions and behaviors in social commerce are culturally shaped (Chu & Choi, 2011). A study by Xu-Priour et al. (2014) showed that social interaction has a stronger influence for Chinese consumers (collectivistic culture) on the intention to use online shopping compared to French consumers (individualistic culture). Similarly, Fong & Burton (2008) showed that Chinese consumers (collectivistic culture) seek more external informational support for purchase decisions than U.S. counterparts. With the strong influence of collectivistic culture, Chinese consumers tend to make purchase decisions based on social support like eWoM and recommendations in social commerce (Statista, 2020a). As Doran(2002) stated, Chinese living in a collectivist culture are more likely to be influenced by reference groups when making decisions.

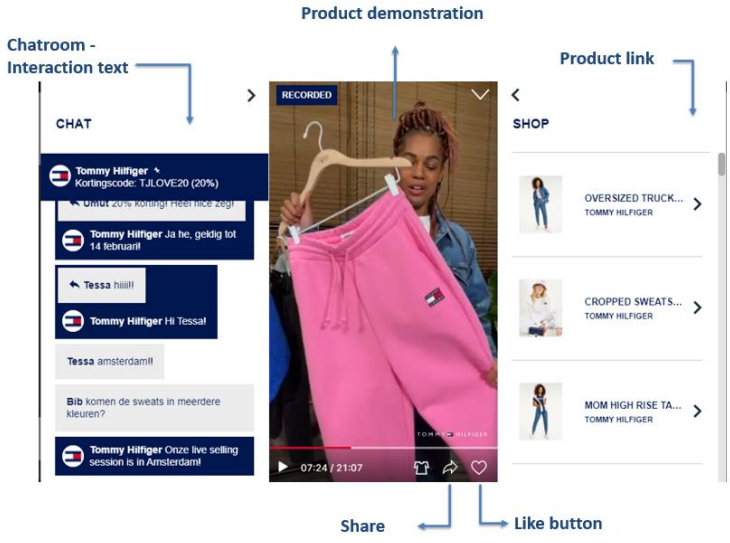
The existing literature on live e-commerce is extensive, focusing particularly on hedonic and utilitarian motivations (Cai et al.,2018), driving forces of live streaming shopping behaviors (Wang et al., 2018; Yu & Lo, 2020; Xu et al., 2020; Ko & Chen, 2020), purchase intentions (Sun et al., 2019; Yin, 2020), and engagement mechanisms (Wang & Wu, 2019; Liu et al., 2021). However, most of the empirical studies on live e-commerce emphasize Chinese consumer behaviors, there is little cross-cultural research that understands the effects of engagement stimuli and cultural differences on purchase intentions. Moreover, cultural comparison is typically conducted at national level in most cross-cultural studies, but within-country cultural variations exist, individuals in the same national culture may share different cultural values (Triandis, 2001). This study also considers the role of individual-level cultural traits.

To the best knowledge of the author, little research investigates the effects of engagement stimuli on purchase intentions in livestream shopping, combining the role of country-level and individual-level individualism-collectivism. To fill in this research gap, two main research questions are proposed: *1) To what extent do engagement stimuli (i.e.,communication immediacy and peer cues) influence consumers emotional and cognitive process (i.e.,perceived social support) and sequentially affect livestream shopping intentions?; 2) To what extent do country-level and individual-level cultural differences(individualism-collectivism) influence live streaming shopping intentions?*

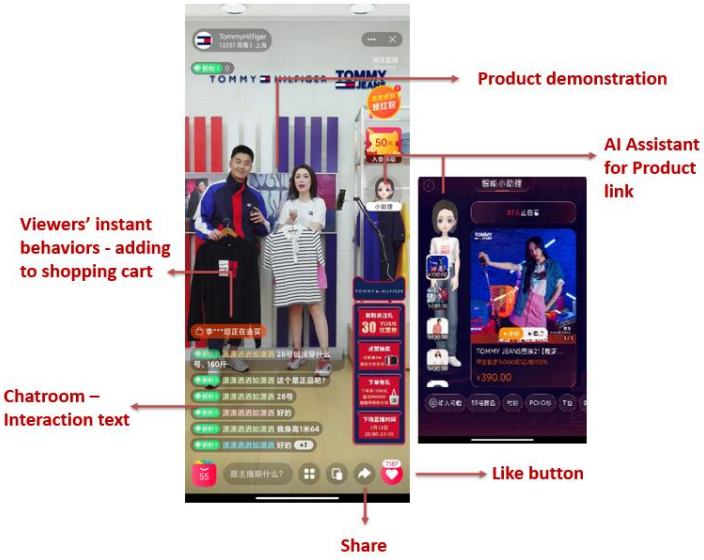
To answer the aforementioned research questions, a 2(*presence of peer cues vs. absence of peer cues*) × 2(*high communication immediacy vs. low communication immediacy*) × 2(*individualistic vs. collectivistic background*) experiment was conducted to examine the effect of engagement stimuli(i.e., communication immediacy and peer cues) and subsequent perceived social support on purchase intentions in livestream shopping. Moreover, this research highlights the role of cultural differences as well. Lastly, the theoretical and practical implications are discussed.

Figure 1

Examples of Livestream shopping on Dutch Platform and Chinese Taobao Live



Note. From Tommy Hilfiger (https://nl.tommy.com/live)



Note. From Tommy Hilfiger on Taobao Live

2. Theoretical Framework

This section discusses the relevant literature. On the basis of the Stimulus-Organism-Response framework, stimuli (i.e., peer cues and communication immediacy), organism (i.e., perceived social support) and response (i.e., purchase intention) are introduced. In addition, the mediating effect, the interaction effects, as well as the moderating effect are presented in the following.

2.1 Livestream E-commerce

Live streaming is a real-time transmission accomplished by using communication technologies that can simultaneously send images and sounds from one location to the other, which enables users to perceive social presence (Chen & Lin, 2018). The concept of livestream is a new type of social media with a higher level of human-computer interaction compared to traditional social network sites (SNSs) such as Facebook and Instagram (Sun et al., 2019). Scheibe et al. (2016) maintained that SNSs can be categorized into asynchronous and synchronous forms. Asynchronous SNS like Facebook only allows publication of a textual post, an image or a video, users react to published sources by a like, share or comment. Contrarily, synchronous SNS enables real-time communication between information producers and consumers (Scheibe et al., 2016). Live streaming is a synchronous communication channel that inherits traditional social media characteristics and enjoys the unique features of simultaneity and authenticity (Scheibe et al., 2016; Cai et al., 2018).

Merging entertainment and commercial elements, Taobao initially implemented a real-time video feature into their commerce business to enhance its user engagement in 2016 (Statista, 2020a). Cai et al. (2018, p. 82) defined livestream shopping as “having attributes of social commerce that integrates real-time social interaction into e-commerce”. Livestream shopping provides a rich information dimension and superior transmission effect, enabling consumers to develop more intuitive and comprehensive understandings of product features (Yin, 2020). Such an immersive shopping experience and interpersonal connection result in a high perception of social presence (Ko & Chen, 2020). The interactivity feature of livestream shopping may compensate for the perception of reduced control (Wu, 2019), increase consumer engagement (Hu & Chaudhry, 2020) and purchase intentions (Zhang et al., 2020; Sun et al., 2019; Yin, 2020).

2.2 Stimulus-Organism-Response Framework

The Stimulus-Organism-Response framework was proposed by Mehrabian & Russell (1974), which is used to explain how environmental stimuli make an impact on human behaviors (Cheng, 2020). The S-O-R framework postulates that stimuli serve as various elements of the environment that can shape consumers' cognitive and affective reactions (organism), which will sequentially result in behavioral approaching or avoiding response (Hu & Chaudhry, 2020; Chan et al., 2017).

The S-O-R framework has been widely and successfully adopted in the studies concerning online consumer behaviors in the e-commerce environment, examining how environmental cues and signals result in transactional behaviors. Previous research on online shopping identified interactivity and vividness (Cheng, 2020), streamer attractiveness (Xu et al., 2020) and atmospheric cues (Floh & Madlberger, 2013) as stimuli; perceived values (Fang et al., 2018), emotional attachment, flow experience (Li & Peng, 2021) and affective commitment (Hu & Chaudhry, 2020) as organism; and consumer engagement (Hu & Chaudhry, 2020), e-loyalty intention (Fang et al., 2018), impulsive buying behavior (Huang, 2016) as response. Therefore, this framework seems to be suitable for examining consumer behaviors in the context of livestream e-commerce.

Wang & Wu (2019) identified three main engagement mechanisms: peer cues, communication immediacy and product interactivity can significantly enhance product evaluation and further produce an impact on users' attitudes and intentions to purchase products on live streaming platforms. Inspired from this finding, social engagement stimuli including peer cues and communication immediacy are identified as stimuli, perceived social support is a cognitive and emotional process that will sequentially lead to approaching behavior (i.e., purchase intention).

2.3 Purchase intention in livestream shopping

Behavioral intentions reflect individuals' subjective probability of performing specific behaviors (Lee et al., 2006). Specifically, in the online shopping context, purchase intention is referred to as the consumer willingness and intention to make online transactions (Pavlou, 2003).

It is now well established from a variety of studies that purchase intention has been used as the behavioral consequence in the livestream shopping context. For instance, Sun et al. (2019) investigated how visibility, meta-voicing and and guidance in livestream shopping influence purchase intention. Hou et al. (2020) proposed relational benefits contribute to purchase intention owing to various technological features of e-commerce live streaming. Zhang et al. (2020) empirically examined the impact of perceived uncertainty and psychological distance on purchase intention in live video streaming. The aforementioned evidence suggested that purchase intention

is a plausible construct as response. Hence, purchase intention can be identified as response (approaching behavior) in the live streaming context, which means the engagement stimuli will eventually generate an impact on purchase intention.

2.4 Perceived social support

Social support is a widely investigated social psychological construct in various disciplines, perceived social support refers to "the social resources that how people perceive to be available or that are actually provided to them by nonprofessionals in the context of both formal support groups and informal helping relationships" (Gottlieb & Bergen, 2010, p. 512). Social support is used to explain the role of social relationships on cognitions, emotions, and behaviors (Wang et al., 2014). With the increasing popularity of social commerce, social networks can be further extended to an online environment and become an essential source of social support (Chen & Shen, 2015). A recent systematic literature review underlined that social support plays an essential role in social commerce (Busalim et al., 2019). With strong social support in livestream shopping, viewers can benefit from socially and emotionally supportive communication and fulfil their social needs by means of information sharing in a social group (Wang et al., 2020).

Social support is regarded as a multi-dimensional construct with the inclusion of tangible support, emotional support and informational support (Schaefer et al., 1981). The components of the construct could differ from context to context. Giving consideration to the online environment, emphasis in this study is placed on informational support and emotional support since online social support is considered as the exchange of verbal and nonverbal messages for information exchange and emotional interactions within a virtual space (Pfeil & Zaphiris, 2009; Chen & Shen, 2015). Perceived social support is seen as the social values that online consumers can gain from the online communities (Liu et al., 2019).

On one hand, *informational support* serves as an essential reference that can offer consumers useful information, recommendations, helping them solve problems as well as making decisions in a variety of consumption activities (Liang et al., 2011; Wang et al., 2020). In livestream shopping, viewers can directly seek purchase help from live streamers thanks to real-time interaction features, live streamers can offer product details based on viewers' personalized needs (Sun et al., 2019). On the other hand, *emotional support* involves affection, encouragement and caring (Wohn et al., 2018), providing decisive affective tendencies such as like or dislike product or service. Such emotional support enables individuals to generate an initial valuation of product or service (Pfeil & Zaphiris, 2009; Wang et al., 2020). The social features in livestream shopping are able to help viewers make

purchase decisions based on affective evaluation and tendencies (Yin, 2020). The majority of viewers watch livestream shopping not only for product demonstration and information, interaction and opinion wanting are also emotional driving factors (Cai et al., 2018).

Several lines of evidence suggested social support as an antecedent of purchase intention in social commerce. Liu et al. (2019) demonstrated that purchase intention in mobile social commerce is significantly influenced by informational and emotional support. Similarly, Hajli et al. (2015) investigated the positive relationship between social support and social commerce intention after sharing and receiving product-related information. There is a strong positive relationship between social support and intention to conduct social commerce (Liang et al., 2011). It can be inferred that if consumers can perceive values from informational and emotional support in live stream shopping, social support will affect their purchase decisions. The hypothesis is formulated as follow:

H1: Perceive social support increases purchase intentions in livestream shopping.

2.5 Engagement mechanisms in livestream shopping

Engagement mechanisms including peer cues and communication immediacy are derived from a study by Wang & Wu (2019). Based on their findings, this study argues that peer cues and communication immediacy are main social engagement cues that can trigger consumers' perceived social support in livestream shopping. Consequently, communication immediacy and peer cues are mainly discussed as follows.

2.5.1 Peer cues

Peer cues reflect how observational learning (OL) occurs when making purchase decisions, which is defined as "an opportunity to observe other online peers' shopping activities (Wang & Wu, 2019, p. 269)". The mechanism of peer cues is based on observational learning (OL). As Bandura (1971) suggested, social interactions involve significant components in the learning process that will occur intentionally or unintentionally. Observing others' behaviors will lead to certain actions based on the advisability of a particular behavior. Subsequently, the coded information serves as a guide for a specific action (Ashuri et al., 2018). Informational social influence is a learning process that accepts information from other consumers as evidence about reality (Cheung et al., 2017). The processing of social information contains "the discrete signals expressed by the actions of other consumers but not the actual reasons behind their actions" (Chen et al., 2011, p. 240).

Applying OL in the social commerce environment, people observe the purchase actions from other online peers, they easily ignore their initial needs, and their beliefs are shaped by publicly observed

information (Chen et al., 2011; Men & Zheng, 2019). Despite less information from OL, they can be perceived to have a higher level of trustworthiness since consumers' actual behaviors outweigh subjective opinions and recommendations (Chen et al., 2011; Bikhchandani et al., 1998). Such action-based information can generate unexpected triggers with strong persuasion, stimulating users' impulse purchase for unplanned products (Wang & Wu, 2019). Moreover, positive OL signals can be more diagnostic for consumers compared to negative OL, it is simpler and more effective for consumers to determine whether the product is desirable or undesirable (Pramono et al., 2020). In the context of livestream shopping, observing other consumers' purchases is regarded as an action-based social interaction. OL from other online consumers could be a complementary source that combines their own product evaluation (Wang & Yu, 2017). Exposing users to a high level of peer cues can potentially enhance customer engagement owing to the social influence, this can be seen as the source of informational and emotional support since it can reduce information redundancy and simplify the decision-making process (Men & Zheng, 2019). When personal knowledge or experience is not sufficient for independent decision-making, herd messages (other consumers' behaviors) provide shortcuts for making final decisions (Yin, 2020).

Overall, several studies outlined the critical role of OL in social commerce. Wang and Yu (2019) found that observing other consumers' purchases significantly influences consumers' purchase and sharing intentions. Correspondingly, a study by Chen et al. (2011) revealed that observing previous consumers' purchases increases sales and purchase intentions. Consumers' purchase decisions are hugely impacted by action-based information cues (i.e., peer consumer purchase), and the effect is stronger than opinion-based social information (i.e., peer consumer review) (Cheung et al., 2017). Yin (2020) reported that herd behaviors (follow other consumers' behaviors) influence purchase intentions. Furthermore, the role of peer cues has been empirically confirmed in livestream shopping platforms, which will hugely exert influence on users' attitudes and intentions to make purchases (Wang & Wu, 2019). Therefore, external cues including user generated content and real-time activities can be emotional and informational support to evaluate the product features and influence purchase intentions. The following hypotheses are formulated:

H2a: The presence (absence) of peer cues increases (decreases) perceived social support.

H2b: The presence (absence) of peer cues increases (decreases) purchase intentions in livestream shopping.

2.5.2 Communication immediacy

Wang & Wu (2019, p. 269) defined *communication immediacy* as "flexible non-verbal and verbal communication channels in real time together immerse and reinforce the user engagement." The sense of immediacy is composed of two elements, one is the space telepresence and the other one the social telepresence. The former indicates an immersive user experience on medium; the latter reflects users are able to share the same presence feelings as others (Tong, 2017). As previously discussed, livestream shopping is a synchronous social media form with a high degree of richness. Videos are perceived to be more intuitive and persuasive than other expression media such as pictures and words, and real-time and interactive communication is more effective that can resolve information asymmetry (Tong, 2017; Men & Zheng, 2019). The integration of live streaming and e-commerce creates a more interactive reality based on the cyber-physical environment (Xu et al., 2020). Hence, real-time interaction creates a strong communication immediacy, which can enhance perceived social presence by presenting the atmosphere that all consumers are present at the scene.

In live stream shopping, viewers not only have audiovisual experience from immediate interaction but also have immediate message communication with streamers (Yang et al., 2019). Owing to the unique elements of livestream shopping, Kang et al., (2021) determined responsiveness and personalization are two main dimensions of interactivity in the context of livestream e-commerce environment, which represents the response rate of viewer's request and reflects degree to which the response is customized to satisfy viewer's needs. The synchronous and interactive communication in live streaming leads to communication immediacy between brands and consumers, especially users in an immersive and entertaining environment (Wang & Wu, 2019). Streamers often react timely and nicely to viewers' questions, some streamers also offer tips about personal concerns, applying and testing products spontaneously (Xu et al., 2020). Haimson & Tang (2017) identified communication immediacy as one of the key dimensions that affects the viewers' engagement experience of remote events when using livestream platforms.

Extensive research has shown the reliability of information content and the immediacy of responses help consumers fulfill their desires (Xu et al., 2020). Sedikides and Jackson (1990) maintained that high-immediacy sources exerted higher social impact than low-immediacy sources. An empirical study by Zhang et al. (2020) demonstrated that the real-time interactivity and communication immediacy of livestream can reduce psychological distance and perceived uncertainty so that viewers can get more authentic and concrete information. Consumers fail to acquire utilitarian values when they perceive low communication immediacy. Tong (2017) found that vividness, interactivity, and authenticity of live video can increase consumers' purchase intentions by

affecting the sense of immediacy. Moreover, streamers' traits and messages that they transmitted deeply affect followers' psychological states and purchase behaviors (Yang et al., 2019). It can be assumed that immediacy cues can be both emotionally and informationally supportive information that help consumers make purchase selection. Therefore, two hypotheses are shown below:

H3a: High (low) level of communication immediacy increases(decreases) perceived social support.

H3b: High (low) level of communication immediacy increases(decreases) purchase intentions in livestream shopping.

2.6 The mediating effect of perceived social support

Livestream e-commerce is a platform that enables consumers to gain emotional and informational support from other online peers and live streamers. Peer cues, as strong complementary sources of product evaluation. Consumers can gain emotional recognition when they communicate with online peers or observe their behaviors. Online peers' decisive affective tendencies will influence the product diagnosis and evaluation (Wang et al., 2020). Since the positive OL is more effective than the negative OL (Pramono et al., 2020), positive peer cues could be the constructive emotional and informational sources for viewers to evaluate if the products are desirable or not. Peer cues in livestream shopping help consumers increase product evaluation and actual product knowledge through social support, accordingly, will positively impact consumers' attitudes and purchase intentions (Wang & Wu, 2019). It can be argued that social support plays a mediating role between peer cues and purchase intentions in livestream shopping.

H4a: Perceived social support mediates the effect of peer cues on purchase intentions in livestream shopping.

According to Liu et al., (2019), when consumers receive informational and emotional support that help them make purchase decisions, users perceive the platform as useful. Thanks to the enriching engagement mechanisms of livestreaming commerce platforms, consumers can receive social support by synchronous communication and enriching interaction from live streamers and online peers. In the era of social commerce, when consumers require suggestions and recommendations, they are more likely to seek help or advice from social platforms (Liang et al., 2011). In this case, communication immediacy is an essential element that helps consumers solve problems and assists them to make purchase decisions. It is contended that communication immediacy enhances consumers' perceived social support and thus affecting purchase intentions.

H4b: Perceived social support mediates the effect of communication immediacy on purchase intentions in livestream shopping.

2.7 The interaction effects between peer cues and communication immediacy

The Heuristic-Systematic Model (Chaiken, 1980) is helpful in explaining the interaction effects between peer cues and communication immediacy as this theory describes there can be additive effects between two modes of information processing when they are perceived as congruent conditions. This model posits that there are two modes of information processing. One is that people process persuasive messages for its relevance and evaluate the validity of the advocated position by scrutinizing the persuasive information and relating this information to previous knowledge in a systematic mode (Chaiken & Maheswaran, 1991; Todorov et al., 2002). The other one posits that people can also be triggered by heuristic cues when they are exposed to information that enables them to use heuristics to form a judgment based on simple rules like "majority opinion is correct" (Chaiken & Maheswaran, 1991; Todorov et al., 2002).

This study argues that a higher level of communication immediacy requires people to scrutinize comprehensive and analytic persuasion information under systematic processing. Liking ratings and peer purchase information are bandwagon cues that trigger decision-making shortcuts (Sundar et al., 2009). Systematic and heuristic cues may act simultaneously, they can produce additive effects when heuristic cues are congruent with the evaluative implications (positive consensus cue – positive message content) (Chaiken & Maheswaran, 1991; Todorov et al., 2002). When consumers perceive judgmental implications of heuristic cues and arguments are consistent, both heuristic and systematic processing may have additive effects on persuasion (Todorov et al., 2002).

It can be argued that both communication immediacy and peer cues are essential engagement cues on live streaming platforms, which can aid decision-making to form perceived social support. Peer cues and communication immediacy can produce complementary effects when they are perceived as congruent (positive consensus cue – positive message content). Therefore, this study hypothesizes that there is a combined effect between peer cues and communication immediacy on perceived social support and purchase intentions in livestream shopping.

H5a: The congruent combination of peer cues and communication immediacy leads to stronger perceived social support as opposed to single engagement stimulus in livestream shopping.

H5b: The congruent combination of peer cues and communication immediacy leads to stronger purchase intentions as opposed to single engagement stimulus in livestream shopping.

2.8 Cultural dimensions – individualism-collectivism

Individualism-collectivism represents "the degree of a relationship between the individual and the collectivity which prevails in a given society" (Hofstede, 1980, p. 148). Collectivistic culture concentrates on interdependence and sociability (Doney et al, 1998). Contrarily, individualistic people are relatively independent from in-groups (Hofstede et al., 2010). In other words, "individualistic traits rely on an independent self, while collectivistic traits emphasize on an interdependent self" (Hofstede et al., 2010, p. 114). Triandis (2001) further distinguished individualism-collectivism as the horizontal-vertical dimension. Horizontal individualists strive to be unique and independent, as well as emphasizing equality with others; horizontal collectivists also regard themselves as equal with others, but they have strong interdependence and cooperation (Tsai & Men, 2017). The role of cultural differences in consumer behaviors has been widely studied, but mostly compared at the national level, Triandis (2001) proposed individual-level cultural traits due to the limitations of country-level cultural differences, maintaining that individuals in the same country can define distinctive cultural identity. The role of country-level and individual-level individualism-collectivism are discussed as follows.

2.8.1 The role of individualism-collectivism at country-level

Based on the Hofstede individualism scale, the Netherlands and China score 80 and 20, respectively (Minkov, 2010). Research also suggested that China is a typical horizontal collectivistic culture; while the Netherlands is horizontally oriented with a high level of individualism (Dechesne et al., 2002; Tsai & Men, 2017). They are two culturally distinctive countries, which means consumers may display different characteristics owing to distinctive cultural values. Therefore, this study discusses the role of horizontal individualism-collectivism in livestream shopping, these distinctive cultural orientations between the Netherlands and China thus are expected to explain cross-cultural variations in the social commerce context.

Cross-cultural studies reported the interaction between country-level individualism-collectivism and consumer behaviors in the context of social commerce. The use of information sources influences online purchase decisions varies by culture, collectivistic culture consumers tend to use more social media to seek information and guide purchase decisions compared to individualistic culture consumers (Goodrich & Mooij, 2014). A study by Fong & Burton(2008) indicated that Chinese consumers (collectivistic culture) engaged in higher levels of information-seeking than U.S. counterparts, showing higher levels of dependence on personal sources of information concerning product recommendations and information. In accordance with previous discussion, Chinese users (collectivistic culture) maintain more tightly knit networks with close ties compared

to U.S. users (individualistic culture), thus placing higher values on opinions from desired peer bonding with brand and like-minded fellow brand users (Chu & Choi, 2011).

With the strong influence of collectivistic culture, Chinese e-commerce attaches importance to social commerce by establishing more interaction and communication between brands and consumers (Ou & Davison, 2009). When collectivistic consumers make purchase decisions, they will be greatly influenced by group members' opinions (Xu-Priour et al., 2014). The engagement stimuli in livestream shopping satisfy Chinese consumers' needs of opinion seeking and opinion giving so that they can gain more social support in decision-making. This study hypothesizes that Chinese consumers (collectivistic culture) expect a high level of communication immediacy and the presence of peer cues to gain informational and emotional support in livestream shopping, when they perceive a high level of social support, they think it is easier and more comfortable to make purchase decisions. On the contrary, Dutch consumers (individualistic culture) tend to be independent in making decisions, the needs of perceived social support in social commerce might be weaker than Chinese consumers. Hence, two hypotheses are as follow:

H6a: The effect of 1) peer cues; 2) communication immediacy on perceived social support is greater for Chinese consumers as opposed to Dutch consumers in the livestream shopping.

H6b: The effect of perceived social support on purchase intentions is greater for Chinese consumers as opposed to Dutch consumers in livestream shopping.

2.8.2 The role of individualism-collectivism at individual-level

Previous literature broadly operationalized individualism-collectivism at country-level based on Hofstede (1980)'s cultural framework, while individuals living in the same country may hold different cultural identity owing to the increase of acculturation (Triandis, 1996). Despite the fact that individuals in the same community share common cultural values, they still have their distinctive cultural characteristics, these distinctions are related to personal values such as self-direction and conformity (Kitirattarkarn, et.al, 2019; Le & Duong, 2020). There are no denying that substantial within-country cultural variations exist. Research revealed that approximately 80 % of variation in cultural values resides within countries, and the substantial variations in cultural values at individual-level may exert influence on individuals' behaviors (Taras et al., 2016; Faqih & Mousa, 2015). Each individual can reflect unique personal, culture-based characteristics; it is possible that the effect of engagement stimuli and perceived social support may differ across consumers holding individualistic and collectivistic cultural traits at individual level. This study also considers and measures individualism-collectivism at individual-level.

Consumers holding collectivistic values emphasize entertainment and socialization in an online shopping environment (Kitirattarkarn et al., 2019). Similarly, it has been argued that consumers with collectivistic values regard online shopping as social activities and take word of mouth into account when gathering information (Doran, 2002). In contrast, consumers with individualistic cultural traits are more autonomous in decision making, they tend to rely on internal knowledge based on personal experiences to make purchase decisions (Nayeem, 2012). Therefore, the following hypotheses are formulated.

H7a: The effect of 1) peer cues; 2) communication immediacy on perceived social support is greater for consumers with personal collectivistic cultural values as opposed to consumers with personal individualistic cultural values in livestream shopping.

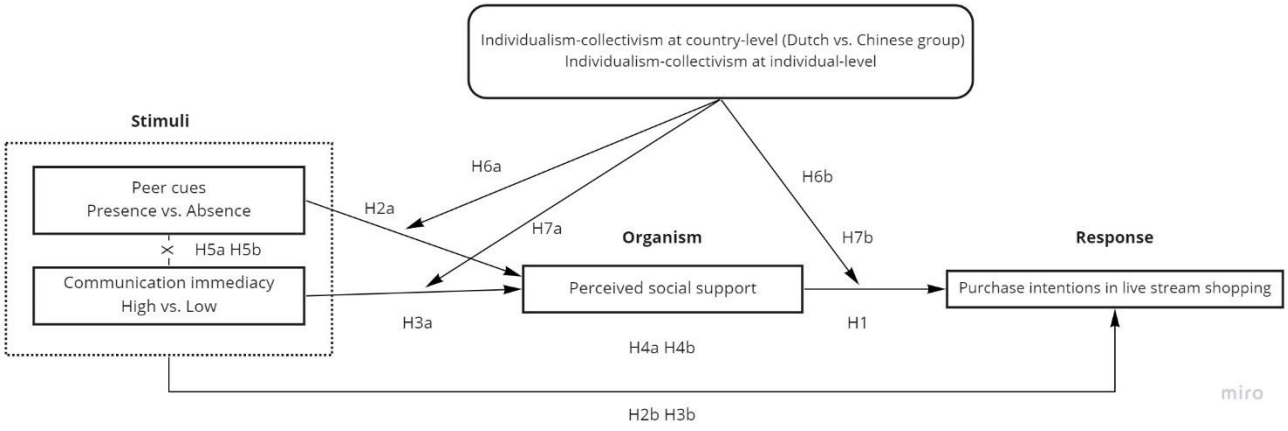
H7b: The effect of perceived social support on purchase intentions is greater for consumers with personal collectivistic cultural values as opposed to consumers with personal individualistic cultural values in livestream shopping.

2.9 Research model

On the basis of the aforementioned theoretical framework, the research model is shown in Figure 2. There are two independent variables including peer cues, communication immediacy, purchase intention is a dependent variable. Additionally, perceived social support is a mediation variable and country and individual-level individualism-collectivism are moderated mediation variables.

Figure 2

Research Model



3. Method

3.1 Research Design

To examine the influence of engagement stimuli and cultural differences on purchase intentions in livestream shopping. This study implemented a 2 (*individualistic vs. collectivistic background*) × 2 *(present vs. absence of peer cues)* × 2 *(high vs. low communication immediacy)* factor between-subject experimental design(See Table 1). The stimuli design, procedure, measurements, reliability, validity, participants and manipulation checks are discussed.

Table 1

Experimental conditions

Condition(N)	**Nationality (Cultural backgrounds)** *Dutch group represents individualism* *Chinese group represents collectivism*	**Communication immediacy**	**Peer cues**
1 ***(N=45)***	Dutch group (Individualistic culture)	High	Presence
2 (*N=34)*	Chinese group (Collectivistic culture)	High	Presence
3 (*N=36)*	Dutch group (Individualistic culture)	Low	Absence
4 (*N=38)*	Chinese group (Collectivistic culture	Low	Absence
5 (*N=43)*	Dutch group (Individualistic culture)	Low	Presence
6 (*N=34)*	Chinese group (Collectivistic culture)	Low	Presence
7 (*N=41)*	Dutch group (Individualistic culture)	High	Absence
8 (*N=36)*	Chinese group (Collectivistic culture)	High	Absence

3.1.1 Stimuli Design

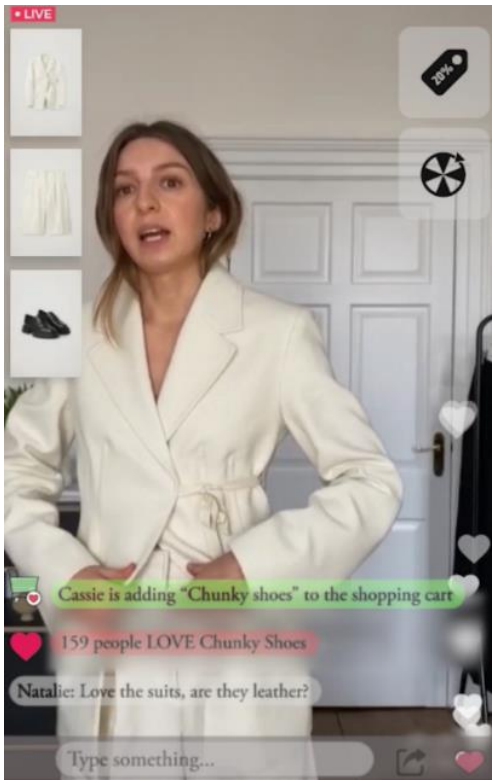
It is reported that clothing and cosmetics are the most purchased categories in livestreaming sales among Chinese respondents, taking up 36.5% and 36.1% respectively (Statista, 2020b). Accordingly, a fashion brand was used as a research context. Four livestream clips were used as experimental materials, there were two live streamers introduced and demonstrated the clothes in each livestream clip. The livestream clips were recorded from a real fashion brand livestream shopping, and part of the real-time comments were kept for authenticity. In the experiment, Dutch group represented individualistic culture, and Chinese group represented collectivistic culture; engagement stimuli in livestream shopping including peer cues, communication immediacy were manipulated. Video editing tool Adobe Premiere Pro was used to edit stimuli elements based on the experimental condition requirements. Full stimuli materials of each condition can be found in Appendix II.

As previously discussed, the mechanism of peer cues can be explained by observational learning, reflecting how observational learning occurs when making purchase decisions in social commerce. In livestream shopping, consumers can observe other people's purchase actions and product preferences, this publicly observed information can be perceived as social support that aids purchase decision-making. The manipulation principle of peer cues was derived from study by Wang & Wu (2019), they operationalized and measured peer cues by observing buyers' actions including "adding product to the shopping cart and giving a like" in real time. Similarly, Men & Zheng (2019)'s experiment also proposed to manipulate observational learning by showing a scroll bar with "how many items people have bought". Hence, this experiment is inspired by the previous work, which manipulated the peer cues through a scroll bar showing consumers' activities in real time.

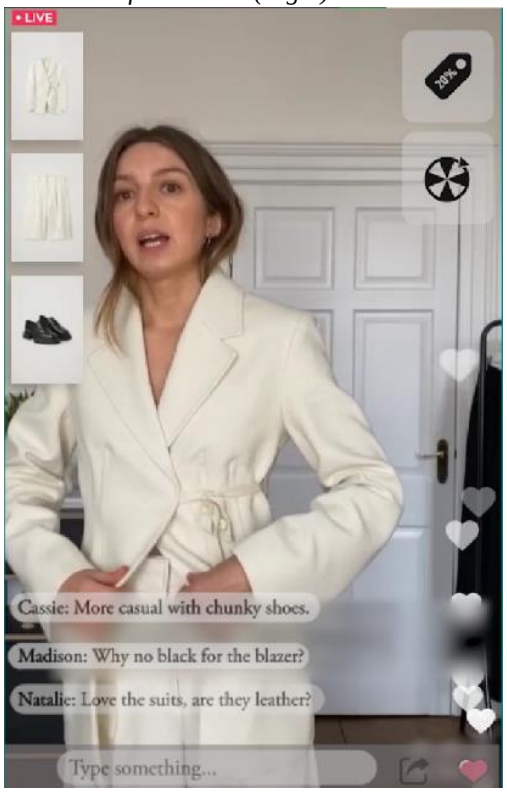
- The presence of peer cues: The peer cues were continuously exposed in a scroll bar showing "User ID is adding this product to the shopping cart and the number of people like this product" (Figure 3-1 Left).
- The absence of peer cues: The control groups were not exposed to a scroll bar showing peer cues, they could only see pop-up comments sent from other consumers instead (Figure 3-1 Right).

Figure 3-1

Presence of Peer Cues(Left)



Absence of Peer Cues(Right)



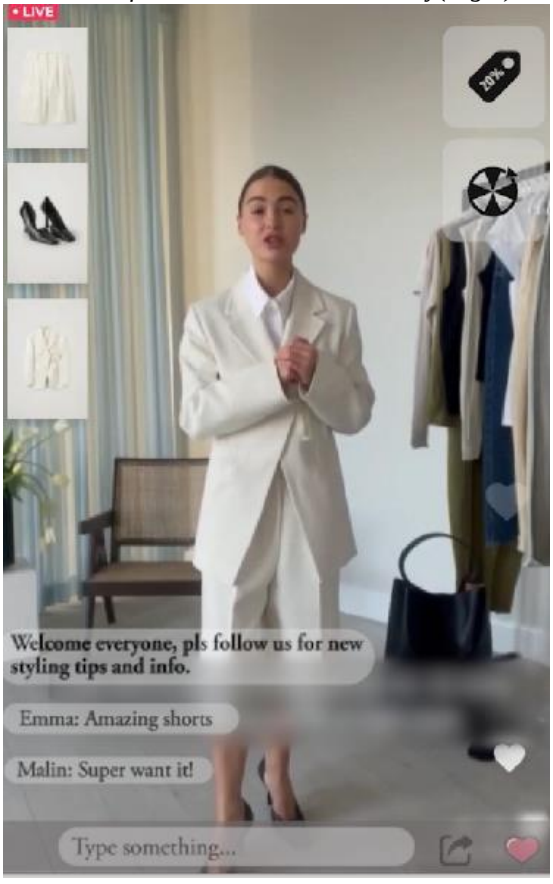
Moreover, Wang & Wu (2019) highlighted communication immediacy as a real-time and immersive feature that can strengthen user engagement. Live streaming is a synchronous communication channel, enabling viewers to receive a personalized response in real time (Scheibe et al., 2016; Cai et al., 2018). Similarly, a recent study by Kang et al.(2021) identified responsiveness and personalization can represent the intensity and richness of the interaction in livestream shopping context. Based on the evidence above, this study manipulated communication immediacy using responsive and personalized feedback.

- High communication immediacy: The brand gave immediate and personalized responses based on consumers' inquiries. For instance, viewers asked questions like: "What shoes can I match this blazer with" ? The brand immediately responded: "Flat shoes or high heels are fine, let's check them out". Then the live host immediately showed the styling appearance by matching the casual flat shoes with the blazer (Figure 4-2 Left).
- Low communication immediacy: The control groups kept showing automatic computer-generated messages (Welcome everyone, please follow us for new styling tips and information) without timely and personalized feedback (Figure 4-2 Right).

Figure 4-2

High Level of Communication Immediacy(Left)

Low Level of Communication Immediacy(Right)



3.1.2 Pretest

A pretest was conducted using polls and interviews, which aimed to validate the stimuli and manipulation-check questions before the main study. Participants were asked to evaluate different stimuli exposures and verify the experimental procedure. Full pre-test materials, interview questions and different aesthetic design alternatives can be found in Appendix I.

In the first section, 42 participants were asked to select the more appealing product based on their preference. There are two alternative products (The White Blazer and The Black Dress) for selection. The result of the preliminary test indicated that 25 participants thought the White Blazer is more appealing, accounting for 59%. Hence, the White Blazer was selected for the experiment. In the second section, six students(3 Dutch and 3 Chinese) participated in the interviews, the objective was to improve the quality of the livestream video, evaluate the perception of the engagement stimuli (i.e., peer cues, communication immediacy) and the clarity of the items.

Two problems were frequently mentioned concerning the quality and authenticity of the livestream video. Most participants pointed out that the "real-time comments" popped up too fast and they did not pay much attention to them. It was suggested that the duration of the pop-up comments should be extended. Besides, a "typing box", "heart button" and "share button" should be added to make it more authentic. Regarding the perception of engagement stimuli and manipulation-check items, 3 participants with prior experience of watching live streaming identified the peer cues as social recognition or reference. 2 participants failed to recognize the peer cue messages for the reason that the comments fade away too fast. One stated that *"I did not pay attention to those messages, I thought they were randomly shown".* They suggested that it can be improved by continually shown in a fixed place with a unique displaying effect, which is easier to catch viewers' eyes. In addition, participants thought the brand responses should be distinctive from viewers' messages. One stated that *"I did not read all those replies and I think they should be shown in a more eye-catching way".*

The items that participants stated "ambiguous"in the survey have been revised based on their suggestions, and the following solutions were implemented based on the feedback. Live streaming cues including "typing box", "live icon", "heart button" and "share button" were integrated into the video. The time duration of the pop-up comments are extended. Peer cue messages are continually shown in a fixed location with unique displaying effects and brand responses are shown in an appealing way in order to catch people's attention.

3.2 Procedure

During the data collection process, participants were asked to open the link and then conduct an experiment. In the first section of the survey, a short introduction to the research, the duration and the confidentiality of the research were indicated. Once participants agreed to continue the procedure, respondents were asked to answer questions about the prior experience of watching livestream shopping and demographics.

In the next section, a simulating livestream shopping video was introduced and shown as "real-time livestream shopping". They were told to imagine watching real livestream shopping with a new ID in an e-commerce platform, they also needed to imagine the real-time interactions with streamers. The brand information was hidden, instead, a fictional brand name was told to the participants in order to prevent participants' subjective evaluation of the products. Then they were randomly assigned to one of the experimental conditions.

After watching a short livestream video, the participants were asked five manipulation-check questions by rating the perception of communication immediacy, peer cues. Besides, mediating variable perceived social support, moderating variable individualism-collectivism at individual level and dependent variable purchase intention were measured with seven-point Likert measurement scales. Full questionnaire can be found in Appendix III. Finally, the questionnaire closed with a message thanking the participants.

3.3 Measurement instrument

The measurement scales of individual-level horizontal individualism, communication immediacy, peer cues, perceived social support and purchase intentions were modified on the basis of existing literature. Each item was measured through a seven -point Likert scale (1 = strongly disagree; 7 = strongly agree), the questionnaire was completed after the exposure to the livestream video. Scale items are displayed in Table 2.

3.3.1 Reliability

Reliability and validity of the constructs need to be fulfilled for further analysis. First of all, the Kaiser-Meyer-Olkin Measure should be checked to ensure sampling adequacy. According to Kaiser (1981), KMO value between 0.8 and 1 indicates the sampling is adequate. The KMO value of this study is .87(p<.001). Thus, factor analysis can be performed to check the validity of scales. Furthermore, a reliability test was taken to measure the internal consistency of a set of scales by computing Cronbach's alpha. The closer Cronbach's alpha coefficient to 1.0 the greater the internal

consistency of the items in the scale (Gliem & Gliem, 2003). George & Marlley (2003) proposed that Cronbach's alpha higher than .70 is acceptable and reliable for building models. Table 2 depicts the Cronbach's alpha of all constructs generated from the result of the reliability test. All the constructs are greater than 0.8.

3.3.2 Validity

Meanwhile, a Varimax Factor Analysis was executed to determine the convergent validity of each scale. It is recommended that a significant item should have a factor loading value higher than .50 (Hair et al., 2006). Table 2 presents the correctly loaded factor analysis. It has been expected 5 constructs with 20 items have similar patterns of response owing to the high association with a latent. In order to ensure the items are accurately loaded, one of the items has been removed to enhance the validity. The item from perceived emotional social support "*I feel I belong to groups of people with similar interests*" was deleted for loading on an unintended construct. Eventually, the factor analysis presented that the rest of the items have correct factor loading scores higher than .50. There are 5 factors loaded in total and all the items are valid to measure the constructs.

Table 2

Measurement Scale and Cronbach's Alpha of all Constructs

Construct	Cronbach's alpha	Mean (SD)	Statements*	Component				
				1	2	3	4	5
Purchase Intention (Pavlou, 2003; Lee et al., 2006)	.90	4.32 (1.23)	It is likely that I will place an order in live streaming in the future.	0.86				
			I expect to purchase products through live streaming in the future.	0.84				
			I would recommend others to buy products in live streaming.	0.81				
			I am very likely to purchase products in this live streaming.	0.79				
			I intend to purchase products in this live streaming.	0.79				
Horizontal Individualism (Kitirattarkarn et al., 2019)	.87	4.87 (1.09)	I would rather depend on myself than others.		0.87			
			My personal identity, independent of others, is very important to me.		0.83			
			I rely on myself most of the time, I rarely rely on others.		0.83			
			I often do my own thing.		0.76			
Perceived Social Support (Liang et al., 2011; Nick, et al., 2018)	.89	4.58 (1.06)	Streamers and other online consumers would share their points of view if I had problems.			0.76		
			I can connect with streamers and online consumers who like the same things I do.			0.73		
			Streamers and other online consumers offer me helpful information and suggestions to make purchase decisions.			0.70		
			Streamers and other online consumers give me information to solve the problems concerning the products.			0.70		
			What streamers or other online consumers say or do make me feel better for making purchase decisions.			0.59		
Communication Immediacy (Wang & Wu, 2019)	.90	4.42 (1.52)	This livestream shopping allows me to get personalized responses from the brands, instead of automatically generated messages.				0.90	
			This livestream shopping allows me to receive timely responses regarding the products, instead of automatically generated messages.				0.89	
			This livestream shopping allows me to communicate about the product information as I would in the physical store.				0.76	
Peer Cues (Wang & Wu, 2019)	.94	4.32 (1.71)	This livestream shopping allows me to view timely feedback on consumers' actions (e.g., adding products to shopping cart/liking products)					0.93
			This livestream shopping allows me to view other consumers' behaviors (e.g., adding products to shopping cart/liking products) in real time.					0.93

**All items measured with 7-point Likert Scale 1 – Strongly disagree/ 7- Strongly agree.*

3.4 Participants

Based on a live e-commerce report by Statista (2020a), female consumers aged 21~40 years old are more active in watching livestream shopping, accounting for 67% on the Taobao platform. Therefore, participants of this experiment mainly targeted Dutch and Chinese females aged 18~45 years old.

The Qualtrics survey tool was used to collect data, convenience sampling and snowball sampling were two main techniques to distribute the survey. To ensure the equal distribution of nationality, the link was published on mainstream social media platforms in the Netherlands and China including Facebook, WhatsApp, Weibo, WeChat and LinkedIn. Besides, survey communities including The Survey Circle and SurveySwap were used to collect data.

A total number of 370 responses were recorded, some of which were invalid since some respondents failed to correctly answer the validation question *"Please validate your continued participation by choosing agree"*. After removal of the invalid data, there were 307 Dutch and Chinese participants in total, taking up 54.1%(n=165) and 45.9%(n=142), respectively. In this study, Dutch group represents country-level individualistic culture, and Chinese group represents country-level collectivistic culture. The majority of the respondents are female, accounting for 86.4%, which fits the criteria of the target group. The age of respondents ranged between 15 and 42 with a mean age of 26.56 (SD=5.0).

To test if the observed distribution meets the expected distribution, a Chi-square test was performed to test if distribution of nationality (Dutch vs. Chinese), age and educational level over different conditions are equal. The Chi-square test for nationality showed no significant difference between Dutch and Chinese over four manipulated conditions, X^2 (3, N = 307) = .88, p =0.83. In addition, The Chi-square for age indicated that there was no significant difference of age over eight conditions, X^2 (21, N = 307) =29.3, p=.10. However, it is noticeable that a Chi-square test for educational level showed that there was significant difference among education levels over eight conditions, X^2 (28, N = 337) = 58.89, p =.01. It can be concluded that the distribution of nationality (Dutch vs. Chinese) and age over different conditions is equal except for educational level. Table 3 depicts the overview of demographic characteristics of respondents.

Table 3

Demographic Characteristics Distribution Over Eight Conditions

Demographic Characteristics		1. Dutch HighPC+HighCI		2. Chinese HighPC+HighCI		3. Dutch LowPC+LowCI		4. Chinese LowPC+LowCI		5. Dutch HighPC+LowCI		6. Chinese HighPC+LowCI		7. Dutch LowPC+HighCI		8. Chinese LowPC+HighCI	
		n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Age	18 below	0	0%	1	25%	0	50%	2	50%	0	0%	1	25%	0	0%	0	0%
	19-26	23	14.2%	23	14.2%	16	9.9%	21	13.0%	19	11.7%	21	13%	18	11.1%	21	13.0%
	27-34	13	11.9%	8	7.3%	14	12.8%	14	12.8%	20	18.3%	10	9.2%	16	14.7%	14	12.8%
	35 above	9	28.1%	2	6.3%	6	18.8%	1	3.1%	4	12.5%	2	6.3%	7	21.9%	1	3.1%
Gender	Male	8	19%	4	9.5%	8	19%	1	2.4%	9	21.4%	5	11.9%	5	11.9%	2	4.8%
	Female	37	14.1%	30	11.4%	27	10.3%	37	14.1%	34	12.9%	28	10.6%	36	13.7%	34	12.9%
Education	High school or below	3	21.4%	1	7.1%	3	21.4%	1	7.1%	3	21.4%	0	0%	3	21.4%	0	0%
	Vocational training (MBO)	11	23.4%	0	0%	9	19.1%	0	0%	14	29.8%	2	4.3%	10	21.3%	1	2.1%
	College (HBO or bachelor's degree	20	13.4%	21	14.0%	15	10.0%	21	14.0%	19	12.7%	18	12%	18	12.0%	18	12.0%
	Master's degree	11	11.7%	11	11.7%	9	9.6%	16	17.0%	6	6.4%	14	14.9%	10	10.6%	17	18.1%
	Doctorate degree	0	0%	1	50%	0	0%	0	0%	1	50%	0	0%	0	0%	0	0%
Total		45	14.7%	34	11.1%	36	11.7%	38	12.4%	43	14.0%	34	11.1%	41	13.4%	36	11.7%

3.5 Manipulation check

This study manipulated peer cues (absence vs. presence) and communication immediacy (low vs. high), manipulation check was conducted to ensure the manipulation works. After exposure to the video materials, five manipulation check questions were taken from the measurement of independent variables to test if participants managed to perceive the differences of the stimuli including two items measuring peer cues (e.g., This livestream shopping allows me to view timely feedback on consumers' actions (e.g., adding products to shopping cart/liking products) and three items measuring communication immediacy (e.g., This livestream shopping allows me to get personalized responses from the brand, instead of automatically generated messages).

A one-way ANOVA was used to examine if the manipulations were perceived as intended. The results revealed that participants perceived significantly higher communication immediacy in the high communication immediacy condition (M=5.38, SD=.90) than in the low communication immediacy condition (M=3.49, SD=1.39*; F* (1,335) =218.7, p<.001*)*. This implies that participants perceived the timely and personalized brand responses as high communication immediacy when they watch the livestream shopping. The manipulation of peer cues was also evaluated by one-way ANOVA. The mean score of the presence of peer cues condition *(*M=5.56, SD=.95) was statistically higher than the absence of peer cues groups *(*M=3.02, SD=1.26; F (1, 335) =437.9, p<.001). The presence of peer cues allows viewers to observe other consumers adding products to shopping carts or liking the products, the absence of peer cues groups failing to recognize peer cue messages. Table 4 demonstrates the scores of both peer cues and communication immediacy for each condition based on the manipulation-check items.

Table 4

Manipulation Check per Each Condition

Number	Experimental condition		Peer cues*		Communication immediacy*	
		N	*Mean*	*SD*	*Mean*	*SD*
1	Dutch + HighPC + HighCI	45	5.30	0.83	5.06	0.90
2	Chinese+ HighPC + HighCI	34	6.18	0.93	5.68	0.88
3	Dutch + LowPC+ LowCI	37	3.41	0.77	3.85	1.12
4	Chinese + LowPC + LowCI	37	2.76	1.48	3.00	1.52
5	Dutch + HighPC+ LowCI	43	5.17	0.86	4.00	1.23
6	Chinese + HighPC + LowCI	34	5.82	0.92	2.85	1.44
7	Dutch + LowPC + HighCI	41	2.95	1.17	5.29	0.98
8	Chinese + LowPC +HighCI	36	2.82	1.49	5.52	0.80
Total		307	4.29	1.72	4.43	1.52

**All items measured with 7-point Likert Scale 1 – Strongly disagree/ 7- Strongly agree.*

4. Results

This section presents the statistical analyses, several tests were done with the IBM SPSS 26. To begin with, a multivariate analysis of variance (MANOVA)was performed to examine the main effects of peer cues and communication immediacy on perceived social support and purchase intentions, respectively (H2a, H2b, H3a, H3b), as well as the interaction effects between communication immediacy and peer cues on perceived social support and purchase intentions (H5a, H5b). Lastly, the mediation and moderated mediation analysis were conducted via PROCESS (H1, H4a, H4b, H6a, H6b, H7a, H7b).

4.1 Multivariate analysis of variance - main effects and interaction effects

A MANOVA test was used to test if the peer cues and communication immediacy can explain a statistically significant amount of variance in the perceived social support and purchase intentions. First of all, the assumptions of MANOVA should be tested. Firstly, the Shapiro-Wilk's test indicated that the data was not normally distributed W (1,307) =.98, p=.0001, but the values for skewness and kurtosis between -2 and +2 are still acceptable (George & Mallery, 2016). Second, Tabachnick & Fidell (2012) suggested r= .90 can be seen as multicollinearity, the correlation between perceived social support and purchase intention is r=.67. No multicollinearity found in this study. Thirdly, the Box M test showed that the data violated the homogeneity of variance/covariance, F (3,21) =67.3, p=.000. Box M is more sensitive to violations of homogeneity, but the violation may produce less impact on validity of the results if overall N is large enough (Warner, 2013). MANOVA can still be further used. Given the fact that Pillai's trace is more robust than the other statistics to violations of assumptions, Pillai's trace was reported (Olson, 1974).

The results of three-way MANOVA (see Table 5) indicated the significant main effects of communication immediacy, Pillai's trace V =.039, F (2,298), p=.003, *partial-η^2*=.039; and peer cues, Pillai's trace V =.033, F (2,298), p=.007, *partial-η^2*=.033. There were no significant communication immediacy * peer cues interaction effects found, Pillai's trace V =.009, F (2,298), p=.25, *partial-η^2*=.009; however, the peer cues *cultural backgrounds interaction effects were significant, Pillai's trace V =.025, F (2,298), p=.025, *partial-η^2*=.025.

Table 5

Results of Multivariate Analysis of Variance (MANOVA)

Multivariate Tests		**F-value**	**Sig.**	**Partial Eta Squared**
Pillai's trace				
	Communication immediacy	.039	**.003**	.039
	Peer cues	.033	**.007**	.033
	Cultural background	.008	.29	.008
	Communication immediacy*Peer cues	.009	.25	.009
	Communication immediacy * cultural background	.006	.38	.006
	Peer cues*cultural background	.025	**.025**	.025
Test of Between-Subjects Design				
Communication immediacy				
	Perceived social support	7.37	**.007**	.024
	Purchase intention	11.81	**.001**	.038
Peer cues				
	Perceived social support	10.21	**.002**	.033
	Purchase intention	7.38	**.026**	.017
Cultural background				
	Perceived social support	.43	.508	.001
	Purchase intention	2.29	.131	.008
Communication immediacy*Peer cues				
	Perceived social support	1.53	.217	.005
	Purchase intention	.001	.970	.000
Communication immediacy * cultural background				
	Perceived social support	1.49	.224	.005
	Purchase intention	1.69	.194	.006
Peer cues*cultural background				
	Perceived social support	7.11	**.008**	.023
	Purchase intention	1.54	.215	.005

**All items measured with 7-point Likert Scale 1 – Strongly disagree/ 7- Strongly agree.*

4.2 Perceived social support

4.2.1 Main effects

A between-subjects MANOVA (see Table 5) revealed that the main effect of peer cues on perceived social support was statistically significant, F (1,299) =10.21, p=.002, *partial-η^2*=.033. Participants who were exposed to the livestream clips with the presence of peer cues indicated higher perceived social support (M=4.78, SD=.083) than the video without the peer cues (M=4.40, SD=.084). Thus, H2a was supported.

Moreover, the results indicated that the main effect of communication immediacy on perceived social support was statistically significant, F (1,299) =7.37, p=.007, *partial-η^2*=.024. Livestream video with high communication immediacy led to higher perceived social support (M=4.75, SD=.083) than low communication immediacy video (M=4.43, SD=.084). H3a was supported. Table 6 depicts the overview for the observed means and standard deviations of perceived social support for manipulations of communication immediacy and peer cues.

Table 6

Descriptive Statistics for the Main Effects of Peer Cues and Communication Immediacy

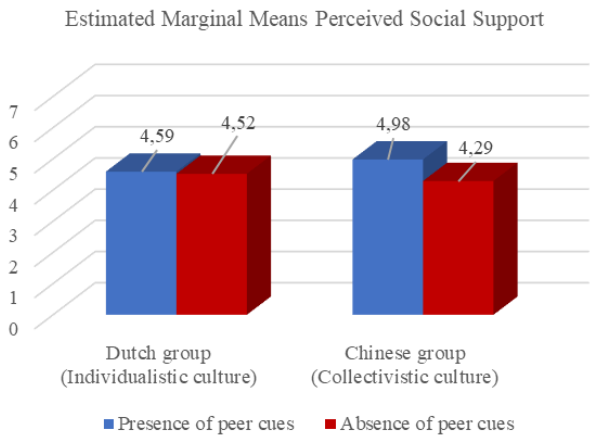
	Perceived social support	
Peer cues	*Mean*	*SD*
Presence	4.78	.083
Absence	4.40	.084
Communication immediacy		
High	4.75	.083
Low	4.43	.084

4.2.2 Interaction effects

However, no significant interaction between peer cues and communication immediacy was found on perceived social support, F (1,299) =1.53, p=.217, *partial-η^2*=.005. Therefore, H5a was rejected. It is worth noting that there exist statistically significant interactions effect between peer cues and cultural backgrounds on perceived social support despite the small effect size, F (1,299) = 7.11, p=.008, *partial-η^2*=.023. Comparing the observed means and standard deviations of perceived social support, Chinese group (M=4.98, SD=.12) reported slightly higher perceived social support than Dutch group (M=4.59, SD=0.11) when they were exposed to peer cues (See Figure 5). Therefore, the moderated mediating role of cultural backgrounds (Dutch vs. Chinese

group) between peer cues and perceived social support should be further discussed in the moderated mediation analysis (4.5.1).

Figure 5
*Cultural Background*Peer Cues on Perceived Social Support*



4.3 Purchase intention

4.3.1 Main effects

The results of MANOVA (see Table 5) demonstrated that the main effect of peer cues on purchase intentions, F (1,299) =5.03, p=.026, *partial-η^2*=.017. The manipulation of the presence of peer cues (M=4.49, SD=.098) resulted in slightly higher purchase intentions compared to the absence of peer cues (M=4.17, SD=.099). Nonetheless, the effect size of peer cues on purchase intention was too negligible to highlight the difference. Cohen (1988) provided rules of thumb to define effect size; he suggested that η^2 = .01 can be regarded as a small effect size. The *partial-η^2* was .017 in this case, the effect size was too small to support the hypothesis Therefore. H2b was rejected.

In addition, there was a statistically significant main effect of communication immediacy on purchase intention, F (1,299) =11.81, p=.001, *partial-η^2*=.038. The manipulation of the high communication immediacy group resulted in higher purchase intentions (M=4.57, SD=.098) than the low communication immediacy group (M=4.09, SD=.099). H3b was supported. Table 7 depicts the overview for the observed means and standard deviations of purchase intentions for manipulations of communication immediacy and peer cues.

Moreover, no evidence indicated communication immediacy and peer cues interact to influence purchase intentions, F (1,333) =.001, p=.97. H5b was rejected.

Table 7
Descriptive Statistics for the Main Effects of Peer Cues and Communication Immediacy

	Purchase intentions	
Peer cues	*Mean*	*SD*
Presence	4.49	.098
Absence	4.17	.099
Communication immediacy		
High	4.57	.098
Low	4.09	.099

4.4 Mediation analysis

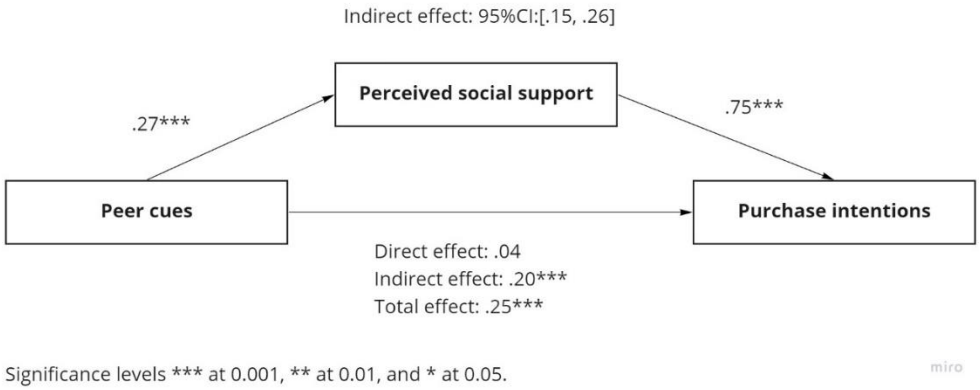
4.4.1 Mediating effect of perceived social support – peer cues

To test whether perceived social support plays a mediating role between communication immediacy, peer cues and purchase intentions. The mediation effect of perceived social support was tested via PROCESS 3.5, which is an add-in SPSS feature created by Andrew F. Hayes.

According to the Model Templates developed by Hayes (2013), *Model 4* was used to test H4a and H4b. Baron and Kenny(1986) proposed a four-step approach in which several regression analyses test the mediation effect. H4a predicted that perceived social support mediates the effect of peer cues on purchase intentions. Firstly, there was no significant effect of peer cues on purchase intentions (b=.04, SE=.33, t=1.29, p=.196); secondly, the effect of perceived social support on purchase intentions was significant (b=.75, SE=.05, t=13.29, p<.001), and the effect of peer cues on perceived social support was significant (b=.27, SE=.03, t=8.59, p<.001). Thirdly, the mediation results displayed that the indirect effect of peer cues on purchase intentions through perceived social support (b=.20, SE=.27, Z=7.35, p<.01) and total effect was significant (b=.25, SE=.04, t=6.42, p<.001). Since peer cues only indirectly influence purchase intentions, it is a full mediation. The 95% CI of indirect effect was [.15, .26]. H1 and H4a were supported. Figure 6-1 provides visualization of the mediation model with path coefficients.

Figure 6-1

Peer Cues - Mediating Effect of Perceived Social Support

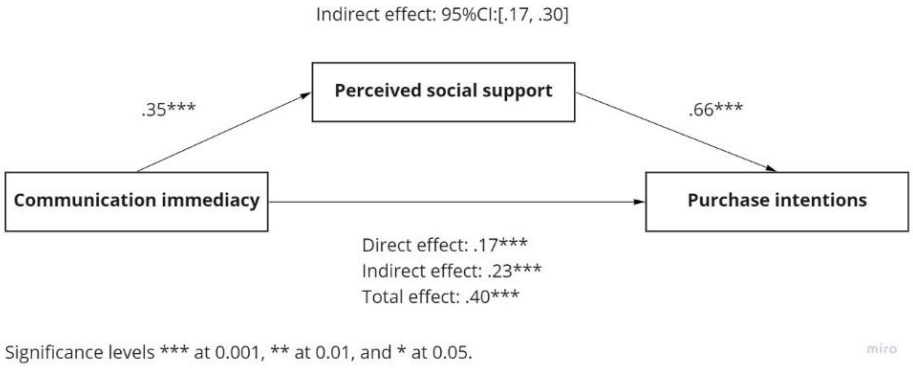


4.4.2 Mediating effect of perceived social support – communication immediacy

H4b stated that perceived social support mediates the effect of communication immediacy on purchase intentions. Firstly, the effect of communication immediacy on purchase intentions was significant (*b*=.17, *SE*=.398, *t*=4.33, *p*<.001). Secondly, the effect of perceived social support on purchase intentions was significant (*b*=.66, *SE*=.05, *t*=12.33, *p*<.001), and communication immediacy significantly affects perceived social support (*b*=.35, *SE*=.033, *t*=10.69, *p*<.001). Finally, the mediation analysis results revealed that both indirect effect (b=.23, *SE*=.29, *Z*=8.06, *p*<.001) and total effect (*b*=.40, *SE*=.04, *t*=10.14, *p*<.001) of communication immediacy on purchase intentions were statistically significant. The 95%CI of indirect was [.18, .31]. Communication immediacy has both direct and indirect effect on purchase intentions, it is a partial mediation. H1 and H4b were supported. Figure 6-2 provides visualization of the mediation model with path coefficients.

Figure 6-2

Communication Immediacy - Mediating Effect of Perceived Social Support



4.5 Moderated mediation analysis

4.5.1 Moderated mediating effect of individualism-collectivism at country-level (Dutch vs. Chinese)

H6a and H6b hypothesized that the effects of peer cues and communication immediacy are greater for Chinese consumers as opposed to Dutch consumers, as well as the effect of perceived social support on purchase intentions. Findings from MANOVA showed that the interaction effects of cultural backgrounds * peer cues on perceived social support were significant. Therefore, this section investigates the moderated mediating role of cultural backgrounds on different paths by using the add-in feature PROCESS v3.5, *Model 58* developed by Hayes (2013) in SPSS. The bias-corrected bootstrap CIs based on 5000 bootstrap samples with a 95% level of confidence were used, this approach is based on a mean derived from n samples with replacement from a data set (Preacher & Hayes, 2004), if the confidence intervals do not include zero, the effect can be interpreted as significant.

Taking peer cues as predictor, the effect of peer cues*cultural backgrounds (path a) was not significant [Unstandardized interaction *B*=-.03, *Bse*=.07, *t*=-.52, *p*=.61, 95%C.I. (-.17, .10)]; the interaction perceived social support*cultural backgrounds (path b) was not significant [Unstandardized interaction *B*=-.02, *Bse*=.11, *t*=-.17, *p*=.86, 95%CI (-.23, .19)]. The results indicated that no significant moderated mediation effects were found; the index of moderated mediation was -.03 with 95%CI (-.14, .08).

Taking communication immediacy as predictor, the interaction communication immediacy*cultural backgrounds (path a) was found insignificant [Unstandardized interaction *B*=-.22, *Bse*=.07, *t*=-3.04, *p*=.11, 95%C.I. (-.36,.08)], the interaction perceived social support*cultural backgrounds (path b) was insignificant [Unstandardized interaction *B*=-.06, *Bse*=.10, *t*=-.60, *p*=.55, 95%CI (-.26, .14)]. No moderated mediation was found. Therefore, H6a, H6b were rejected.

In summary, despite the significant interaction effects of peer cues* cultural backgrounds (Dutch group vs. Chinese group) on perceived social support in MANOVA analysis, the moderated mediation model was not significant when considering perceived social support as the mediator in PROCESS. Therefore, country-level individualism-collectivism (*Dutch group vs. Chinese group)* failed to play a moderated mediating role on the relationship between engagement stimuli (i.e., peer cues and communication immediacy) and purchase intentions. The following section discusses the role of individualism-collectivism at individual-level.

4.5.2 Moderated mediating effect of individualism-collectivism at individual-level

Having said that, the role of country-level cultural differences (Dutch vs. Chinese group) was insignificant, cultural traits individualism-collectivism at individual-level cannot be ignored. The moderated mediation *Model 58* displayed that the interaction effects only significant for the individual-level individualism-collectivism*perceived social support (path b) rather than path a. Therefore, a simpler Model (*Model 14*) was used to further investigate the moderated mediating effect of individual-level cultural traits (horizontal collectivism vs. individualism) on the relationship between engagement stimuli (i.e., peer cues and communication immediacy) and purchase intentions.

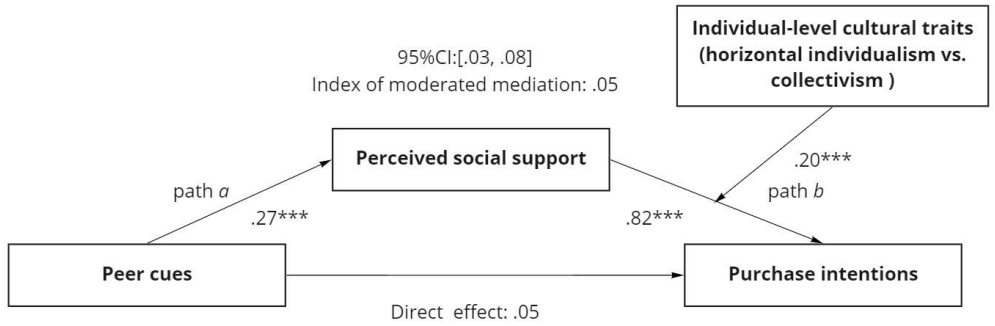
When 'peer cues' is a predictor, the results indicated that the unconditional interaction between perceived social support and purchase intentions was significant (Unstandardized interaction *B*=.20, *Bse*=.04, *t*=4.59, *p*<.001, 95%CI (.12, .29). The overall moderated mediation was confirmed by the index of moderated mediation= .05 with 95% CI [.03, .08]. The effect of perceived social support on purchase intentions was stronger for consumers with higher level of collectivism (*b*=.28, *se*=.04, 95%CI=.21, .36) and weaker in those low in collectivism (b=.15, se=.04, 95%CI=.10,.20).

When communication immediacy is a predictor, the results indicated that unconditional interaction between perceived social support and purchase intentions was significant (Unstandardized interaction *B*=.19, *Bse*=.04, *t*=4.45, *p*<.001, 95%C.I. (.11, .27). The overall moderated mediation was supported by the index of moderated mediation= .07 with 95% CI [.04, .10]. The effect of perceived social support on purchase intentions was stronger for consumers with higher level of collectivism (*b*=.33, *se*=.05, 95%CI=.25, .43) and weaker in those low in collectivism (*b*=.17, *se*=.03, 95%CI=.11,.23). Hence, H7a and H7b were supported. Figure 7 provides visualization of the moderated mediation model with path coefficients.

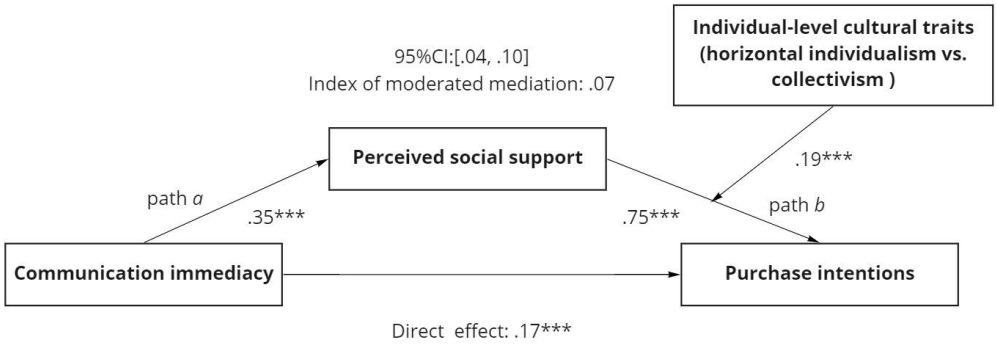
These aforementioned results identified that participants with higher individual-level collectivistic (lower individualistic) cultural traits and in the positive perceived social support had stronger purchase intentions.

Figure 7

The Moderated Mediating Role of Individualism-Collectivism at Individual-level



Significance levels *** at 0.001, ** at 0.01, and * at 0.05.



Significance levels *** at 0.001, ** at 0.01, and * at 0.05.

4.6 Overview of hypotheses

Table 8 displays the summary of the seven hypotheses based on the statistical analyses.

Table 8

Results of the tested hypotheses

Hypotheses	Results
H1: Perceive social support increases purchase intentions in livestream shopping.	Supported
H2a: The presence (absence) of peer cues increases (decreases) perceived social support.	Supported
H2b: The presence (absence) of peer cues increases (decreases) purchase intentions in live stream shopping.	Rejected
H3a: High (low) level of communication immediacy increases(decreases) perceived social support.	Supported
H3b: High (low) level of communication immediacy increases(decreases) purchase intentions in livestream shopping.	Supported
H4a: Perceived social support mediates the effect of peer cues on purchase intentions in livestream shopping.	Supported Fully mediated
H4b: Perceived social support mediates the effect of communication immediacy on purchase intentions in livestream shopping.	Supported Partially mediated
H5a: The congruent combination of peer cues and communication immediacy leads to stronger perceived social support as opposed to single engagement stimulus in livestream shopping.	Rejected
H5b: The congruent combination of peer cues and communication immediacy leads to stronger purchase intentions as opposed to single engagement stimulus in livestream shopping.	Rejected
H6a: The effect of 1) peer cues; 2) communication immediacy on perceived social support is greater for Chinese consumers as opposed to Dutch consumers in the livestream shopping.	1) Rejected 2) Rejected
H6b: The effect of perceived social support on purchase intentions is greater for Chinese consumers as opposed to Dutch consumers in livestream shopping.	Rejected
H7a: The effect of 1) peer cues; 2) communication immediacy on perceived social support is greater for consumers with personal collectivistic cultural values as opposed to consumers with personal individualistic cultural values in livestream shopping.	1) Rejected 2) Rejected
H7b: The effect of perceived social support on purchase intentions is greater for consumers with personal collectivistic cultural values as opposed to consumers with personal individualistic cultural values in livestream shopping.	Supported

5. Discussion

This study aimed at exploring whether peer cues and communication immediacy influence purchase intentions mediated by perceived social support, as well as investigating the role of individualism-collectivism at country-level (Dutch group vs. Chinese group) and individual-level between engagement stimuli and purchase intentions in the context of livestream e-commerce. The explanations of research findings, theoretical and practical implications, limitations, and future recommendations are discussed in the following.

5.1 Discussion of the results

Firstly, the current study highlighted the significant role of perceived social support in the context of livestream shopping. This finding is in accordance with recent study by Liu et al. (2019) indicating that social support significantly influences purchase intentions in mobile social commerce. Consumers can gain informational and emotional support which assists them in making purchase decisions if they perceive social commerce as useful. This also supports the conclusion by Hajli et., al (2015) and Liang et., al (2011), social support can strengthen purchase intentions and users' intentions to use social commerce, especially when consumers can benefit from receiving product-related information in social commerce. Social commerce focuses on facilitating social networks and interpersonal relationships among brands and users, which reflects the characteristics of collectivism (Kim et al., 2012). The sense of social support, to some extent, fulfils viewers' social needs and inspires them to have more interaction with live streamers and other consumers in the same community. Live e-commerce, as an emerging form of social commerce, enjoys the benefits of rich engagement mechanisms and audiovisual demonstration, which can play an irreplaceable role in social commerce especially for consumers with collectivistic cultural traits who rely more on external information sources and group decisions.

Secondly, the results indicated that peer cues enhance purchase intentions through perceived social support in livestream shopping, which implies that previous consumer purchase information can be an emotional and informational referral for consumers to evaluate the product and form purchase intentions. Consistent with the study by Wang & Wu (2020), the presence of peer cues can be useful messages that enhance purchase intentions through product evaluations. This study manipulated peer cues by demonstrating peer purchases and affective tendencies (adding to the shopping cart; liking the products), these are action-based information cues that create reference basis and emotional support for later consumers to make purchase decisions. However, this study was unable to convincingly demonstrate the direct effect of peer cues on purchase intentions due to the low

effect size. Slightly different from the former studies by Cheung et al.(2017), Wang & Yu (2017) and Yin (2020), these studies argued that peer purchases information and herd messages can directly stimulate purchase intentions, consumers' purchase decisions can be hugely influenced by action-based information cues (i.e., peer consumer purchase). This inconsistency could be explained by the fact that the studies mentioned above were conducted in the context of online seller websites or online communities, the action-based information cues are shown in static text. It is worth noting that peer cues in livestream shopping are shown as flickering messages at the bottom of the interface. Moreover, the inconsistency can also be explained by the study conducted by Fei et al (2021), they pointed out that the role of herd messages (peer cues) in livestream shopping depends on the level of viewers' attention to peer cues (exogenous attention), attention to peer cues could arise positive social influence or negative distraction on purchase intentions. In this study, perceived social support fully mediated the effect of peer cues on purchase intentions, this result is agreement with Fei et al (2021), only people who give attention to peer cues and perceive peer cues as useful social support can strengthen purchase intentions, some other people may perceive peer cues as distractors in livestream shopping interface.

It was found that communication immediacy significantly increases perceived social support, sequentially resulting in stronger purchase intentions. This result broadly supports other studies in the social commerce area linking communication immediacy with purchase intentions (Tong, 2017; Wang & Wu, 2019; Zhang et al., 2020). In live e-commerce, communication immediacy affects purchase intentions through product evaluation (Wang & Wu, 2019); vividness, interactivity, and authenticity in livestream shopping enhance purchase intentions by affecting the sense of communication immediacy (Tong, 2017). Real-time interactivity and communication immediacy can decrease perceived uncertainty, which can help viewers gain more authentic information of product details and product diagnosis (Zhang et al., 2020). Synchronous communication in livestream shopping is beneficial to create high communication immediacy between brands and consumers. Specifically, livestream shopping can empower viewers to be more capable of evaluating product details in a vivid way thanks to communication immediacy offered by live streamers or brands. Viewers cannot effectively evaluate products and form judgements if live streamers failed to deliver timely and personalized responses.

One unanticipated finding was that there were no interaction effects between peer cues and communication immediacy on perceived social support and purchase intentions. In contrast to earlier research suggested by Chaiken & Maheswaren (1991), no evidence of additivity was detected. Literature pointed out that there is additivity when both systematic and heuristic

processing are in the congruent condition. This study tried to argue that a high level of communication immediacy enhances perceived informativeness, which is beneficial for systematic processing, while peer cues are bandwagon heuristics for decision making shortcuts. However, no combined effects found when heuristic cues were consistent with the evaluative implications of the product details in the current study.

The lack of significant combined effect between peer cues and communication immediacy could be explained by sophisticated information processing of viewers. Previous literature has shown both content-related(systematic) cues and non-content related(heuristic) cues influence judgement making (Bohner et al., 1994; Zhang et al., 2014), both can occur concurrently and affect each other in a more complicated way. Zhang et al.(2014) explained that the additivity effect may often be complicated to detect due to two reasons, one is that content-related information may offer more issue-relevant information than non-content related cues, which makes the influence of non-content cue undetected; the other is that the attenuation effect may firstly take place when viewers are highly motivated to process information, content-related cue (systematic processing) may weaken the effects of non-content related cues (heuristic processing), resulting in attenuation effect (Zhang et al., 2014). Besides, the interaction effects depend on the implications recalled by heuristic and systematic processing on the ambiguity of persuasion messages and source credibility (Chaiken & Maheswaran, 1994; Todorov et al., 2002). Message ambiguity plays an essential role in information processing, which can be attributed to perceived credibility (Bohner et al., 1994). It has been elucidated that trustworthiness of influencers can affect consumers' perceived information credibility (Xiao et al., 2018), and source credibility has direct impact on purchase intention (Zhang et al., 2014). The present study did not take ambiguity of messages and perceived source credibility into account, which makes it hard to detect additive or attenuation effects.

Lastly, it was expected that the country-level cultural differences influence the relationship between engagement stimuli and purchase intentions. The outcome is contrary to previous studies which emphasized that Chinese consumers have a higher level of dependence on social groups' opinions and seek more online social support compared to individualistic countries in social commerce context (Fong & Burton, 2008; Chu & Choi, 2011; Tsai and Men, 2017). By comparing the observed means, Chinese group scored slightly higher in perceived social support than Dutch group under the peer cues exposure, but country-level individualism-collectivism failed to play a moderated mediation role when taking perceived social support as mediator. The lack of a statistically significant role of country-level cultural differences may result from inadequate sample size or sample bias. Such sample bias arises from the incomparability of samples due to cross-

cultural variation in sample characteristics that have a bearing on target measures (He & Vijver, 2012). Nonetheless, individualism-collectivism at individual level added values in this study, the finding indicated the significant role of individual-level individualism-collectivism between perceived social support and purchase intentions. The level of horizontal individualism negatively affects the strength of the relationship between perceived social support and purchase intentions. In other words, consumers holding collectivistic cultural traits can be greatly influenced by recommendations and group members' opinions for the reason that they perceive social support information is useful for them to make purchase decisions, while consumers with individualistic cultural traits are less likely to rely on social commerce to look for informational and emotional support to aid purchase decisions. As Gvili & Levy (2021) stated, consumers with individualistic cultural traits tend to rely on their efforts and internal owned information instead of seeking advice from social commerce communities, they are less likely to believe in group decision-making and use social commerce as the most important source of information.

5.2 Research implications

This research provides important theoretical and practical insights. From the theoretical perspective, this study establishes a theoretically grounded link between engagement stimuli (i.e., peer cues and communication immediacy) and behavioral intention through perceived social support based on S-O-R framework. Social peer cues are widely adopted in a social commerce environment, allowing users to observe others' commercial activities (Fei et al., 2021; Wang & Yu, 2017; Cheung et al., 2017; Chen et al., 2011); communication immediacy reflects the synchronous communication and real-time interactive feature in live e-commerce (Cai et al., 2018). The results indicated that peer cues and communication immediacy are essential engagement stimuli that can effectively trigger consumers' perceived social support, and thus influencing purchase intentions. These features are not only beneficial for product evaluation but also fulfil social gratification of social interaction.

Secondly, the online environment has become the essential source of social support as a result of the popularity of social commerce (Chen & Shen, 2015). Live e-commerce can be regarded as a new source of social support with rich hedonic, utilitarian, and social values. Previous literature (e.g., Liang et al., 2011; Hajli et al.,2015; Liu et al., 2019) adopted social support in the context of asynchronous social platforms (i.e., Facebook, Instagram, social commerce sites). This study investigated consumers' cognitive and affective processes from the perspective of perceived social support, empirically confirming the critical role of social support in the context of livestream e-commerce.

Thirdly, this study extended the existing live e-commerce literature by adding individual-level cultural traits. Since live e-commerce has been well-developed in China, most existing studies focus on Chinese consumer behaviors in livestream shopping (e.g., Cai et al.,2018; Wang et al., 2018; Yu & Lo, 2020; Xu et al., 2020; Ko & Chen, 2020; Wang & Wu, 2019). The main findings in this research enrich the implications connected to different cultural backgrounds, especially the investigation on moderated mediating role of cultural differences deepens the understanding of how individual-level cultural values (horizontal individualism-collectivism) influence the relationship between cognitive process and behavioral intentions in livestream shopping. It further proved that online consumers' behaviors are culturally shaped (Chu & Choi, 2011).

This research presents some managerial implications as well. As an emerging marketing approach combining entertainment and commerce, this study implies how e-commerce marketers can entail consumers' cognitive and affective processes in a more effective way. Therefore, platform creators should implement and integrate more utilitarian and social features that enrich online shopping experience and reduce consumers' perceived uncertainty on product evaluation, encouraging more interaction between consumers and live streamers. The non-transactional behaviors such as giving 'likes' and generating eWoM are manifestations of consumer engagement that can stimulate social support.

Furthermore, the findings highlight the importance of peer cues and communication immediacy. Marketers and practitioners can develop such livestream mechanisms and sociability functions to facilitate consumers' information processing in product evaluation and social interaction. Offering social peer cues and timely personalized messages can enhance product information reliability and perceived informativeness, which can further improve the conversion rate in livestream shopping. Live streamers should attach more importance to real-time interaction and vivid communication with viewers since timely response and feedback can facilitate viewers' understanding of the product and stimulate closer relationships between brands and online consumers. For instance, live streamers can offer personalized recommendations according to different inquiries, shorten the response time and improve the response quality.

Lastly, the results suggest that marketers should be aware of consumers with different cultural traits, using effective marketing strategies to interact with the right consumer segment. Consumers with collectivistic traits are more likely to be active in social commerce to get recommendations and suggestions, which can help them make purchase decisions (Goodrich & Mooij, 2014). Marketers should have a clear understanding of the target consumers' characteristics and better satisfy their social, hedonic, and utilitarian needs.

5.3 Limitations and future research recommendations

This study has three limitations, some learnings and future research recommendations are discussed as well.

Firstly, Statista (2020a) reported that clothing and apparel are the top purchased product categories in Chinese live streaming platforms, and females aged 21~40 years old are more active in watching livestream shopping. Hence, this study only took females aged 19~45 as the main target group and used clothing as the experimental product, which results in the limitations of generalizability. Besides, educational levels failed to be equally distributed over eight different conditions. These findings cannot be extrapolated and generalized to all live e-commerce cases because of the limitations mentioned above. Future research should shed more light on product categories and wider sample groups to ensure external validity. Research suggested that different types of product-category involvement give rise to different levels of effect on purchase decisions (Tejavibulya & Eiamkanchanalai, 2011). Product involvement is one of the determinants of elaboration motivation (Zhou, 2010). When customers are highly involved in the product, they tend to seek information to acquire product knowledge and expertise. Additional research could delve into different product categories, for instance, laptop vs. clothing to study how they make decisions in livestream shopping with the different levels of cognitive involvement and affective involvement.

Secondly, even though experimental materials were designed to imitate a real livestream shopping setting, interactive functions were constrained by the disabled chat box. This study may be limited by the manipulations of communication immediacy. In a real livestream shopping, live streamers can give immediate and personalized responses in person rather than via the chat box at the bottom of the interface. Too many messages in the chat box, to some extent, elicit viewers' much exogenous attention(stimulus-driven attention) and attenuate endogenous attention(goal-driven attention) to the product information and demonstration provided by the streamers(Fei et al., 2021). This consequence may deviate the results, therefore, these issues should be tackled to avoid lurking effects by setting up a professional laboratory environment.

Moreover, the role of country-level cultural differences has not been fully solved in this study. For one thing, sample bias (incomparability of samples due to cross-cultural variation in sample characteristics) and inadequate sample sizes are potential limitations since the participants were recruited using convenience sampling, the generalization of findings could be problematic (He & Vijver, 2012); the data of this study violated the assumption of homogeneity of variance when taking cultural backgrounds into account, which may result in deviating outcomes in MANOVA. For another, country-level cultural difference resembles a huge umbrella combining various

elements; it is complicated to infer which cultural factor contributes to differences between sample groups from different countries (Tarhini, 2013). Regarding the role of individual-level cultural traits, this study only considered one of the individual-level cultural traits – individualism-collectivism. To develop a full picture of cultural traits differences, additional studies need to explore other cultural traits like uncertainty avoidance. This study argues that consumers with collectivistic cultural traits cherish online social communities' informational and emotional support when making purchase intentions, and livestream shopping can satisfy their social, hedonic, and utilitarian needs thanks to enriching social engagement stimuli. Nevertheless, live e-commerce is a sophisticated ecosystem that can also make use of limited time discount and flash sales persuasive tricks, Ma(2021) pointed out that consumer displaying high uncertainty avoidance cultural traits may not purchase from livestream shopping for the reason that they need sufficient product search, which is less likely to have impulsive buying behavior triggered by limited-time strategy. Further research can study how individual-level uncertainty avoidance cultural traits influences the perception of scarcity in livestream shopping.

Finally, further study should shed more light on interaction effects between different cues since no additive effects were found between peer cues and communication immediacy in the current study. Guided by Heuristic-Systematic Model (1980), it is suggested to further explore interaction effects when considering heuristic processing and systematic processing on the topic of livestream shopping. According to Chaiken & Maheswaran(1994), the HSM posits three hypotheses concerning interplay of systematic and heuristic processing: additivity, attenuation and bias effect. Attenuation effect may become stronger when people are highly motivated to process information and perceive high relevance, they prefer to process information through systematic processing (Zhang et al., 2014). The use of ambiguous message content can increase the likelihood of additivity or attenuation effects (Chaiken & Maheswaran, 1994). Further research can be undertaken to investigate motivational factors and ambiguity of message content, examining how systematic and heuristic processing produce additivity or attenuation effects in livestream shopping. Besides, source credibility is one of the heuristic cues. Live streamers being the source of information and messenger, their credibility including expertise, trustworthiness and attractiveness (Ohanian, 1990). Source expertise and trustworthiness significantly influence information credibility (Wathen & Burkell, 2002). A study by Xiao et al. (2018) revealed trustworthiness of influencers can affect consumers' perceived information credibility in YouTube. Future research can incorporate different types of live streamers (product expert vs. influencer vs. key opinion consumer) to explore the effects of source credibility and investigate how heuristic and systematic processing interact under the influence of perceived information credibility.

6. Conclusion

As livestream shopping gradually becomes a global new trend, it has caught the attention of many western e-commerce marketers. This study contributes to the literature in the field of live e-commerce by examining the role of social support and cultural factors. It is suggested that livestream shopping can strengthen online social support by establishing enriching engagement stimuli (i.e., peer cues and communication immediacy), and thus strengthening purchase intentions, its effect could be even stronger for those consumers holding collectivistic values. As one of the most popular consumer-facing digital innovations for online shopping, livestream e-commerce provides opportunities for brands and viewers to co-create values including information, hedonic and social values. Many Dutch marketers and brands are currently developing livestream shopping to engage audiences on their digital properties, this study helps them learn consumer behaviors and the importance of engagement mechanisms in livestream shopping. Future research can shed more light on the interactions between engagement stimuli and the effect of source credibility in livestream shopping.

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Appendices

Appendix I Pre-test

Pre-test materials

Figure 1
Alternative selling object

Interview questions

- Do you perceive this as real live streaming ? How can I improve? any elements that I can add to make it more realistic?
- Do you notice other buyers' behaviors in the livestream video? What elements did you see and what do you think of that?
- Do you notice the responses from the brand? And do you think the responses from the brand could help you evaluate the products?
- Please check the clarity of these statements, which one do you think is not clear enough?

Based on the feedback acquired from the second pretest, livestream video has been modified. The following solutions(Figure 2 & Figure3) were proposed to improve and optimize the aesthetic design of interaction text in live stream shopping. The following materials were used to further test which aesthetic design is more attractive. Eventually, 20 participants joined the last round of pre-test for stimuli design, the majority of the pre-test participants preferred peer cues with color text(n=15) and pop-up comments with rounded shape(n=13).

Figure 2

The way of highlighting peer cues(color vs. bold text)

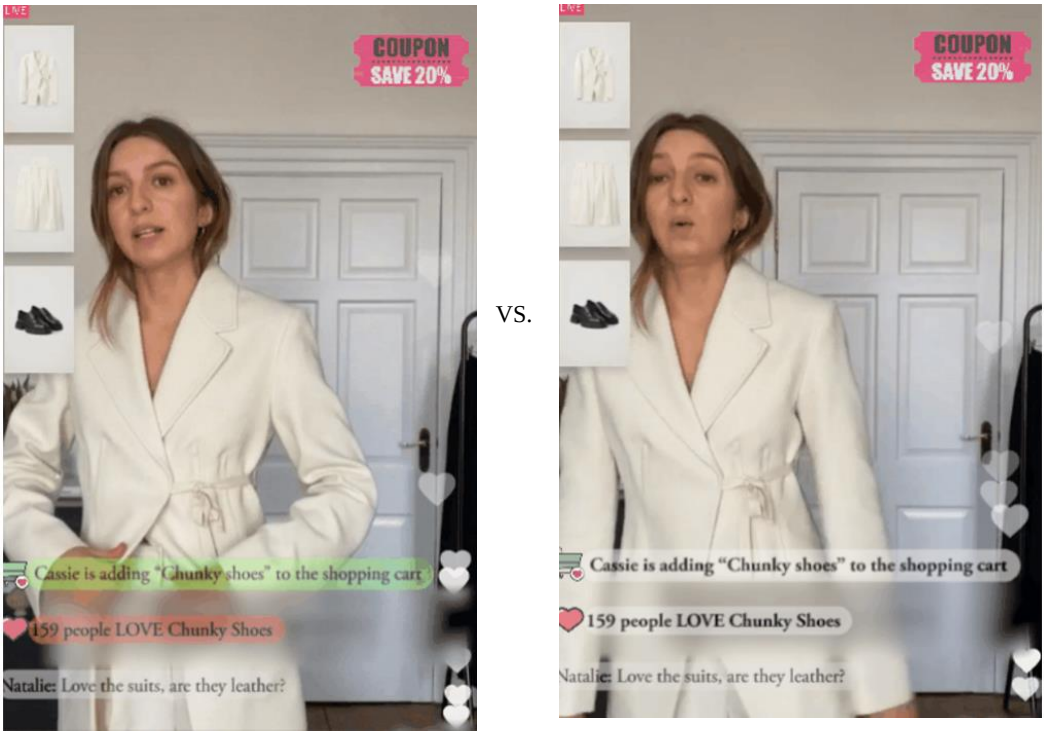
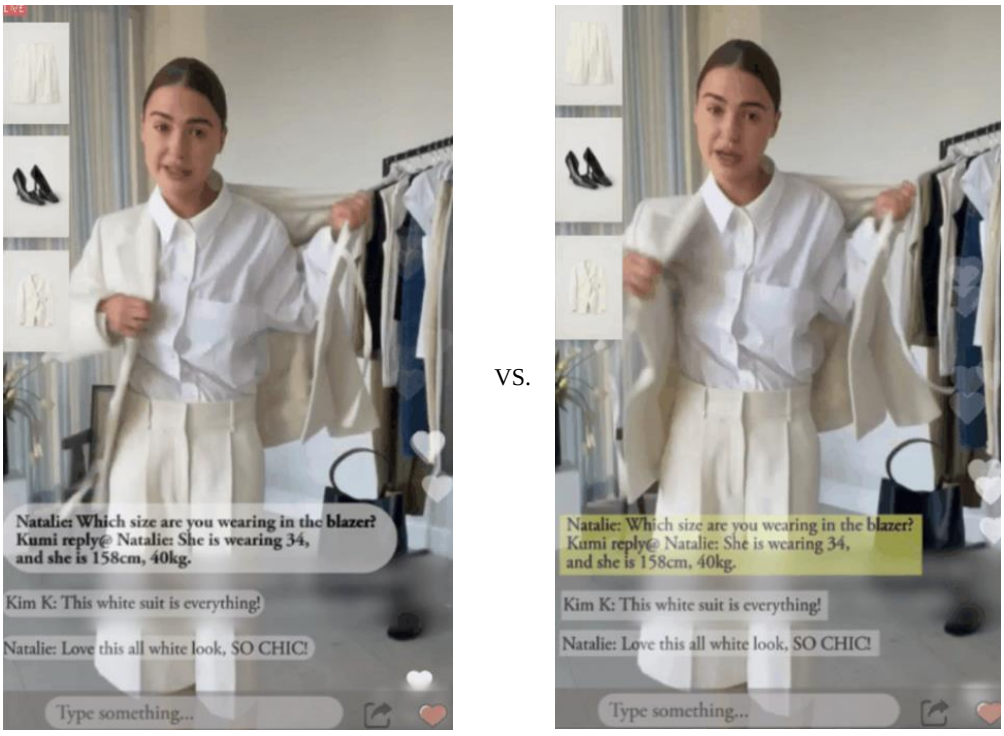


Figure 3

The shape of pop-up comments(rounded shape vs. rectangle shape)



Appendix II Experiment Materials

Figure 4-1

High communication immediacy + presence of peer cues

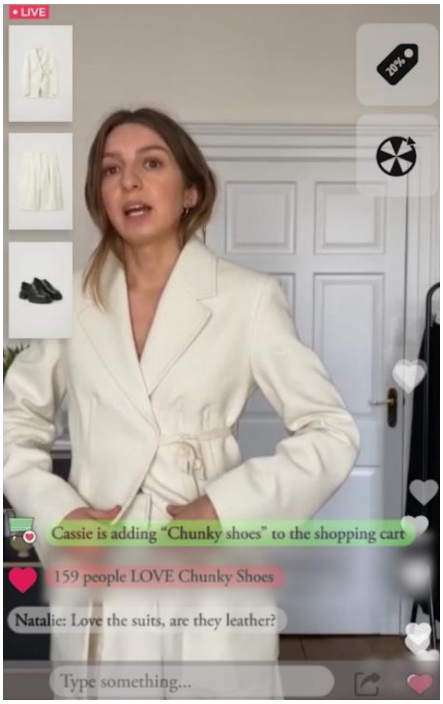
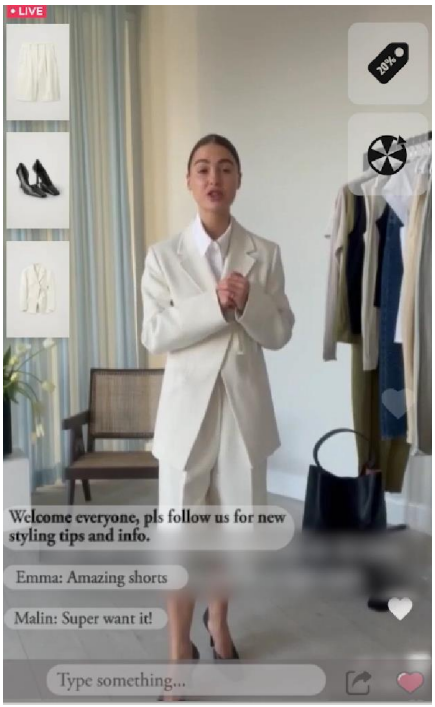


Figure 4-2

Low communication immediacy+ absence of peer cues



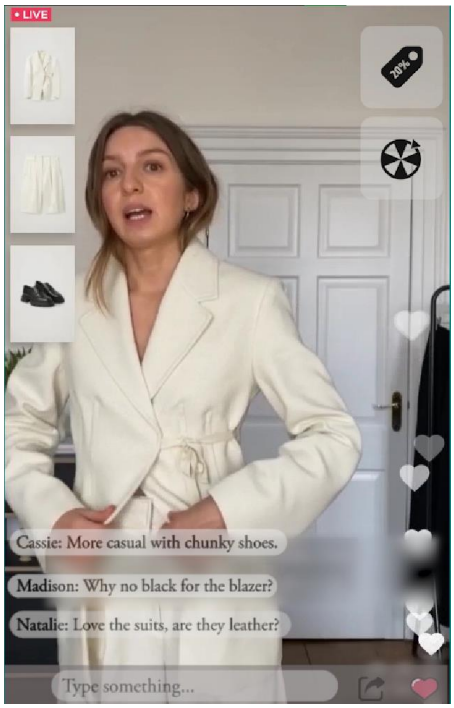


Figure 4-3

High communication immediacy + absence of peer cues

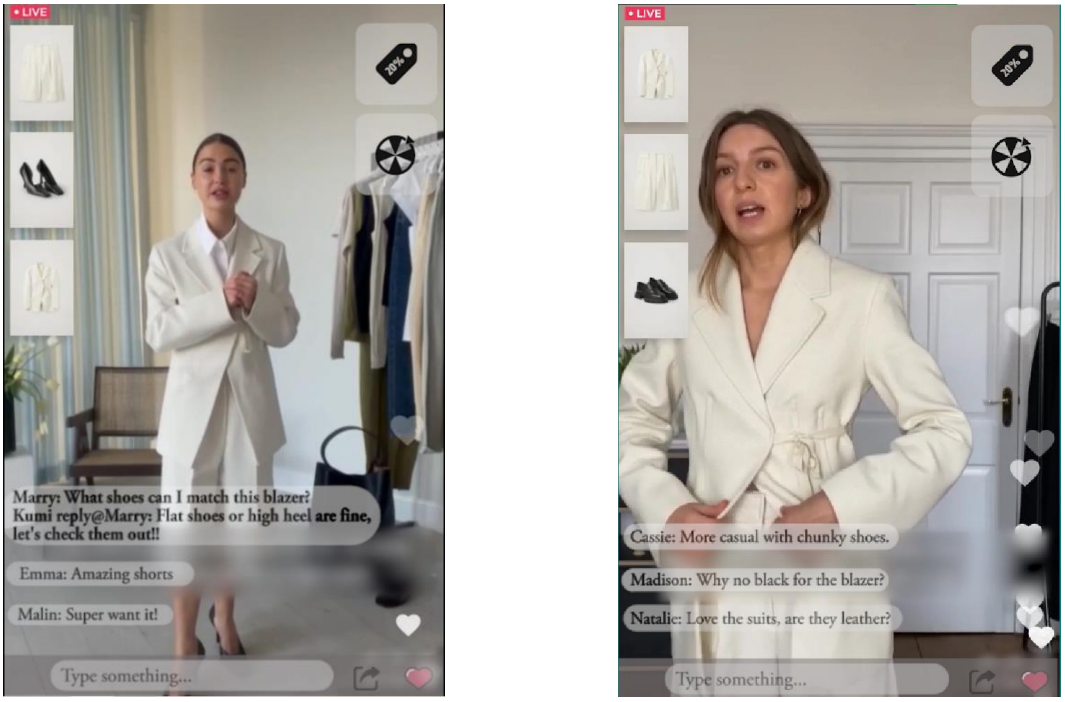
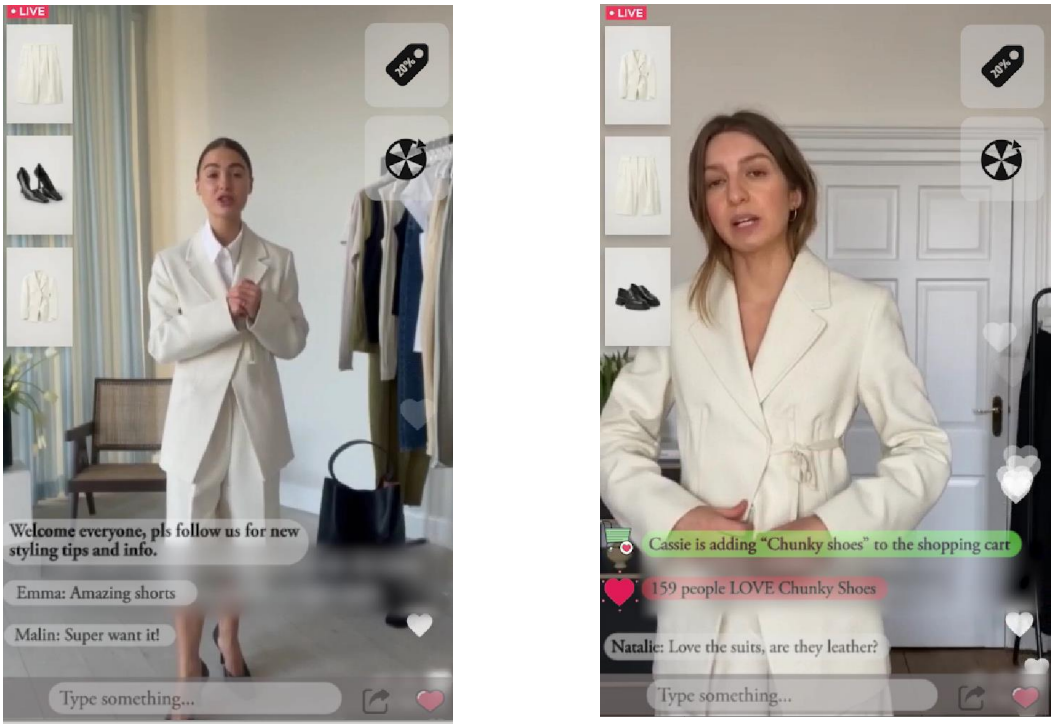


Figure 6-3

Low communication immediacy + presence of peer cues



Appendix III Main Study Survey

English

Dear participant,

Your participation is much appreciated.

I am a master student at the University of Twente. This experimental study is part of my master thesis and Greenhouse (Dutch marketing consultancy)'s research. This is a cross-cultural study about live stream shopping, trying to compare consumer behaviors in different countries. **In this study, a two-min live stream shopping clip will be demonstrated in English. After that, please fill in the questionnaire with your first feeling, and there is no right or wrong answer.**

The whole experiment will take approximately **5 to 10 minutes**. All the data will be collected anonymously through Qualtrics and is only for academic research use.

As a thank you note, two of you will have the opportunity to get a **EUR 25 Bol.com gift card OR RMB 50 Avon/JD.com gift card** if you finish the whole video and survey. Fill in your e-mail address at the end then you can participate in the prize drawing. Please be notified that your email address will not be stored in the data list.

Your participation is voluntary, and you are free to stop at any time. If you would like to know more about the research or further findings. Feel free to reach out me to me: w.liang@student.utwente.nl.
Thanks for your valuable contribution to the research.

Warm regards,

Wei Liang
The Faculty of Behavioural, Management and Social Sciences
University of Twente

Q0.
Please choose to proceed if you consent to participate in this study.

- ○ I agree to voluntarily participate in this study.

Q1. What is your age?

Q2.
What is your gender?

- ○ Male
- ○ Female
- ○ Prefer not to say

Q3.
What is the highest degree or level of school you have completed? If currently enrolled, pick the current education.

- ○ High school or below
- ○ Vocational training (MBO)
- ○ College (HBO) OR Bachelor's degree
- ○ Master's degree
- ○ Doctorate degree

Q4.
What is your nationality?

- ○ Dutch
- ○ Chinese
- ○ Other

Q5.
Have you ever watched live stream shopping before?

- ○ Yes
- ○ No
- ○ Not sure what it is

Q6. Have you ever bought something from live stream shopping before?

- ○ Yes
- ○ No
- ○ Not sure

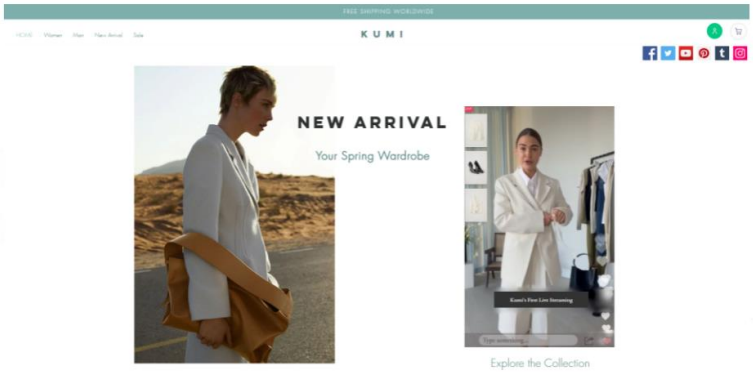
Q8.
Please rate the following statements based on your own situation: (1=strongly disagree; 7=strongly agree)

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I would rather depend on myself than others.	○	○	○	○	○	○	○
I rely on myself most of the time, I rarely rely on others.	○	○	○	○	○	○	○
My personal identity, independent of others, is very important to me.	○	○	○	○	○	○	○
I often do my own thing.	○	○	○	○	○	○	○

Kumi is a global fashion brand selling clothing and accessories, **imagine you spontaneously open Kumi's first live stream shopping on an e-commerce platform, and you are going to watch a real live stream.**

You are not familiar with this live channel before. You newly registered an ID on this platform, and you will ask some questions during this live stream. **Please watch this 2-min live stream clip carefully until the end and fill in the questionnaire.**

The "next step" button will show after you read the introduction and watch the video.



Q9.
After watching the **real live stream clip.**
Please indicate the extent to which you agree or disagree with the following statements after you this live streaming (1=strongly disagree; 7=strongly agree)

In this live stream shopping:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Streamers and other online consumers offer me helpful information and suggestions to make purchase decisions.	○	○	○	○	○	○	○
Streamers and other online consumers give me information to solve the problems concerning the products.	○	○	○	○	○	○	○
Streamers and other online consumers would share their points of view if I had problems.	○	○	○	○	○	○	○
I can connect with streamers and online consumers who like the same things I do.	○	○	○	○	○	○	○
What streamers or other online consumers say or do make me feel better for making purchase decisions.	○	○	○	○	○	○	○
I feel I belong to groups of people with similar interests.	○	○	○	○	○	○	○

Q10.
After watching the **real live stream clip.**
Please indicate the extent to which you agree or disagree with the following statements after you this live streaming (1=strongly disagree; 7=strongly agree)

This live stream shopping:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
allows me to view other consumers' actions (e.g., adding products to shopping cart/liking products) in real time.	○	○	○	○	○	○	○
allows me to view timely feedback on consumers' actions (e.g., adding products to shopping cart/liking products)	○	○	○	○	○	○	○
Please validate your continued participation by choosing "agree"	○	○	○	○	○	○	○
allows me to receive timely responses regarding the products, instead of automatically generated messages.	○	○	○	○	○	○	○
allows me to get personalized responses from the brands, instead of automatically generated messages.	○	○	○	○	○	○	○
allows me to communicate about the product information as I would in the physical store.	○	○	○	○	○	○	○

Q11.

After watching the **real live stream clip.**

Please indicate the extent to which you agree or disagree with the following statements after you this live streaming (1=strongly disagree; 7=strongly agree)

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I intend to purchase products in this live streaming.	○	○	○	○	○	○	○
I am very likely to purchase products in this live streaming.	○	○	○	○	○	○	○
I expect to purchase products through live streaming in the future.	○	○	○	○	○	○	○
It is likely that I will place an order in live streaming in the future.	○	○	○	○	○	○	○
I would recommend others to buy products in live streaming.	○	○	○	○	○	○	○

Q12.

What would be your main concerns for live stream shopping?

- ☐ After-sales problems
- ☐ No guarantee of product quality
- ☐ Online payment
- ☐ Consumer rights
- ☐ Do not trust live stream platforms.
- ☐ Do not trust live streamers
- ☐ No idea
- ☐ Others

Q13.

What product categories would you like to watch in live stream shopping?

- ☐ Clothing and apparel
- ☐ Beauty and cosmetics
- ☐ Food
- ☐ Daily supplies
- ☐ Household decorations
- ☐ Consumer electronics
- ☐ Other commodities
- ☐ Not interested in live stream shopping

English

Q14. Would you like to be entered into a drawing for a EUR25 OR RMB50 gift card?

- ○ Yes
- ○ No

UNIVERSITY OF TWENTE.

Thanks for participating in this survey.

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