EXPLORING GIFTING BEHAVIOR IN E-SPORTS LIVE STREAMING: THE INFLUENCE OF STREAMER ATTRIBUTES AND VIEWERS' MOTIVATIONS WITH THE MEDIATING ROLE OF PARASOCIAL RELATIONSHIPS AMONG CHINESE AUDIENCES

Complete Research and Research in Progress

Don't delete and resize the square shape in your original submission. You can delete it in the final submission and use the space for adding authors' information.
The review process is double-blind. Therefore, papers submitted for review MUST NOT contain any author information – neither on the title page nor in the page header!

Abstract

This study explores the dynamic between streamer attributes and viewer motivations in the context of Chinese e-sports live streaming, focusing on how these factors influence Para-Social Relationships (PSR) and subsequent gifting behaviour. Utilizing the Uses and Gratifications (U&G) theory and source credibility model, the findings reveal that attractiveness and trustworthiness consistently enhance both PSR and gifting behaviour. Conversely, expertise exhibits a complex, inverse effect on gifting when additional variables are considered. These findings provide insights into the mechanisms of viewer engagement and offer strategies for content creators and platforms when they consider the sustainable profitable format.

Keywords: gifting behaviour, e-sports live-streaming, paral-social relationship.

1 Introduction

As the Internet continues to evolve, live streaming has emerged as a rapidly expanding trend. In recent decades, advancements in the Internet and media technologies have significantly heightened viewers' interest in live streaming (Hilvert-Bruce et al., 2018). Live streaming has grown so popular that, in certain instances, more people prefer watching others engage in activities, rather than participating in the activities themselves. Video games are an obvious example (Kaytoue et al., 2012). *Twitch* is currently the largest live-streaming platform in the world, the users are all over the world except for mainland China. Nearly 35 million daily visitors were active on *Twitch* in 2022, to stream, watch and interact in communities with others (*Twitch Advertising: Audience* 2023).

Meanwhile, the Chinese live-streaming sector is also experiencing a surge in growth. Statistics show that The percentage of Chinese internet users who streamed live content climbed from 47.1% to 70% between June 2016 and June 2023 (Statista, 2023b). In the entire live-streaming domain, the e-sports and video game segment accounted for 765.39 million participants up to June 2023 (Statista, 2023a). The trend shows a sharply increasing sign from the year 2020 with an overall increase. The rapid growth of e-sport and video game live-streaming relies on a vast audience and the emerging business model of virtual gifts from viewers. *Douyu*, one of the most popular Chinese live-streaming platforms especially focused on the gaming section, saw 7.3 million viewers send virtual gifts (W. Zhang, 2022).

Previous research has examined how the factors from the Uses and Gratifications Theory (U&G) influence viewer engagement in live streaming. The viewer engagement can have a broad scope, including emotional connection, time spent, donation (Hilvert-Bruce et al., 2018), viewers' satisfaction (Hsu and J. C.-C. Lin, 2023), the continuous watching intention (C.-C. Chen and Y.-C. Lin, 2018).

Research has identified several attributes of streamers such as attractiveness, expertise, trustworthiness (Ooi et al., 2023; S. Zheng et al., 2023), passion, and communication style (Y. Guo, K. Zhang, and C. Wang, 2022) that influence gifting behaviour in various ways.

While the role of para-social relationship (PSR) in influencing viewers' interactive, impulse purchasing behaviour and strengthening influencers' branding has been acknowledged (Aw and Chuah, 2021; Ledbetter and Meisner, 2021). They are mostly limited in the general live-streaming field, few research has holistically integrated both viewer and streamer variables, along with PSR as mediate, to assess their influence on the gifting behaviour of Chinese viewers in the e-sports live-streaming sector.

Given the existing research gaps, this study aims to understand how the motivations of Chinese viewers and the characteristics of streamers influence the strength of PSRs in e-sports live streams, and how the level of PSR affects viewers' gifting behaviour.

The structure of this paper is as follows. First, the literature review and conceptual development led to the construction of our research model and the formulation of hypotheses. Subsequently, we present a comprehensive description of our measurement methodology, followed by a quantitative analysis of the results. Ultimately, we acknowledge the limitations of our study and offer directions for future research.

2 Literature Review

Viewers' gifting behaviour in the e-sports live-streaming area is also a sub-phenomenon of social live-streaming services and social commerce. To understand the gifting behaviour of viewers and the hidden reasons, the study starts with a systematic literature review on social live-streaming commerce (S-commerce) and social live-stream services (SLSSs) to glean insights into comparable internal and external motivations and behavioural patterns.

S-commerce is a subset of E-commerce that leverages social media platforms to facilitate the buying and selling of products and services. By integrating E-commerce with social media, it enables streamers to participate directly in the marketing and selling processes. A critical feature of social commerce is the integration of purchasing mechanisms within social media platforms (Stephen and Toubia, 2010).

SLSSs stands for a unique category of social media platforms that offer real-time, synchronous broadcasting capabilities. It is different from the traditional social media. Interactivity is a cornerstone of these services. Audiences can actively engage with streamers through chatting and sending virtual gift functions in channels to show their emotion and appreciation (Scheibe, Fietkiewicz, and Stock, 2016). SLSSs can be broadly categorized into two main types: general live streaming platforms, or topic-specific platforms (*Twitch* for gaming).

However, it is important to note that not all the SLSSs activities accounted for S-commerce. Only when it directly involves commercial transactions, such as promoting products or facilitating sales directly through the platform can be considered as S-commerce.

In past studies on S-commerce/SLSSs topics, factors like trust and social/ethical have been shown to influence consumers' purchasing intentions and impulse buying (L. Guo et al., 2021). On the other hand,

social/ethical factors with emotional attachment (Y. Lin, Yao, and X. Chen, 2021) were also examined to improve the stickiness between viewers and streamers. Research has indicated likes, chats, visits, and exposure time behaviours in social media impact not only purchasing but also fellowship intention (Clement Addo et al., 2021). Customer trust and personal recommendation have been identified as significant contributions to purchasing intention (Eggert and Weber, 2023). Moreover, the research has demonstrated the positive relationship between high-value perception of virtual gifts and purchasing intention with mediates greater viewer satisfaction (Liu, Tan, and Pawar, 2022). Viewers' behaviours, including continuous watching intention, prolonged use of social media, participation intention and satisfaction experiences, are fundamentally linked to purchasing intention. Several studies have individually examined these viewers' behaviours or simultaneously investigated their connection with viewers' purchasing intention. Essential elements and outcomes have been highlighted in earlier research. Concerning collective viewer behaviours, factors such as humour, interactivity, and appeal were investigated to influence consumers' continuous watching, purchasing intent, and inclination to use social media (Hou et al., 2020). From context-based factors like interactivity, social presence, personal factors like trait, curiosity, and social media dependence with mediate role gender difference Guan et al. (2022), we measure the consumption intention, especially on virtual gifts. Variables such as information richness, interactivity, vividness, and social presence newness (Gu, Cheng, and Shen, 2023) have been shown to influence consumers' intention to participate and create lasting experiences. Not every factor we examined positively impacts viewer behaviour. In the context of streaming politics debates, the real-time chat was found as a negative influence on the viewers' experience (Asbury-Kimmel et al., 2021).

Some studies also indicated that the streamers' attributes also have a significant influence on viewers' purchasing behaviour. Streamers' physical attractiveness and communication style (Y. Guo, K. Zhang, and C. Wang, 2022) lead to different levels of streamer popularity, viewers' buying intention and watching habits. From the streamer dimension, attractiveness and expertise are the crucial motivation factors leading to buying action (S. Zheng et al., 2023).

Within social media research, the uses and gratification theory (U&G) has been pivotal in pinpointing factors like entertainment and informativeness that drive viewer engagement and satisfaction. Specifically, four gratifications — informational(knowledge dissemination), pragmatic(financial savings and information acquisition), communal(sense of social connection), and pleasure-driven (leisure, pleasure, and seeking escape) — are influential in shaping consumer purchase intentions. Social engagement, as evidenced in the literature, has shown a more pronounced effect on user intentions than content or streamer engagement alone (J. Wang and Oh, 2023). This aligns with the finding that individuals are driven by entertainment and social motives in their interactions with streamers, as they seek a sense of identity within the community(Chang, 2023). These insights align with our study, where information-seeking and entertainment stand out as key factors influencing viewer behaviour in live-streaming commerce.

Among the existing research findings, there appears to be a notable gap in our understanding of viewer motivations within the U&G Theory context. While U&G theory serves as a foundation to explore viewer motivations, there is limited insight into the roles of specific streamer attributes namely attractiveness, trustworthiness, and expertise. Moreover, the mediating effect of PSR as a form of psychological support in shaping overall gifting behaviours has yet to be fully explored. This study aims to bridge these gaps by integrating both viewer and streamer perspectives with the mediating role of the PSR, offering a more holistic understanding of gifting behaviours in e-sports live-streaming of Chinese community contexts.

3   Conceptual development

3.1   Uses and Gratification Theory (U&G)

The U&G Theory (U&G) explores why individuals choose various forms of media consumption (Rubin, 2009). Many studies have applied U&G theory in traditional media and recent SNSSs studies to better

understand from the audiences' side how it impacts the final viewer engagement. Drawing from the U&G theory framework, studies on social media consumption identified the following motivation categories: entertainment, convenience, socialization, social support, information seeking, escape, avoidance, and positive or negative outcomes (Falgoust et al., 2022). The constructs under investigation will be explained in subsequent sections.

3.2 The stimulus-organism-response (S-O-R) model

The Stimulus-Organism-Response (S-O-R) framework, initially proposed by Mehrabian and Russell (1974), describe the process through which external stimuli (S) precipitate alterations in an organism's internal state (O), culminating in varied responses (R). Predominantly utilized in consumer behaviour and marketing research, including the burgeoning domain of influencer marketing, this paradigm elucidates the mechanisms by which external factors (stimulus) trigger shifts in the organism that, in turn, influence a spectrum of responses. For instance, factors such as the visual complexity of a background (Tong et al., 2022), the platform of engagement, the nature of streaming content, the streamer's persona, and the motivations of the viewers can each cause unique emotional and psychological transformations within the organism. These shifts can then result in a diverse array of outcomes. This research will utilize the S-O-R model as a foundational framework to construct and test hypotheses that examine the impact of external factors, alongside selected constructs from viewer motivation and streamer personality, mediated by PSR, on viewers' gifting behaviour.

3.3 Factors in Conceptual Model and hypothesis development

Gifting behaviour
The concept of gifting behaviour in e-sports live-streaming can be traced to the origins of social exchange theory, which was initially developed by Homans (1958). This theory posits that people are motivated to maximize benefits and minimize costs in their social interactions. The definition of 'payoff' is subjective, varying from one individual to another and even for the same individual over time. Within the e-sports live-streaming environment, the benefits that viewers receive from streamers may include increased pleasure, emotional connection and access to information from their interactions with streamers (Sjöblom and Hamari, 2017). In return, viewers may reciprocate by sending virtual gifts or direct monetary contributions to express their enjoyment and engagement, as well as to support the streamers and encourage continued attention and content delivery(Chau, 2010). The expenditure on such gifts is perceived by viewers as worthwhile, aligning with the principles of social exchange theory where the benefits received justify the costs incurred. In Chinese culture, gift-giving is an essential tool for strengthening relationships. It signifies that a relationship is valued and is used to express respect and honour towards the other person. Gifts are also a means to convey goodwill and gratitude (Steidlmeier, 1999). In this study, gifting behaviour as the dependent variable is defined as all the forms of money expenditure from viewers towards e-sports live streamers on the platform, which can be considered as financial support.

Information seeking and Entertainment
Previous studies have categorized the Uses and Gratifications (U&G) associated with computer-mediated communication platforms into three main types: content, process, and social. Content-related U&G, include activities such as seeking information and gaining exposure. Process-related U&G often involve aspects like entertainment, social influence, and escapism. Lastly, social U&G encompass activities related to forming connections and coordination (T. F. Stafford, M. R. Stafford, and Schkade, 2004). Information-seeking and Entertainment are two frequently examined fundamental elements within media engagement. These elements have been validated to positively enhance emotional connectedness (Falgoust et al., 2022; Hilvert-Bruce et al., 2018). The act of seeking information can increase viewer interaction willingness during streaming, potentially leading to higher instances of purchase behaviour (Ko, C.-H.

Cho, and Roberts, 2005). This research centres on the observation that within Chinese communities during e-sports live streaming, the content-related and process-oriented U&G factors will possibly not only exert a direct influence on viewers' relationships with streamers but indirectly shape their spending behaviours. These hypothesises will be empirically examined across prominent live-streaming platforms in mainland China. Therefore, information-seeking and entertainment variables have been selected for inclusion in the model, laying the groundwork for the forthcoming analysis and hypothesis validation.

Para-social relationship (PSR)
A PSR is a one-sided psychological bond formed by audience members during their engagement with media personas (Horton and Richard Wohl, 1956). Despite the limited interaction, viewers often develop feelings of friendship, personal connections, and emotional understanding toward these media figures (Chung and H. Cho, 2017; Horton and Richard Wohl, 1956). Lately, media formats have expanded beyond traditional media such as television and radio to encompass the online environment Labrecque (2014). Some recent studies discussed the PSR with streamers such as the social media influencer, video-games streamer(Kowert and Daniel Jr, 2021; Wulf, Schneider, and Queck, 2021), YouTubers (Tolbert and Drogos, 2019), online shopping streamers (P. Zhang et al., 2023). Recent investigations have highlighted that PSR acts as the mediate role that can significantly influence consumer behaviour, manifesting in patterns such as repeated purchasing intentions (X. Zheng et al., 2020) and psychological motivations including the need for attention, a sense of belonging, emotional sharing, and commitment, (C.-P. Chen, 2021) all of which can lead to actual buying actions, in study (Wulf, Schneider, and Queck, 2021) demonstrated that when video-games streamers engage with their viewers through chat, it can notably strengthen the PSR, thereby increasing the viewers' enjoyment and their willingness to participate. Therefore, we posit that the level of PSR is also an essential mediate measurement for analyzing Chinese e-sports viewers' actions, particularly the financial contributions they make in the form of gifting, through the lens of psychological theory. An analysis will be conducted to examine the direct influence of independent constructs on PSR and its mediated role in affecting gifting behaviour. Thus, the following hypotheses are proposed, the indirect effect equal to the mediate effect.

- **H1:** Information seeking positively influences the level of PSR.

- **H2:** Entertainment positively influences the level of PSR.

- **H1a:** Information seeking has a direct positive effect on gifting behaviour towards the streamer.

- **H2a:** Entertainment has a direct positive effect on gifting behaviour towards the streamer.

- **H1b:** Information seeking has an indirect positive effect on gifting behaviour towards the streamer, mediated by the level of PSR.

- **H2b:** Entertainment has an indirect positive effect on gifting behaviour towards the streamer, mediated by the level of PSR.

Source Credibility and Gifting Behavior in E-sports Live Streaming
Source credibility is "a term commonly used to imply a communicator's positive characteristics that affect the receiver's acceptance of a message." Two general models: the source-credibility model and the source-attractiveness model were used to study the topic of celebrity endorsement. Source-credibility was comprised of two main factors, expertise, and trustworthiness, while source-attractiveness was dependent on the source's familiarity, likability, similarity, and attractiveness to the consumer (McGuire, 1985; Ohanian, 1990), and can also be applied to analyze the attributes of streamers in nowadays e-sports live-streaming context.
Trustworthiness: Grounded in the seminal work on the approach of persuasive communication by Hovland, Janis, and Kelley (1953). Trustworthiness is recognized as a crucial element influencing the information's persuasion. reflect live-streaming, it encapsulates a viewer's perception of a streamer's sincerity and dependability, which is a factor included in the source-credibility model. In recent studies,

trustworthiness was found to be positively linked to the perceived PSR between adolescent followers and their favourite influencers, which in turn was associated with purchase intention (Lou and Kim, 2019). If viewers trust a streamer, they're more likely to buy things, which is something (Chong et al., 2023) also found in their study. Therefore, we assume that a streamer's trustworthiness not only enhances PSR (H3) but also directly (H3a) and indirectly (H3b), through the mediation of PSR, increases gifting behaviour towards the streamer.

- **H3:** Trustworthiness of the streamer positively influences the level of PSR.

- **H3a:** Trustworthiness of the streamer has a direct positive effect on gifting behaviour towards the streamer.

- **H3b:** Trustworthiness of the streamer has an indirect positive effect on gifting behaviour towards the streamer, mediated by the level of PSR.

Expertise: Expertise, another crucial element from the source-credibility model, expresses the ability of the source to be perceived as "qualified", "professional", "expert." Fashion bloggers draw a following through their regular exhibition of sophisticated fashion sense, a trend that has turned content-centric fashion blogging into a widespread phenomenon (McQuarrie, Miller, and Phillips, 2013). Similarly, in the realm of e-sports live streaming, a gamer's skill can captivate an audience, fostering a bond that may lead to purchasing behaviors(Weismueller et al., 2020). Recent research has stated that the characteristic of expertise exerts the strongest positive influence on purchase intention in e-commerce settings, underscoring the importance of this factor in the current investigation (Y. Guo, K. Zhang, and C. Wang, 2022).

- **H4:** Expertise of the streamer positively influences the level of PSR.

- **H4a:** Expertise of the streamer has a direct positive effect on gifting behaviour towards the streamer.

- **H4b:** Expertise of the streamer has an indirect positive effect on gifting behaviour towards the streamer, mediated by the level of PSR.

Attractiveness: The decision on inclusion of attractiveness in the source-attractiveness model was additionally driven by the growing significance of physical appearance, especially given the rising trend of using celebrities as promoters for products, services, and various social initiatives(Baker and Churchill Jr, 1977). Empirical evidence from studies employing the source-attractiveness model has created a link between streamer's attractiveness and the level of PSR(Gong and Li, 2017; Lee and Watkins, 2016; Sokolova and Kefi, 2020). These findings highlight that influencers who are considered physically or socially appealing tend to capture more attention and deeper engagement from consumers, which in turn cultivates a stronger level of PSR. Research has also demonstrated a correlation between physical attractiveness and outcomes in the labour market (Hamermesh and Biddle, 1993). In the e-sports live-streaming sector, streamers' appearance may draw in casual viewers and convert them into dedicated fans. It is widely believed that a pleasing appearance can bring significantly increased potential financial benefits to streamers. Thus, we proposed the following hypotheses: a streamer's attractiveness not only directly fosters a higher degree of PSR (H5) but also directly (H5a) and indirectly (H5b), through mediate PSR, influences the viewers' gifting behaviour.

- **H5:** Attractiveness of the streamer positively influences the level of PSR.

- **H5a:** Attractiveness of the streamer has a direct positive effect on gifting behaviour towards the streamer.

- **H5b:** Attractiveness of the streamer has an indirect positive effect on gifting behaviour towards the streamer, mediated by the level of PSR.

- **H6:** The level of PSR has a mediation effect on the viewers' gifting behaviour. This mediate assumption taking into account the indirect hypotheses from H1b to H5b, each one delineates a distinct pathway through which PSR mediates the relationship between selected constructs and viewers' gifting behaviour.

Figure 1 illustrates the research model, capturing the relationships and mediating effects posited in our hypotheses.
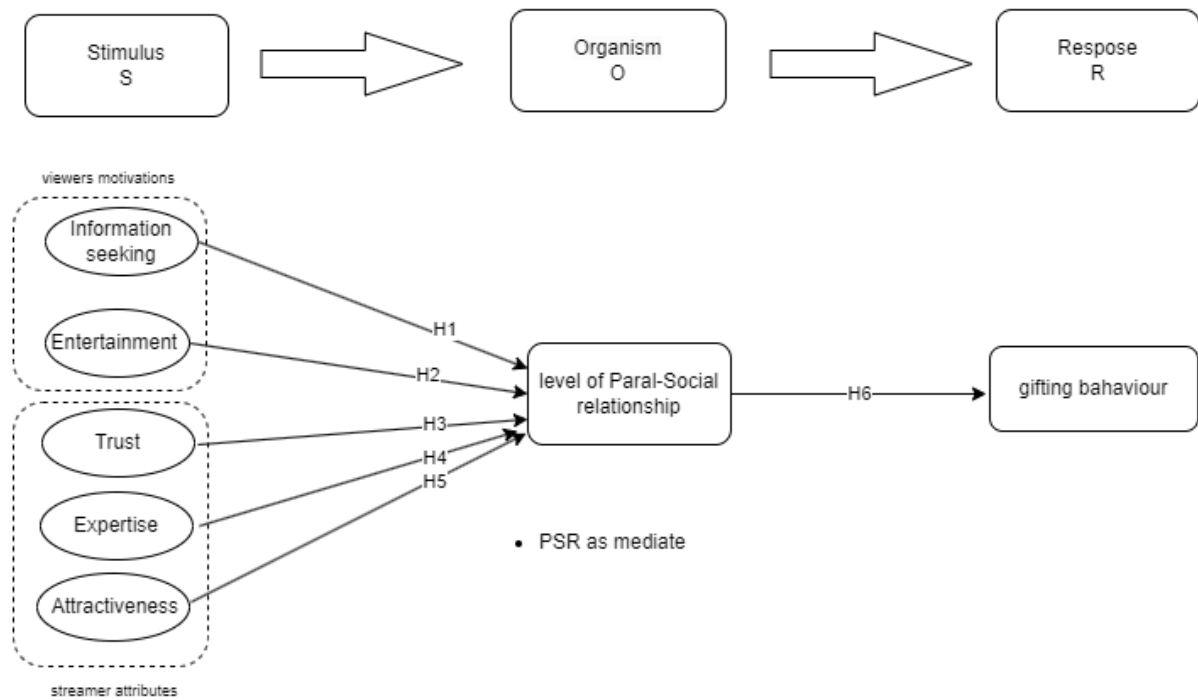

Figure 1.   Research model.

4   Methodology

4.1   Samples collection and characteristics

To validate the hypotheses proposed, an online survey was carried on in Wenjuanxing (https://www.wjx.cn) to online distribute questionnaires in mainland China to target participants. Wenjuanxing is China's largest cloud-based survey platform, widely implemented in different fields to access target populations and gain insight from representative samples. Data were gathered from Chinese individuals aged 18 and above who had watched e-sports live streams on various platforms. Each respondent was compensated with 1.50 RMB. A total of 342 valid questionnaires were collected. Responses were disqualified based on the following criteria: a) the respondent had no experience watching e-sports live streams; b) failure to answer the attention check question. The demographic breakdown of the valid sample was approximately 64% male (n=219) and 36% female (n=123), with ages ranging from 18 to 41 years. The age group of 18-25 years represented 51.17% of the sample, while those aged 26-41 years constituted 48.83%. Viewership of e-sport live streams was distributed across various platforms, with *Bilibili* accounting for 22.81% (n=78), *Douyin* for 21.05% (n=72) and *Huya* for 19.30% (n=66).

Within the group of participants, 26.61% (n=91) had never spent money on e-sports streamers. Conversely, 73.61% of the participants, engaged in various financial support to e-sports live streamers, including one-time subscriptions, monthly subscriptions, highlighted comments, virtual gifts, direct monetary transfers, and others. Within the rest 251 people, a majority of 73.39% spent between 1 to 900 RMB. A further 33.33% of the participants disbursed amounts ranging from 1,000 to 3,000 RMB. There was a singular outliner, accounting for just an individual sample contributed as much as 10,000 RMB to e-sports live streamers.

4.2 Measurements

We established and verified scales from previous studies (see **Table 1**) and associated sample mean (M) and standard deviation (SD). The measurement of viewers' motivations owns factors seeking information in five dimensions (Papacharissi and Rubin, 2000) and entertainment in four dimensions(Venkatesh, 2000). Meanwhile, the assessment of influence tactics included elements of trustworthiness, expertise, and attractiveness following the methodology of Ohanian (1990). The constructs for PSR were adopted by the work of (Reinikainen et al., 2020). Each question was evaluated using a 7-point Likert scale, labelled "1 = strongly disagree" and "7 = strongly agree".

Constructs (M, SD)	Items	Description	M	SD
Information seeking (5.20, 1.33)	IS_1	By watching the streams of my favourite esports streamer, I can better decide which game I want to play.	5.18	1.68
	IS_2	By watching the streams of my favourite esports streamer, I am better informed about topics I am interested in.	5.20	1.70
	IS_3	By watching the streams of my favourite esports streamer, I can better decide whether I want to play a particular game or not.	5.25	1.66
	IS_4	By watching the streams of my favourite esports streamer, I am better informed about new game strategies.	5.15	1.82
	IS_5	Watching the streams of my favourite esports streamer helps me to get information on learning how to play games.	5.25	1.73
Entertainment (5.21, 1.31)	Enter_1	I find watching live streams of my favourite esports streamer to be enjoyable.	5.20	1.68
	Enter_2	I find watching live streams of my favourite esports streamer to be interesting.	5.23	1.72
	Enter_3	Watching live streams of my favourite esports streamer is exciting..	5.17	1.74
	Enter_4	I have fun watching live streams of my favourite esports streamer.	5.23	1.64
Parasocial relationship (5.06, 1.33)	PSR_1	I think my favourite esports streamer is like an old friend.	5.13	1.77
	PSR_2	I think about my favourite esports streamer even when I am not online.	4.86	1.89
	PSR_3	I miss my favourite esports streamer if I do not see him for a long time.	5.04	1.81
	PSR_4	I feel that I know my favourite esports streamer very well.	4.97	1.87
	PSR_5	I would like to meet my favourite esports streamer in person.	4.93	1.85
	PSR_6	My favourite esports streamer makes me feel comfortable as if I am with friends.	5.13	1.79
	PSR_7	I look forward to watching my favourite esports streamer on his/her channel.	5.18	1.68
	PSR_8	If there was a story about my favourite esports streamer in a newspaper or magazine, I would read it.	5.21	1.75
Trust (5.10, 1.35)	trust_1	I believe my favourite esports streamer to be a reliable person.	5.12	1.72

	trust_2	I believe my favourite esports streamer to be an honest person.	5.10	1.76
	trust_3	I believe my favourite esports streamer to be a sincere person.	5.12	1.71
	trust_4	I believe my favourite esports streamer to be a trustworthy person.	5.08	1.73
Expertise (5.21, 1.30)	expert_1	I think my favourite esports streamer is an expert.	5.15	1.77
	expert_2	I think my favourite esports streamer is experienced.	5.29	1.66
	expert_3	I think my favourite esports streamer is competent.	5.11	1.69
	expert_4	I think my favourite esports streamer is qualified.	5.29	1.70
	expert_5	I think my favourite esports streamer is skilled.	5.20	1.73
Attractiveness (5.06, 1.34)	attract_1	I think my favourite esports streamer is attractive.	5.07	1.71
	attract_2	I think my favourite esports streamer is classy.	5.11	1.75
	attract_3	I think my favourite esports streamer is beautiful.	5.09	1.73
	attract_4	I think my favourite esports streamer is elegant.	5.04	1.79
	attract_5	I think my favourite esports streamer is sexy.	4.99	1.80
Gifting behaviour (5.20,1.79)	GF_1	How likely is it that you will financially support your favourite esports streamer in the future?	5.20	1.79

Table 1. Descriptive statistics of the measurements

4.3 Measurement Validation

A Confirmatory Factor Analysis (CFA) was proceeded in the partial least square structural equation modelling (PLS-SEM) approach. The main focus of the CFA is to examine each construct's reliability and validity through the different indicators. Strength of the relationship between an item and the underlying construct with Factor loadings, internal consistency with Cronbach's alpha and Composite Reliability (CR) and the Average Variance Extracted (AVE) for convergent validity (see **Table 2**). Cronbach's Alpha and CR with the recommended threshold of 0.7 are considered as good internal composite reliability (Chin, 1998), in the table range from [0.68,0.84], only one item slightly lower than the threshold and CR with the interval[0.85,0.91], which is acceptable; factor loadings above the benchmark value of 0.7 considered as strong relationship(Hair Jr et al., 2014), in table range from[0.77,0.88]; AVE value exceeds 0.5 threshold suggests to good convergent validity(Pavlou and Fygenson, 2006), in table lowest value 0.54. Besides, Values of the Variance Inflation Factor(VIF) numbers are used to assess multicollinearity within a regression model, the overall numbers in the analysis are between 1 and 2 indicating that there is very little multicollinearity among the predictor variables in your regression model(Shrestha, 2020). The model fit of SEM in the initial analysis round using the original PLS-SEM algorithm, was assessed with a Standardized Root Mean Square Residual (SRMR) of 0.052 and a Normed Fit Index (NFI) of 0.842. After applying the consistent PLS-SEM algorithm, which accounts for measurement inconsistencies and may provide more accurate estimates, we observed a notable improvement in fit indices: the SRMR decreased to 0.034, indicating a better fit with lower residuals, and the NFI increased to 0.907, suggesting a more satisfactory comparative fit to the model(Kline, 2023).

Constructs	Items	Cronbach's α	FL[a]	CR[b]	AVE[c]
Inforamtion seeking	IS_1	0.75			
	IS_2	0.81	0.83	0.88	0.59
	IS_3	0.77			
	IS_4	0.76			
	IS_5	0.76			
Entertainment	Enter_1	0.79			
	Enter_2	0.71	0.77	0.85	0.59
	Enter_3	0.77			
	Enter_4	0.81			
Parasocial relationship	PSR_1	0.78			
	PSR_2	0.71	0.88	0.91	0.54
	PSR_3	0.75			
	PSR_4	0.77			
	PSR_5	0.74			
	PSR_6	0.75			
	PSR_7	0.69			
	PSR_8	0.71			
Trust	trustworthy_1	0.77			
	trustworthy_2	0.77	0.79	0.86	0.61
	trustworthy_3	0.81			
	trustworthy_4	0.77			
Expertise	expert_1	0.75			
	expert_2	0.78	0.82	0.87	0.58
	expert_3	0.76			
	expert_4	0.80			
	expert_5	0.73			
Attractiveness	attract_1	0.68			
	attract_2	0.74	0.82	0.87	0.58
	attract_3	0.77			
	attract_4	0.84			
	attract_5	0.78			

Notes: a. Factor loadings for FL. b. Composite reliability for CR. c. Average variance extracted for AVE.

Table 2.   Constructs Reliability and Validity

4.4 Hypothesis testing

The proposed hypotheses employed Hayes's PROCESS macro within SPSS software to carry out a mediation analysis. This approach entailed executing multiple linear regression analyses to ascertain the conditional indirect effects. These effects were then verified using bias-corrected 95% confidence intervals(CIs) derived from 5,000 bootstrap samples (Hayes, 2017).

The mediation analysis was conducted not only to assess the indirect effects on the gifting behaviour via PSR (H6 included all sub-hypotheses H1b through H5b) but also to examine the direct influences on PSR (H1 to H5) and subsequently on the dependent gifting behaviour (sub-hypotheses H1a to H5a). The

analysis will develop in two stages: initially, it will examine the mediating effect of PSR on the outcome, considering only one construct at a time. Next, the analysis will incorporate one main construct alongside other constructs as covariates, again utilizing PSR as a mediator. The final step involves comparing results from both stages to draw conclusive insights.

Under single variable test setting:examining the viewers' motivation, information-seeking as an independent variable, PSR as the outcome.H1 demonstrated R^2 of 54.93%, $(F(1,340) = 414.41, p < .0001)$. The analysis showed that the coefficient for information-seeking was significant $(B = 0.7427, SE = 0.0365, p < .0001)$; gifting behaviour as the outcome. H1a demonstrated R^2 of 72.62%, $(F(2,339) = 449.56, p = .0001)$. The analysis showed that the coefficient for information-seeking was significant $(B = 0.2226, SE = 0.0571, p < .0001)$. Under including covariants test setting: H1 demonstrated R^2 of 73.77%, $(F(5,336) = 189.04, p = .0000)$, model significant. The analysis showed that the coefficient for information-seeking was not significant $(B = 0.0633, SE = 0.0555, p = 0.2550)$; gifting behaviour as the outcome. H1a demonstrated R^2 of 78.42%, $(F(6,335) = 202.92, p = .0000)$. The analysis showed that the coefficient for information-seeking was not significant $(B = 0.1020, SE = 0.0681, p = .1349)$. In the information-seeking set of tests, the influence of information-seeking is significant for both PSR and gifting behaviour. However, when covariates are included, information-seeking is not a significant factor in either PSR or gifting behaviour.

Under single variable test setting: examining the viewers' motivation, entertainment as an independent variable, PSR as the outcome.H2 demonstrated R^2 of 52.38%, $(F(1,340) = 373.92, p = .0000)$. Model significant. The analysis showed that the coefficient for entertainment was significant $(B = 0.7362, SE = 0.0381, p = .0000)$; gifting behaviour as the outcome. H2a demonstrated R^2 of 72.61%, $(F(2,339) = 449.27, p = .0000)$,model significant.The analysis showed that the coefficient for entertainment was significant $(B = 0.2187, SE = 0.0564, p = .0001)$.Under including covariants test setting: H2 demonstrated R^2 of 73.77%, $(F(5,336) = 189.04, p = .0000)$, model significant. The analysis showed that the coefficient for entertainment was marginally significant $(B = 0.0966, SE = 0.0498, p = 0.0503)$; gifting behaviour as the outcome. H2a demonstrated R^2 of 78.42%, $(F(6,335) = 202.92, p = .0000)$,model significant.The analysis showed that the coefficient for entertainment was not significant $(B = 0.0449, SE = 0.0612, p = 0.4642)$. Entertainment variable has a significant direct effect on both PSR and gifting behaviour in the single variable model, but when covariates are considered, the effects are not significant. Under single variable test setting: verifying the streamers' attributes, trustworthiness as an independent variable, PSR as the outcome.H3 demonstrated R^2 of 63.36%, $(F(1,340) = 587.84, p = .0000)$, model significant. The analysis showed that the coefficient for trustworthiness was significant $(B = 0.7830, SE = 0.0323, p = .0000)$; gifting behaviour as the outcome. H3a demonstrated R^2 of 74.39%, (F(2, 339) = 492.33, p = .0000), model significant.The analysis showed that the coefficient for trustworthiness was significant $(B = 0.3788, SE = 0.0602, p = .000)$.Under including covariants test setting: H3 demonstrated R² of 73.77%, $(F(5,336) = 189.04, p = .0000)$, model significant. The analysis showed that the coefficient for trustworthiness was significant $(B = 0.3406, SE = 0.0477, p = 0.0000)$; gifting behaviour as the outcome. H3a demonstrated R² of 78.42%, (F(6, 335) = 202.92, p = .0000),model significant.The analysis showed that the coefficient for trustworthiness was significant$(B = 0.2509, SE = 0.0626, p = .0001)$. In both versions, trustworthiness significantly predicts both PSR and gifting behaviour, with the strength of the relationship slightly decreasing when covariates are included in the model.

Under single variable test setting: verifying the streamers' attributes, expertise as an independent variable, PSR as the outcome.H4 demonstrated R^2 of 56.89%, $(F(1,340) = 448.62, p = .0000)$, model significant. The analysis showed that the coefficient for expertise was significant $(B = 0.7703, SE = 0.0364, p = .0000$; gifting behaviour as the outcome. H4a demonstrated R² of 71.44%, $(F(2,339) = 423.91, p = .0000)$,model significant.The analysis showed that the coefficient for expertise was not significant $(B = 0.0432, SE = 0.0608, p = 0.4780)$.Under including covariants test setting: H4 demonstrated R^2 of 73.77%, $(F(5,336) = 189.04, p = .0000)$, model significant. The analysis showed that the coefficient for expertise was significant $(B = 0.2215, SE = 0.0530, p = 0.0000)$; gifting behaviour as the outcome. H4a demonstrated R^2 of 78.42%, (F(6, 335) = 202.92, p = .0000),model significant.The analysis showed

that the coefficient for expertise was significant ($B = -0.2182, SE = 0.0665, p = .0011$). This set of testing shows that the streamers' perceived expertise significantly predicts PSR both with and without covariants. Interestingly, when examining the effect on gifting behaviour, expertise does not appear to be a significant factor in the single variable model (H4a), but it becomes significant when covariates are included, indicating an inverse relationship.

Under single variable test setting: verifying the streamers' attributes, attractiveness as an independent variable, PSR as the outcome. H5 demonstrated R^2 of 57.01%, ($F(1,340) = 450.90, p = .0000$), model significant. The analysis showed that the coefficient for attractiveness was significant ($B = 0.7491, SE = 0.0353, p = .0000$); gifting behaviour as the outcome. H5a demonstrated R² of 76.66%, ($F(2,339) = 556.72, p = .0000$), model significant. The analysis showed that the coefficient for expertise was significant ($B = 0.4677, SE = 0.0535, p = .0000$). Under including covariants test setting: H5 demonstrated R^2 of 73.77%, ($F(5,336) = 189.04, p = .0000$), model significant. The analysis showed that the coefficient for attractiveness was significant ($B = 0.2405, SE = 0.0451, p = 0.0000$); gifting behaviour as the outcome. H5a demonstrated R^2 of 78.42%, ($F(6,335) = 202.92, p = .0000$), model significant. The analysis showed that the coefficient for attractiveness was significant($B = 0.3950, SE = 0.0575, p = .0011$). The results suggest that attractiveness significantly predicts both PSR and gifting behaviour across both testing settings. **Table 3** includes all the data of direct hypothesis paths in both with and without covariants test setting.

Hypothesis paths	Without Covariates		With Covariates	
	Coeff	t-value	Coeff	t-value
H1:Information-seeking $\rightarrow$ PSR	0.74	20.36*	0.06	1.14ns
H2:Entertainment $\rightarrow$ PSR	0.74	19.34*	0.10	1.94ns
H1a: Information-seeking$\rightarrow$ GF	0.22	3.90*	0.10	1.50ns
H2a: Entertainment$\rightarrow$ GF	0.22	3.88*	0.04	0.73ns
H3:Trust $\rightarrow$ PSR	0.78	24.25*	0.34	7.15*
H4:Expertise $\rightarrow$ PSR	0.77	21,18*	0.22	4.18*
H5:Attractivness$\rightarrow$ PSR	0.75	21.23*	0.24	5.33*
H3a: Trust$\rightarrow$ GF	0.38	6.30*	0.26	4.01*
H4a: Expertise$\rightarrow$ GF	0.04	0.71ns	-0.22	-3.28**
H5a: Attractivness$\rightarrow$ GF	0.47	8.75*	0.40	6.88*

Notes: *$p <= .0001$, **$p < .01$, ns- Not Significant; GF-Gifting behaviour.

Table 3.   Direct effect comparison of H. Paths between with and without covariants.

When assessing the mediating effect of PSR, analyses were conducted under two conditions: with and without covariates. For H1b in the single variable testing mode, the effect was significant $B = 0.5356$, $SE = 0.0451$, $CI_{95\%} = [0.4442, 0.6225]$. When considering other covariates, the effect for H1b was $B = 0.0323$, $SE = 0.0337$ and $CI_{95\%} = [-0.298, 0.1023]$, indicating a non-significant effect.

For H2b in the single variable testing mode, the effect was significant $B = 0.5279$, $SE = 0.0383$, $CI_{95\%} = [0.4520, 0.6027]$. When considering other covariates, the effect for H2b was $B = 0.0485$, $SE = 0.0289$, and $CI_{95\%} = [-0.0036, 0.1091]$, indicating a non-significant effect.

For H3b in the single variable testing mode, the effect was significant $B = 0.4914$, $SE = 0.0413$, $CI_{95\%} = [0.4110, 0.5715]$. When considering other covariates, the effect for H3b was $B = 0.1769$, $SE = 0.0357$, and $CI_{95\%} = [0.1055, 0.2470]$, indicating a significant effect.

For H4b in the single variable testing mode, the effect was significant $B = 0.6194$, $SE = 0.0456$, $CI_{95\%} = [0.5278, 0.7079]$. When considering other covariates, the effect for H4b was $B = 0.1108$, $SE = 0.0328$, and $CI_{95\%} = [0.0474, 0.1745]$, indicating a significant effect.

For H5b in the single variable testing mode, the effect was significant $B = 0.4384$, $SE = 0.0545$, $CI_{95\%} = [0.3299, 0.5450]$. When considering other covariates, the effect for H5b was $B = 0.1238$, $SE = 0.0339$, and $CI_{95\%} = [0.0625, 0.1933]$, indicating a significant effect. **Table 4** summarized the mediation hypothesis paths of PSR under with and without covariants settings.

Hypothesis paths	Without Covariates			With Covariates		
	Effect	SE	95%CI	Effect	SE	95%CI
H1b:Information-seeking → PSR→ GF	0.54	0.05	[.44,.62]	0.03	0.03	[-.03,.10]^{ns}
H2b:Entertainment → PSR→ GF	0.53	0.04	[.45,.60]	0.05	0.03	[-.00,0.11]^{ns}
H3b:Trust→ PSR → GF	0.49	0.04	[.41,.57]	0.18	0.04	[.11,.24]
H4b:Expertise→ PSR → GF	0.62	0.05	[.53,.71]	0.11	0.03	[.05,.17]
H5b:Attractiveness → PSR → GF	0.44	0.05	[.33,.55]	0.13	0.03	[.06,.19]

Notes: 95%CI for 95% confidence intervall, ns- Not Significant

Table 4.   Mediation Analysis comparison of H. Paths between with and without covariants.

5 Discussion

This study has investigated both streamers' characteristics and viewers' motivations as main constructs, leveraging PSR's mediating role to assess its influence on gifting behaviour within the vibrant Chinese e-sports live-streaming area. Our analysis under two conditions with and without covariates, reveals different insights into this dynamic. Single variable analyses underscore the importance of 'information-seeking' and 'entertainment' to PSR, consistent with previous research. However, their predictive power wanes when other factors are introduced, suggesting a more complex interdependency than traditionally posited. Trustworthiness and attractiveness maintain their predictive strength across models, cementing their integral role in the marketing and engagement of live-streaming. Expertise, while a significant predictor of PSR, reveals an unexpected inverse relationship with gifting behaviour when covariates are considered, differ from other constructs and show a negative impact, challenging assumptions that expertise unequivocally positively drives viewer generosity. This nuanced finding implies that perceived self-sufficiency due to high expertise might dampen viewers' impetus to gift. This indicates the impact of expertise on viewer behaviour is more complex than initially hypothesized.

Our mediation analysis revealed that PSR serves as a significant channel for the effects of viewers' motivations:information-seeking and entertainment on gifting behaviour in the absence of other variables. This finding underscores the mediating role of PSR in translating viewer engagement into spent money actions. However, when additional covariates were accounted for, these indirect paths did not maintain their significance, suggesting that the mediating effect of PSR is contingent upon the broader context of the streaming environment. These results invite a deeper examination of the factors that may moderate or mediate the relationship between viewers' motivations and their gifting behaviour. Conversely, the streamers' attributes, including trustworthiness, expertise, and attractiveness, consistently demonstrate significant effects on PSR across all conditions. This consistency suggests a stable influence of streamer attributes on PSR, reinforcing their foundational importance in live-streaming commerce and the viewer-streamer relationship within the digital engagement landscape.

The study encounters several limitations. Firstly, the survey's design is constrained by relying on a single item with a 7-point scale to measure gifting behaviour. Despite a significant positive correlation ($Pearson's r = 0.463, p < .001$) between past and intended future spending on streamers, this solitary item poses risks to the robustness of the model. Additionally, the omission of control variables such as gender, age, education, and geographic location could introduce bias. Furthermore, the discriminant validity assessed by the Heterotrait-Monotrait Ratio Matrix (HTMT) criterion is sub-optimal, with nine items

exceeding the threshold of 0.9 (Cheung et al., 2023), suggesting potential overlap between constructs and casting doubt on the distinctiveness of our measures. These issues could potentially impact the validity of our findings.

6 Conclusion

Despite some methodological limitations, this study has conclusively highlighted the importance of streamers' characteristics, particularly attractiveness and trustworthiness, in affecting viewer behaviour. Expertise has revealed a complex and varied influence that diverges from previous studies, indicating the intricacy of this attribute. Additionally, the research confirms that viewers' motivations significantly impact both the level of PSR and gifting behaviour, thus deepening our understanding of the reasons for gifting behaviour within the Chinese e-sports live-streaming community.

7 Theoretical and practical Implications

Theoretically, this study reaffirms the U&G theory and Source Credibility model's application, illustrating their relevance in a mediated context with PSR. It integrates these theories to enhance understanding, especially within the unique context of China's e-sports live-streaming environment.

Practically, the findings advocate for streamers and platforms to prioritize trust and attractiveness as key strategies for boosting engagement and revenue. For future studies, a more comprehensive set of control variables is recommended to sharpen these findings. Additionally, a deeper examination of the role of expertise and more complex models could further elucidate the nuances of viewer-streamer interactions and financial support behaviours.

References

Asbury-Kimmel, V., K.-C. Chang, K. T. McCabe, K. Munger, and T. Ventura (2021). "The Effect of Streaming Chat on Perceptions of Political Debates." *Journal of Communication* 71 (6), 947–974.

Aw, E. C.-X. and S. H.-W. Chuah (2021). ""Stop the unattainable ideal for an ordinary me!" fostering parasocial relationships with social media influencers: The role of self-discrepancy." *Journal of Business Research* 132, 146–157.

Baker, M. J. and G. A. Churchill Jr (1977). "The impact of physically attractive models on advertising evaluations." *Journal of Marketing research* 14 (4), 538–555.

Chang, P.-C. (2023). "Investigating the discrepancy between motivation and live-streaming media usage through the analysis of user engagement." *International Journal of Mobile Communications* 21 (2), 203–224.

Chau, C. (2010). "YouTube as a participatory culture." *New directions for youth development* 2010 (128), 65–74.

Chen, C.-C. and Y.-C. Lin (2018). "What drives live-stream usage intention? The perspectives of flow, entertainment, social interaction, and endorsement." *Telematics and Informatics* 35 (1), 293–303.

Chen, C.-P. (2021). "Digital gifting in personal brand communities of live-streaming: fostering viewer–streamer–viewer parasocial relationships." *Journal of Marketing Communications* 27 (8), 865–880.

Cheung, G. W., H. D. Cooper-Thomas, R. S. Lau, and L. C. Wang (2023). "Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations." *Asia Pacific Journal of Management*, 1–39.

Chin, W. W. (1998). *Commentary: Issues and opinion on structural equation modeling.*

Chong, H. X., A. H. Hashim, S. Osman, J. L. Lau, and E. C.-X. Aw (2023). "The future of e-commerce? Understanding livestreaming commerce continuance usage." *International Journal of Retail & Distribution Management* 51 (1), 1–20.

Chung, S. and H. Cho (2017). "Fostering parasocial relationships with celebrities on social media: Implications for celebrity endorsement." *Psychology & Marketing* 34 (4), 481–495.

Clement Addo, P., J. Fang, A. O. Asare, and N. B. Kulbo (2021). "Customer engagement and purchase intention in live-streaming digital marketing platforms." *The Service Industries Journal* 41 (11-12), 767–786.

Eggert, M. and J. Weber (2023). "What drives the purchase decision in Instagram stores?"

Falgoust, G., E. Winterlind, P. Moon, A. Parker, H. Zinzow, and K. C. Madathil (2022). "Applying the uses and gratifications theory to identify motivational factors behind young adult's participation in viral social media challenges on TikTok." *Human Factors in Healthcare* 2, 100014.

Gong, W. and X. Li (2017). "Engaging fans on microblog: the synthetic influence of parasocial interaction and source characteristics on celebrity endorsement." *Psychology & Marketing* 34 (7), 720–732.

Gu, Y., X. Cheng, and J. Shen (2023). "Design shopping as an experience: Exploring the effect of the live-streaming shopping characteristics on consumers' participation intention and memorable experience." *Information & Management* 60 (5), 103810.

Guan, Z., F. Hou, B. Li, C. W. Phang, and A. Y.-L. Chong (2022). "What influences the purchase of virtual gifts in live streaming in China? A cultural context-sensitive model." *Information Systems Journal* 32 (3), 653–689.

Guo, L., X. Hu, J. Lu, and L. Ma (2021). "Effects of customer trust on engagement in live streaming commerce: mediating role of swift guanxi." *Internet Research* 31 (5), 1718–1744.

Guo, Y., K. Zhang, and C. Wang (2022). "Way to success: understanding top streamer's popularity and influence from the perspective of source characteristics." *Journal of Retailing and Consumer Services* 64, 102786.

Hair Jr, J. F., M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser (2014). "Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research." *European business review* 26 (2), 106–121.

Hamermesh, D. S. and J. Biddle (1993). *Beauty and the labor market*.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

Hilvert-Bruce, Z. et al. (2018). "Social motivations of live-streaming viewer engagement on Twitch." *Computers in Human Behavior* 84, 58–67.

Homans, G. C. (1958). "Social behavior as exchange." *American journal of sociology* 63 (6), 597–606.

Horton, D. and R. Richard Wohl (1956). "Mass communication and para-social interaction: Observations on intimacy at a distance." *psychiatry* 19 (3), 215–229.

Hou, F., Z. Guan, B. Li, and A. Y. L. Chong (2020). "Factors influencing people's continuous watching intention and consumption intention in live streaming: Evidence from China." *Internet Research* 30 (1), 141–163.

Hovland, C. I., I. L. Janis, and H. H. Kelley (1953). "Communication and persuasion."

Hsu, C. L. and J. C.-C. Lin (2023). "The effects of gratifications, flow and satisfaction on the usage of livestreaming services." *Library Hi Tech* 41 (3), 729–748.

Kaytoue, M., A. Silva, L. Cerf, W. Meira Jr, and C. Raïssi (2012). "Watch me playing, I am a professional: A first study on video game live streaming." In: *Proceedings of the 21st international conference on world wide web*, pp. 1181–1188.

Kline, R. B. (2023). *Principles and practice of structural equation modeling*. Guilford publications.

Ko, H., C.-H. Cho, and M. S. Roberts (2005). "Internet uses and gratifications: A structural equation model of interactive advertising." *Journal of advertising* 34 (2), 57–70.

Kowert, R. and E. Daniel Jr (2021). "The one-and-a-half sided parasocial relationship: The curious case of live streaming." *Computers in human behavior reports* 4, 100150.

Labrecque, L. I. (2014). "Fostering consumer–brand relationships in social media environments: The role of parasocial interaction." *Journal of interactive marketing* 28 (2), 134–148.

Ledbetter, A. M. and C. Meisner (2021). "Extending the personal branding affordances typology to parasocial interaction with public figures on social media: Social presence and media multiplexity as mediators." *Computers in Human Behavior* 115, 106610.

Lee, J. E. and B. Watkins (2016). "YouTube vloggers' influence on consumer luxury brand perceptions and intentions." *Journal of Business Research* 69 (12), 5753–5760.

Lin, Y., D. Yao, and X. Chen (2021). "Happiness begets money: Emotion and engagement in live streaming." *Journal of Marketing Research* 58 (3), 417–438.

Liu, H., K. H. Tan, and K. Pawar (2022). "Predicting viewer gifting behavior in sports live streaming platforms: The impact of viewer perception and satisfaction." *Journal of Business Research* 144, 599–613.

Lou, C. and H. K. Kim (2019). "Fancying the new rich and famous? Explicating the roles of influencer content, credibility, and parental mediation in adolescents' parasocial relationship, materialism, and purchase intentions." *Frontiers in psychology* 10, 2567.

McGuire, W. J. (1985). "Chapter attitudes and attitude change." *Handbook of social psychology*, 233–346.

McQuarrie, E. F., J. Miller, and B. J. Phillips (2013). "The megaphone effect: Taste and audience in fashion blogging." *Journal of consumer research* 40 (1), 136–158.

Mehrabian, A. and J. A. Russell (1974). *An approach to environmental psychology.* the MIT Press.

Ohanian, R. (1990). "Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractiveness." *Journal of advertising* 19 (3), 39–52.

Ooi, K.-B., V.-H. Lee, J.-J. Hew, L.-Y. Leong, G. W.-H. Tan, and A.-F. Lim (2023). "Social media influencers: An effective marketing approach?" *Journal of Business Research* 160, 113773.

Papacharissi, Z. and A. M. Rubin (2000). "Predictors of Internet use." *Journal of broadcasting & electronic media* 44 (2), 175–196.

Pavlou, P. A. and M. Fygenson (2006). "Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior." *MIS quarterly*, 115–143.

Reinikainen, H., J. Munnukka, D. Maity, and V. Luoma-Aho (2020). "'You really are a great big sister'– parasocial relationships, credibility, and the moderating role of audience comments in influencer marketing." *Journal of marketing management* 36 (3-4), 279–298.

Rubin, A. M. (2009). "Uses-and-gratifications perspective on media effects." In: *Media effects*. Routledge, pp. 181–200.

Scheibe, K., K. J. Fietkiewicz, and W. G. Stock (2016). "Information behavior on social live streaming services." *Journal of Information Science Theory and Practice* 4 (2), 6–20.

Shrestha, N. (2020). "Detecting multicollinearity in regression analysis." *American Journal of Applied Mathematics and Statistics* 8 (2), 39–42.

Sjöblom, M. and J. Hamari (2017). "Why do people watch others play video games? An empirical study on the motivations of Twitch users." *Computers in human behavior* 75, 985–996.

Sokolova, K. and H. Kefi (2020). "Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions." *Journal of retailing and consumer services* 53, 101742.

Stafford, T. F., M. R. Stafford, and L. L. Schkade (2004). "Determining uses and gratifications for the Internet." *Decision sciences* 35 (2), 259–288.

Statista (2023a). *Number of live streaming users in China from 2016 to June 2023*. Source: CNNIC. Survey: 52nd Statistical Report on China's Internet Development. URL: https://www.statista.com/statistics/1061708/china-online-streaming-user-number/.

— (2023b). *Usage rate of live streaming among the internet users in China from 2016 to June 2023*. Source: CNNIC. Survey: 52nd Statistical Report on China's Internet Development. Published by: CNNIC. URL: https://www.statista.com/statistics/1204156/china-online-streaming-penetration-rate/.

Steidlmeier, P. (1999). "Gift giving, bribery and corruption: Ethical management of business relationships in China." *Journal of business ethics*, 121–132.

Stephen, A. T. and O. Toubia (2010). "Deriving value from social commerce networks." *Journal of marketing research* 47 (2), 215–228.

Tolbert, A. N. and K. L. Drogos (2019). "Tweens' wishful identification and parasocial relationships with YouTubers." *Frontiers in psychology* 10, 2781.

Tong, X., Y. Chen, S. Zhou, and S. Yang (2022). "How background visual complexity influences purchase intention in live streaming: The mediating role of emotion and the moderating role of gender." *Journal of Retailing and Consumer Services* 67, 103031.

Twitch Advertising: Audience (2023). 28/10/2023. URL: `https : / / twitchadvertising . tv / audience/`.

Venkatesh, V. (2000). "Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model." *Information systems research* 11 (4), 342–365.

Wang, J. and J. I. Oh (2023). "Factors Influencing Consumers' Continuous Purchase Intentions on TikTok: An Examination from the Uses and Gratifications (U&G) Theory Perspective." *Sustainability* 15 (13), 10028.

Weismueller, J., P. Harrigan, S. Wang, and G. N. Soutar (2020). "Influencer endorsements: How advertising disclosure and source credibility affect consumer purchase intention on social media." *Australasian marketing journal* 28 (4), 160–170.

Wulf, T., F. M. Schneider, and J. Queck (2021). "Exploring viewers' experiences of parasocial interactions with videogame streamers on twitch." *Cyberpsychology, Behavior, and Social Networking* 24 (10), 648–653.

Zhang, P., C.-W. F. Chao, R. Chiong, N. Hasan, H. M. Aljaroodi, and F. Tian (2023). "Effects of in-store live stream on consumers' offline purchase intention." *Journal of Retailing and Consumer Services* 72, 103262.

Zhang, W. (2022). "Understanding gift-giving in game live streaming on Douyu: An evaluation of PSR/social presence." *Frontiers in Psychology* 13, 953484.

Zheng, S., J. Chen, J. Liao, and H.-L. Hu (2023). "What motivates users' viewing and purchasing behavior motivations in live streaming: A stream-streamer-viewer perspective." *Journal of Retailing and Consumer Services* 72, 103240.

Zheng, X., J. Men, L. Xiang, and F. Yang (2020). "Role of technology attraction and parasocial interaction in social shopping websites." *International Journal of Information Management* 51, 102043.