

Streamer-Interface-Viewer Entanglement in Popular Chinese Social Media Apps

An Analysis of the Discursive and Affective Live-Streaming Chatroom Interfaces

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MedieKultur 2021, 70, 131-150

Published by SMID | Society of Media researchers In Denmark | www.smid.dk

The online version of this text can be found open access at www.mediekultur.dk

Abstract

In China, the live-streaming industry has a distinctive model of cultural production: showroom live-streaming. It is often adopted by social media platforms to complement other social networking activities. This study reveals the ways in which social media platforms (specifically, Douyin and Momo) design their showroom live-streaming interfaces and affordances to normalise and commodify the affective interactions between female streamers and their male viewers and to establish a gendered power relationship. Using the walkthrough method during two stages of the apps (entry to live-streaming chatrooms and the everyday use of live-streaming chatrooms), this study analyses various affordances regarding their functional, sensory, and cognitive impacts on users. This research thereby demonstrates that the live-streaming interface design constructs two types of subject positions. The ideal user is constructed as a heterosexual male, who is empowered through the consumption of virtual gifts; in contrast, the interface nudges the female streamers to conduct emotional labour and deliver implicitly sexualised performances to maintain an affective relationship with viewers.

Keywords

Interface, live-streaming, user, gender, social media

Introduction

Streaming, by its technical definition, refers to “the transmission and retrieval of digital content that is stored and processed on a remote server” (Spilker & Colbjørnsen, 2020). Live-streaming adds a synchronous dimension to the transmission of audio-visual content. The most well-known live-streaming platform in Western contexts is Twitch, which is mainly dedicated to gaming (Taylor, 2018). Twitch is recognised as a topic-specific live-streaming service, different to social live-streaming platforms such as YouNow that have a wide range of content generated by users (Meisner & Ledbetter, 2020; Scheibe, Fietkiewicz, & Stock, 2016).

In the Chinese market, live-streaming technology has been adopted in a similar manner (Huya and other gaming-specific live-streaming platforms can be seen as counterparts of Twitch). However, it also features distinctive business models that are embedded in the socio-cultural conditions of Chinese society. The 45th Statistical Report on China’s Internet Development Status shows that there were 560 million live-streaming users as of March 2020 (CNNIC, 2020). Of these users, 28.7 pct. watched gaming-specific live-streaming, 29.3 pct. watched e-commerce live-streaming, and 39.5 pct. watched entertainment live-streaming. The entertainment sector of China’s live-streaming industry is known as showroom live-streaming (*xiuchang zhibo*), and it features content ranging from singing and dancing to everyday-life activities such as chatting and eating. In this sector, content producers are mostly young women, while the viewers are predominantly men. It has grown into a lucrative entertainment sector currently worth around 16.3 billion U.S. dollars, according to Thomala (2020). Showroom live-streaming content is normally created and circulated on social media platforms to complement other forms of social networking services; it does not typically have a specific platform devoted to all forms of showroom live-streaming. In other words, the business model of showroom live-streaming is based on the infrastructure of social media platforms and integrated into what Craig and Cunningham (2019) term “social media entertainment” (SME), playing a supplementary but crucial role to other social networking activities. This research focuses on two of the leading social media platforms that contain showroom live-streaming content – Douyin and Momo – to explore the showroom live-streaming interface design and its relationship to user engagement.

Douyin was launched in China in 2016 and entered the global market under the name of TikTok in 2017. Owned by ByteDance, both apps are used to browse and share short video clips ranging from 15 seconds to a few minutes. The videos contain diverse content such as people singing, performing magic tricks, and playing with pets. However, the two apps exist in radically different markets: While TikTok became popular amongst an international user base after acquiring Musical.ly, a music lip-synching short video platform, Douyin is rooted in China’s local social media ecosystem and the influencer culture (Kaye, Chen, & Zeng, 2020). Douyin introduced the live-streaming function and started to incor-

porate it with e-commerce in 2018, enabling content creators to profit from advertising and followers' direct donations of virtual gifts.

Compared to Douyin, Momo has a longer history of participating in the live-streaming industry. Originally built in 2011, it started as a geolocation-based dating and social networking platform. Momo included a live-streaming function into its service in 2015. The combination of social networking and live-streaming has become key to Momo's success in China's live-streaming industry, helping the platform to have reached 108 million monthly active users, according to China Internet Watch (2020). Moreover, the live-streaming function has become Momo's core growth engine: Momo's live-streaming revenue accounted for 79 pct. of its income in 2016, nearly tripled in 2017, rose 41 pct. in 2018, and grew another 15 pct. in 2019 (Sun, 2020). It is worth noting that Momo's success, especially in the sector of showroom live-streaming, is highly dependent on its gendered labour force – according to the 2018 annual report published by Momo, women constituted 78.8 pct. of the workforce, while over 60 pct. of the viewers were men. Momo currently aims to increase the visibility of its female streamers in the offline world by hosting concerts or fan conventions for them and cultivating them as well-rounded professional talents for the television and film industry.

Although these two platforms have different core business models, the technical structure and the interface design of their live-streaming sections are extremely similar. Prior research has primarily focused on the technical structures and the monetisation mechanisms of China's live-streaming industry. For instance, Zou (2018) analysed several technical features (including gift donation and ranking) to articulate how the live-streaming industry capitalises on users' affective engagement and creates a constant process of value production. Following the same line of argument, Zhang et al. (2019) examined the virtual gifting function, through which viewers use the in-app currency to purchase virtual gifts on platforms and donate them to streamers in live-streaming chatrooms. Collectively, they unveiled how live-streaming platforms' infrastructure and algorithms nudge content monetisation. Their research provides useful insights into how content production in live-streaming has become a profit-driven practice in the digital economy.

However, discussion of the live-streaming users' cognitive, emotional, and bodily experiences, elicited by their engagement with the interfaces, has been neglected in existing research. Thus, this study aims to draw attention to the interface design of showroom live-streaming and how streamer-interface-viewer entanglement is produced. The study seeks to answer the following research questions: How does the interface shape and normalise certain types of affective engagement between streamers and viewers? Additionally, how does the interface afford different subject positions?

Data for examining the interface and affordances in this research result from conducting the walkthrough method (Light, Burgess, & Duguay, 2016) and netnographic observation on Douyin and Momo. Using step-to-step observation and documentation of these two apps, this study examines showroom live-streaming interfaces and affordances

during two stages: entry to live-streaming chatrooms and the everyday use of live-streaming chatrooms. The affordances – real-time comments, virtual gifting, competitions (*pk*), and subscription – are examined using Stanfill's (2014) framework of discursive interface analysis, which surveys the functional, sensory, and cognitive impacts on users. The analysis reveals how affordances are incorporated into the showroom live-streaming interfaces. This study argues that the interface design normalises certain affective interactions and creates a gendered power relationship between female streamers and their male viewers. The gendered and implicitly sexualised overtones of the design of showroom live-streaming interfaces can influence the subjectivities of the streamers and the viewers.

Why Does the Interface Matter?

The term interface originates in the field of Human-Computer Interaction; when considering the interface, researchers in media studies focus on the configuration of human activities and the screen-based and device-driven affordances (Drucker, 2011). Affordance – a concept developed by Gibson (1979), a cognitive and ecological psychologist – is what the environment offers, provides or furnishes to animals and human agents. Affordance is a relational concept: It is grounded within an object's material form, but it is also recognised and realised through an agent's identification and sense-making (Scarlett & Zeilinger, 2019). As it concerns both humans' subjective experiences and the material and the mediated environment, this conceptualisation of affordances resonates with what Galloway (2012) describes as "the interface effect". Galloway asserts that the computer or the machine is an ethic because "it is premised on the notion that objects are subject to definition and manipulation according to a set of principles for action" (2012, p. 23). Accordingly, the interface comes in as an effect: a process of active mediation between the self and the world.

Unlike Gibson's conceptualisation of affordance, which emphasises interactions and relationality, Norman (1999) adapted this term in the field of design and proposed an object-centric and user-centred perspective. He regards the affordance as something with which a designer imbues an object in order to guide and channel (some might say to control and limit) that which a user perceives as the object's uses and function and, consequently, the uses which a user can imagine to be possible (Scarlett & Zeilinger, 2019, p. 11). Norman's account of affordance as "by design" has been widely applied to digital artefacts and environments and has triggered discussion around the production and use of technologies, particularly regarding the power relationship between designers and users.

Regarding the power of the interface, instead of observing what is controlled and limited, Stanfill (2014) proposes a productive power approach. Her approach applies Foucault's idea of "normativity" to examine what is possible on websites and how technological features construct norms of use. To Stanfill, the website interface is an environment that affords a sequence of interactions, grounded in various affordances that influence

the sense-making of users. In other words, similar to the material environment that people inhabit, the interface is a mediated environment that channels people's actions in certain directions and helps establish social behavioural norms. Like Stanfill, yet with a greater focus on users, Nagy and Neff (2015) argue that what people *imagine* a communication technology is for shapes how they approach the technology and what actions they think are suggested. They propose the concept of *imagined affordances* to describe a mediated, material, and affective process that is commonly shaped by users' social experiences and expectations, the functionality of technologies, and the intentions of designers. Importantly, Nagy and Neff's concept focuses both on the materiality of communication technologies and the affective states of users. According to them, *imagined affordances* necessitate an investigation of users' imaginations, perceptions, and unconscious emotional experiences, or say affect, towards technologies.

Following their reasoning, this study firstly recognises the interface as a mediated environment where users, as social and cultural beings, consciously make sense of what they interact with. Secondly, the interface is an affective environment that hosts interactions between human and technical features, generating unconscious emotions. These emotional experiences may influence users' physical bodies. In her research on reality television, Kavka (2014, p. 462) indicates that affective flows cannot be detached from physically situated bodies on either side of the screen because the space–time locations enable the bodies to occupy a material environment that stages the possibility of their present and future affective encounters. In the case of showroom live-streaming, the physically situated bodies of the streamers and the viewers – as well as their engagement with the affordances – are bound together by the interfaces.

The User, the Spectator, the Subject

Interfaces mediate the relationship between humans and technologies. Humans involved in this process are always referred to as “users”. The adoption of the term “users” constitutes an important move in the field of Human-Computer Interaction, which abolishes the idea of “human factors” and adopts the concept of “human actors” in the design process. According to Bannon (1995), if humans are actors in the design process, this indicates that a computational system depends on the users to articulate their requirements, ultimately acting on a variety of specialised options provided by the system design team. Bannon asserts that identifying humans as “users” places emphasis on actions and indicates users' decision-making and agency.

However, the concept of the “user” is also challenged from the same perspective of agency. White (2006, p. 9) argues that “the concept of the user and Internet use, which suggests that something is put into service and employed” is problematic. An active and empowered Internet user, who is in control of the interface and moves actively in Internet spaces, is a fake premise because computer settings and design adopt different visual

and textual strategies to render this idea of empowerment while downplaying the limitations on the level of materiality. She proposes borrowing the term “spectator” from film studies to understand how individuals observe representations that are acknowledged or displayed on the interface and make sense of the setting and their experiences through narratives and rendering. White (2016, pp. 6-7) states:

Spectatorial positions do not exactly describe the experience of any individual, but all viewers are addressed and shaped by media forms. Spectatorship indicates the processes of watching and listening, identification with characters and images, the various values with which viewing is invested, and how these ideas continue even after the spectator has stopped viewing. [...] In Internet and computer viewing, the forms of spectatorship articulated by the technologies and representations are constantly acted out by using the system.

To further explain why White applies the term “spectators” to Internet users, it is necessary to understand cinematic spectatorship, which addresses a particular relationship between subjectivity and film-viewing. Rushton (2009) writes about the physical participation of the spectators’ bodies and senses in the film-viewing process. He terms this “Deleuzian spectatorship”, characterised by “non-reflexive, passive, uncritical responsiveness” in the mode of immersion, where “the film comes out to the spectator so as to surround and envelop her/him” (Rushton, 2009, p. 49). In the process, the subject is formed by the experience of film-viewing. The involvement of material bodies and sensations complicates the relationship between the beholder of the subject (film viewers) and the object (the cinema) as this indicates a dialectic subject–object interaction.

In White’s account, Internet spectators are self-affirmed as subjects through their embodied interaction with the interface, while their subjectivities are also transformed in the process of viewing and identifying with the bodies and representations that are rendered by the interface in particular ways. This study was conducted in 2006, some years before smartphones became the most used devices to access the Internet. Smartphone interfaces afford haptic contact and physical gestures, enabling users to be mentally and physically evolved. According to Szita (2020), smartphone spectatorship combines two distinct capacities of smartphone users: Viewing and consuming require not only perceptual, mental, and bodily abilities but also the knowledge and desire to participate in the production, distribution, and access of content. The term “spectator”, however, risks obscuring users’ activity and agency, as it emphasises the effect of the interface on material bodies, sensations, and the configuration of subjectivities.

The graphic and haptic features of the interface create interactions between users and screens. Johanna Drucker (2011) expresses concerns over the descriptive understanding of the principles and properties of the interface in research: “Interface theory has to take into account the user/viewer, as a situated and embodied subject, and the affordances of a graphic environment that mediates intellectual and cognitive activities” (Drucker, 2011,

p. 8). In interface research, both the sensational and embodied experience and the semantic and cognitive capacities of users should be considered. Drucker proposes substituting the idea of a “user” for that of a “subject” in response to constructivist models of the subject in literary, media, and visual studies. This approach opens possibilities to reconceptualise an autonomous user as a constituted subject created through the process of interacting with and reading the interface.

Drawing on this critical examination of the concept of users, this study defines show-room live-streaming viewers and streamers as situated and embodied subjects. Their real-time engagement with the live-streaming interfaces is primarily based on their cognitive interpretation of different functional features that are presented graphically. Moreover, their interactions with interfaces also enable intrusion on the sensational level. The cognitive, bodily, and emotional experiences of the live-streaming users may account for the construction of their subject positions.

Methodology

For this study, two social media platforms – Douyin and Momo – were chosen as the sites for observation and examination. As mentioned previously, they cannot be identified as live-streaming specific platforms because the core services of their business are short-video sharing and geolocation-based dating, respectively. Nonetheless, live-streaming has become an important feature that is incorporated into the mobile apps of both platforms.

Examining apps is a challenging task for humanities researchers. Apps represent a technical closed-off environment where data queries can typically only be done through APIs. In response to this challenge, Light et al. (2016) developed a method – the walk-through method – to analyse mobile apps by focusing on their embedded relationship with the wider socio-cultural environment, without neglecting their technological features or data outputs. Adopting a step-to-step walkthrough method allows the researcher to “make explicit the otherwise implicit and (by design) apparently seamless process of engaging with a digital media object – and they can give away hidden affordances and tricks” (Light et al., 2016, p. 6). In addition to examining apps’ material influences, Light et al. (2016) believe that the walkthrough method could enable the researcher to embody the user’s position and imagine with a critical eye the range of affordances that the user perceives. The walkthrough method resonates with the conceptual approach adopted here, which perceives the interface as a mediated environment that has a discursive and affective impact on material bodies. Therefore, in this study, the researcher conducted a walkthrough-inspired observation by accessing the apps of Douyin and Momo that are installed on her device.

Regarding the data-gathering procedure, Light et al. (2016) propose investigating three common and interconnected stages during the walkthrough: registration and entry,

everyday use, and suspension, closure, and leaving. In this study, given the specific focus on the showroom live-streaming interfaces and affordances, the researcher gathered data for analysis in two stages during the walkthrough – entry to live-streaming chatrooms and the everyday use of live-streaming chatrooms – instead of conducting a walkthrough of all the stages and features of Douyin and Momo. A walkthrough of the apps' entries to their live-streaming chatrooms provides insight into how these two platforms position their live-streaming services and the relationships between live-streaming and other features on the apps. Observing the everyday use of live-streaming chatrooms provides valuable data of “what activities [live-streaming] enables, limits and guides users towards” (Light et al., 2016, p. 15). Leaving the live-streaming chatrooms simply directs the users back to the home page on both apps, so the examination of this stage is left out.

Besides the walkthrough method, this study also employs a netnography approach (Kozinets, 2015) to record and observe the activities that occur in live-streaming chatrooms. This approach has been found useful to reveal interaction styles, online rules and practices, and communal exchanges in the field of social media research (Kozinets, 2015). From November 2019 to May 2020, the researcher watched live-streaming content produced by 20 selected accounts on Douyin and Momo as they occurred in real-time. These accounts were selected by browsing a secondary website devoted to listing the most influential streamers in China's live-streaming industry and by using the apps' “recommendation” feature. The data collected encompassed real-time comments from the viewers, virtual gifting interactions, and the performative self-presentation of female streamers. While the sample of 20 female streamers analysed in this study might not be representative of the showroom live-streaming sector, it offers a valuable starting point. Netnographic observation provides the researcher with a glimpse into general patterns of interactions between the female streamers and their viewers as well as their engagement with the technical artefacts on the two apps.

Data for analysing the interface design were documented using screen captures. Although the selected live-streaming chatrooms are publicly accessible, the research conforms to the ethical guidelines of Internet research (Markham & Buchanan, 2012) for the usage of social media content. The researcher altered the screenshot material by covering the streamers' faces and removing personal information, such as account names, that could be used to identify the streamers. After data collection through the walkthrough method and ethnographic observation, Stanfill's discursive interface analysis (2014) was used to organise and analyse the data. Discursive interface analysis focuses on the functional affordances, sensory affordances (placement, colour, and motion), and cognitive affordances (how features are classified and explained) on the websites. In this study, the discursive interface analysis approach was used to analyse the showroom live-streaming app-interface on Douyin and Momo, with a specific focus on how different features exert a functional, sensory, and cognitive impact on users. An examination of how streamers and viewers engaged with these features helps to illustrate how the showroom live-

streaming interface design formulates two types of subject positions: one of the female streamers, and another of the spectators.

Analysis and Discussion

Entry to the Live-Streaming Chatrooms

Once the user enters the homepage of Douyin, the interface shows a short video, usually one of the most popular videos on the platform or a video relevant to the user's browsing history, under the recommendation section. From there, users can swipe up and down to change the content, or they can swipe right and left to visit other sections (see Fig. 1).

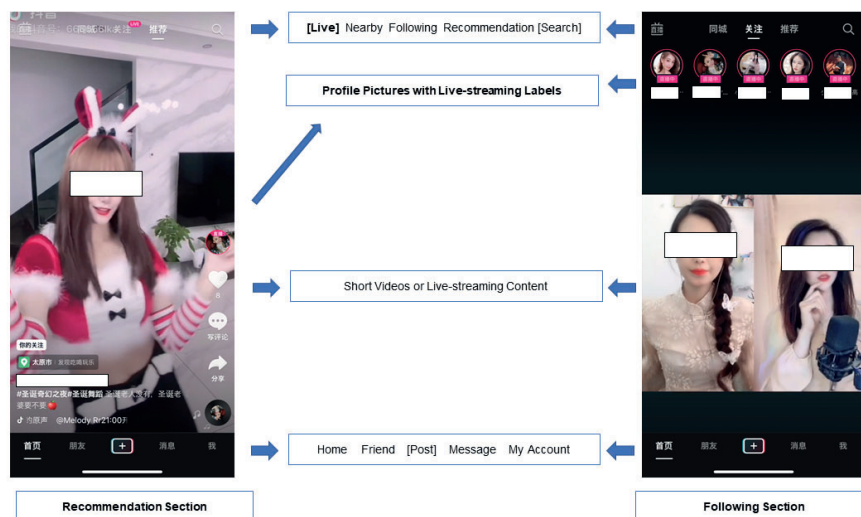


Figure 1. The analysis of Douyin's interfaces upon entering live-streaming chatrooms.

There are three ways to enter the live-streaming chatrooms on Douyin. Firstly, under the recommendation section, which is the default interface that the platform shows users (see Fig. 1, left image), live-streaming content is mixed with short video content. The content creator of the short video is presented with her/his profile picture on the right side of the interface. If this account is conducting a live-streaming performance, users will notice a red live-streaming label attached to the profile picture, and users can access the live-streaming chatroom by tapping the profile picture. Secondly, under the following section (see Fig. 1, right image), the entries to live-streaming are shown in separate hide-able tabs on top of the screen. This section only shows users the accounts that they are following. This setting suggests that the live-streaming service is designed as a tool for content creators to connect and interact with their existing followers. At the time of writing, the live-streaming feature is only available for users with over 4,000 followers. Douyin regards setting a threshold for its live-streaming service as a mechanism to incentivise content creators to publish more short videos, through which they can be recommended

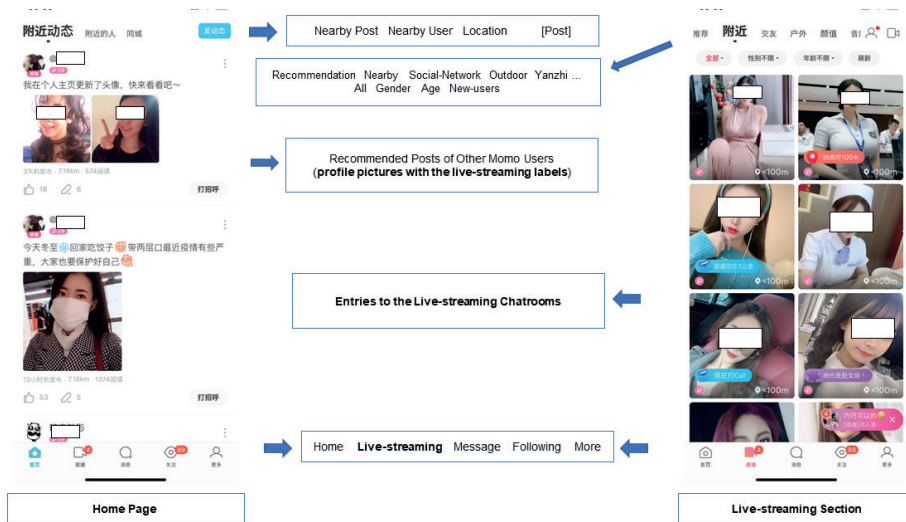


Figure 2. The analysis of Momo's interfaces at the stage of finding entries to live-streaming chatrooms.

and exposed to other users in order to gain enough followers (Kaye et al., 2020). Lastly, on the top left of the interface, there is a section labelled “live-streaming” which is specifically devoted to browsing live-streaming content. The interface of this section is identical to the recommendation section, but it excludes all short-video content.

When users open Momo’s app, they are presented with the homepage, which shows recommended posts of other nearby Momo users. Momo requires users to give the platform access to geolocation information. Otherwise, there is no content on the homepage, but only a pop-up notification reminding them to do so. From the homepage, the user can swipe right to the live-streaming section and find the entries to the live-streaming chatrooms (see Fig. 2).

The live-streaming section of Momo is a flat lay design filled with profile pictures of the streamers, represented in small squares. Each of the squares stands for an entry to that particular live-streaming chatroom. Users do not see any personal information such as usernames or a self-introduction about the streamers; users only see their gender and how far away the streamers are from the users’ location. The profile pictures of the streamers are normally carefully modified selfies. From what the researcher observed, female content creators have more visibility than men on Momo (regardless of the gender of the user account). On the top of the screen, different tabs describe the types of content, including social networking, outdoors, *yanzhi*,¹ and music. Users can also filter the content by selecting gender, age group, and whether these accounts are new users.

Applying the walkthrough method on Douyin and Momo in the stage of accessing their live-streaming services reveals the structural differences of these two apps. Douyin’s

1 Lit. “face-value”, a Chinese buzzword indicating the level of attractiveness.

core business model relies on the diverse user-generated short videos that are appealing to both users and advertisers. Following this logic, the platform integrates the live-streaming function as a supplementary mechanism for stimulating the production of short videos and increasing the engagement between content creators and their followers. The entry for accessing live-streaming-specific content is positioned on the margin of the interface, indicating its subordinate role. In the case of Momo, live-streaming content is easier to notice: The tab for entering the live-streaming section is located in a central position. Geolocation information is crucial to Momo users and many of the functions are designed around the geolocation information, addressing the nature of Momo as a geolocation-based social networking and dating app. In this sense, the live-streaming feature on Momo is significant because it can enrich the social networking experiences of the users and help Momo compete with other dating apps.

Everyday use in the Live-streaming Chatrooms

Although Douyin and Momo position the live-streaming feature differently in their systems, the interface design of the live-streaming chatrooms is fundamentally similar. The live-streaming chatroom is designed as an environment where the streamer is presented at the centre of the screen. Various technical artefacts, such as commenting and virtual gifting, joining the streamers' fan groups, and rankings, are displayed on the top or the bottom of the screen. As mentioned in the introduction, women constitute the majority of the workforce in the showroom live-streaming sector. This phenomenon resonates with the netnographic observation conducted by the researcher.

Certain functional affordances construct the communication and interaction patterns in live-streaming chatrooms. Zou (2018, p. 807) argues that the appeal of live-streaming lies in the "real-time and interactive communication between streamers and viewers, shoring up a sense of co-presence". The sense of co-presence is achieved mainly through two features: commenting and virtual gifting. As shown in Figure 3, the real-time comments from the viewers are displayed on the bottom of the interface, with the newest comments at the bottom. The space for showing comments occupies nearly one-third of the screen at the bottom and covers the streamers' bodies from the shoulder below without concealing their faces. On the bottom-right corner of the interface, the user can find an icon representing the virtual gifting feature, which is the major monetisation mechanism in live-streaming. By clicking the icon, a drawer-like pop-up section, where users can find different virtual gifts with the prices in the platform's virtual currency, appears and replaces the space for comments (see Fig. 3). After buying a certain amount of in-app virtual currency through a real-money transaction in one's account, a viewer can use the virtual currencies to purchase virtual gifts and donate them to the streamers. Streamers (and the streamer agent companies with which they are affiliated) can cash out these virtual gifts.

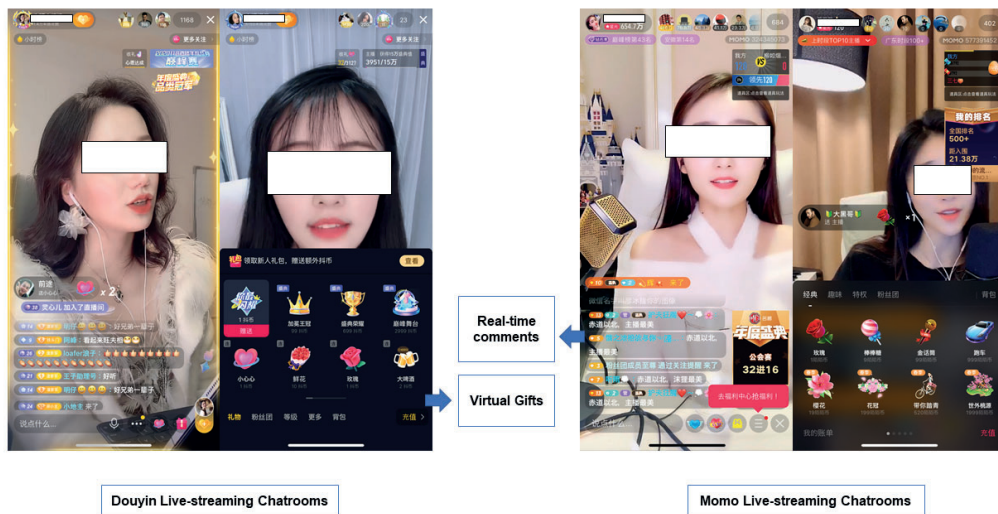


Figure 3. The interface of live-streaming chatrooms on Douyin and Momo.

During live-streaming, the interface that is displayed on the streamers' devices is almost identical to the viewers' interface, with a few additional features, such as ending the broadcasting. For viewers, commenting with textual messages is the most common way to interact with the streamer in a live-streaming chatroom. The real-time comments invite the streamer to respond with her voice or bodily performance, immersing the viewers in an intimate atmosphere with their audio-visual experiences. The streamers must always keep their eyes on the real-time comments to read out and respond to ones they select. Only when the viewers send comments or virtual gifts can the streamer notice their existence. Hence, it is notable that the functional setting of commenting creates a higher threshold for the streamers to experience a sense of co-presence. The researcher observed that the action of sending virtual gifts occurs within the conversation flow. Real-time engagements through commenting can be seen as the prerequisite for sending virtual gifts. Similarly, sending virtual gifts increased the likelihood of viewers receiving the streamer's attention and response. These two functional affordances together produce a norm in the live-streaming chatroom: If users want more attentive interactions with the streamer, they must pay in the form of virtual gifting. The norm that a viewer must pay in the form of virtual gifts to increase the possibility of receiving attention from the streamer is strengthened through the sensory aspects of virtual gifts. When gifts are sent, visual and audio effects are triggered, helping to reinforce the rule of "the more you pay, the more recognition you will get" (Zhang et al., 2019, p. 6). For instance, if a rose (which costs one unit of virtual currency) is sent in the live-streaming chatroom, it is demonstrated as a symbol on top of the comments section, while the expensive gifts, like a "love rocket" on Momo or a "carnival show" on Douyin, are programmed to appear and occupy the whole screen with animation and sound effects for around 10 seconds. This sensory

affordance instructs both the attention of the streamers and the viewers towards the visibility and audibility of expensive virtual gifts.

The cognitive aspect is related to the naming, labelling, and description of features (Stanfill, 2014). It is worth noting that the design of the virtual gifts is gendered and foregrounded in a consumerist ideology. Both Douyin and Momo provide a variety of options for virtual gifts (see Fig. 4). The symbolic meaning of these virtual gifts matters as it is closely tied to users' meaning-making. Some of the options are commonly seen in gift-exchange in romantic or intimate relationships in real life, such as flowers and balloons. Other options refer to affective expressions such as kissing and poking face. These options position the streamer-viewer relationship in a heteronormative romantic setting, indicating that the gifts are sent from men to women as a gesture of love. The gift-giving behaviour indicates the gendered roles in romantic relationships whereby a monetary gift is given regularly to a woman by man for her long-term emotional or sexual services (see Swader et al., 2013). There is even one gift on Douyin called *quni huijia*, which means marrying the lady and taking her home. Users can easily associate the symbolic meaning of this gift with the traditional marriage culture in China, where men are more socially and economically advantaged than women and wedding gifts and bride prices are provided by men. With the process of urbanisation and the increasing numbers of women participating in the labour market, the traditional marriage culture has been challenged and eliminated in many areas. The design of virtual gifts reconstructs a power relationship in which male viewers can obtain a sense of social and economic privilege. Moreover, some other virtual gifting options represent expensive commodities in real life, such as fancy cars, yachts, and helicopters. Liu et al. (2010) argue that in a relationship-based culture

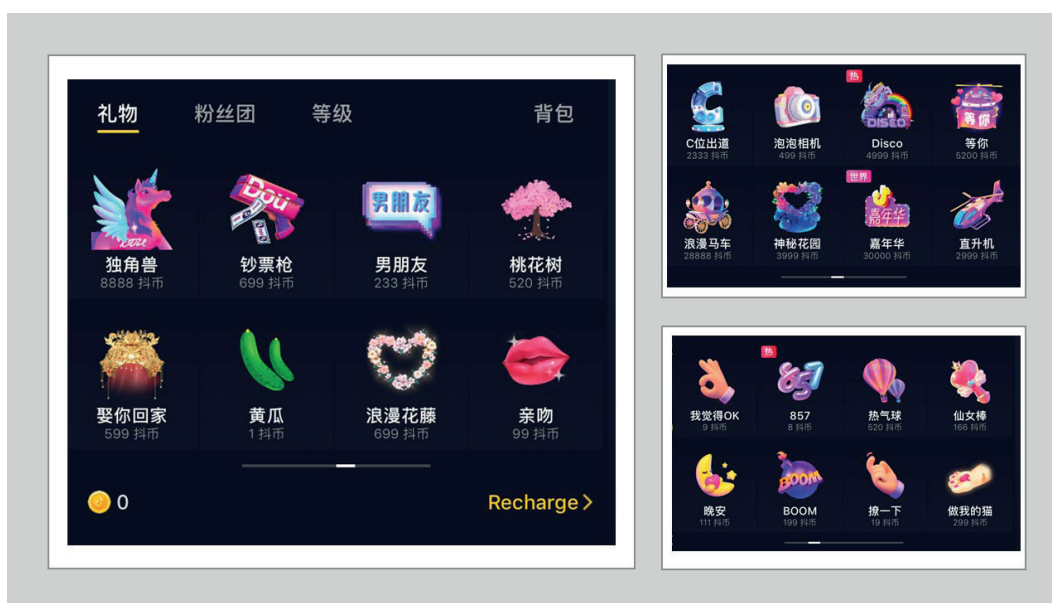


Figure 4. A selection of virtual gifts on Douyin.

like Chinese society, gifts are considered a bond between people and a carrier of *mianzi*, meaning one's social image. Therefore, the choice of gifts reflects the socioeconomic status of gift-givers. In live-streaming chatrooms, many virtual gifts are designed as commodities that represent a middle-class and upper-class lifestyle. Purchasing these virtual gifts and sending them to female streamers implies fulfilment of some working-class male viewers' fantasies of being rich and attracting the attention of beautiful ladies. The cognitive aspect of virtual gifting addresses the individual male user as a subject, granting consumerist power to him.

Although the sensory and cognitive affordances address male viewers as the targeted users of live-streaming, the design also impacts female streamers. The audio-visual effects along with the naming of the virtual gifts become emotional reminders that tell the streamers what to feel, when to feel, and how strong their feelings should be. The live-streaming performances of Moli provide an example of this. At the time of writing, she is a renowned music streamer with over 700,000 followers on Momo. Her chatroom attracts attention from thousands of viewers, and the screen is always filled with comments and the audio-visual effects of the virtual gifts. Moli does not stop singing to interact with comments and gifts; she responds with a smile. But when she receives valuable gifts, which are accompanied by some absorbing visual effect that lasts for a few seconds and fills the whole screen, she displays her surprise or happiness in more obvious ways, like clapping her hands or thanking the gift-senders verbally.

Applying the conceptualisation of emotional labour to Moli's case can reveal how sensory and cognitive affordances are influencing her subjectivities. Emotional labour is defined as "the management of feeling to create a publicly observable facial and bodily display" (Hochschild, 2003, p. 7), which could be sold for a wage. Hochschild argues that feeling is a form of pre-action or a script that complies with "feeling rules", which refer to "what guides emotion work by establishing the sense of entitlement or obligation that governs emotional exchanges" (2003, p. 56). In the private emotional system, feeling rules and rule reminders are normally entangled with social and cultural conditions. However, the commercial use of emotions has transformed intangible rule reminders into various management tactics. In the airline industry, for instance, airline attendants are constantly reminded by their managers to "put-on" a smile. In the case of live-streaming, female streamers are reminded by the visual effects of virtual gifting to account for their positive feelings, such as gratitude and happiness, and to deliver these affects to their male viewers through bodily or verbal expressions.

Commenting and virtual gifting formulate the basic rule of communication in the live-streaming chatrooms, while other technical artefacts are designed to stimulate interactions and engagements between streamers and viewers. The mechanism of *pk* is encoded in the live-streaming systems of both platforms. It refers to a time-limited competition between two streamers (see Fig. 5). Any streamer can initiate the game of *pk* and connect herself with another live-streaming chatroom, either a streamer in her "friends"

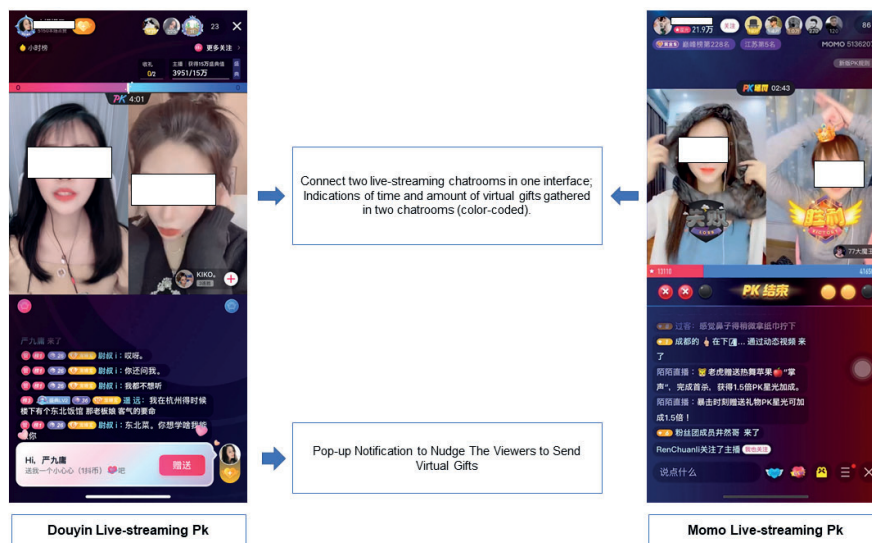


Figure 5. The interfaces of live-streaming chatrooms during pk competition.

list or a streamer automatically assigned by the system. The competition between two live-streaming chatrooms is visualised with red and blue colour-coded bars, representing the total number of virtual gifts each streamer gathers. The streamer who gathers more virtual gifts within the timeframe wins the *pk*. *Pk* creates a gamified scenario that is effective in stimulating viewers to purchase and donate virtual gifts for the streamer whom they support. The gift-senders are thanked greatly for their generosity during and after the competition. Accordingly, the mechanism of *pk* mobilises and intensifies the affect in two live-streaming chatrooms and increases the intimate bond between streamers and their supporters.

It is important to recognise the entanglement of female streamers' physical bodies with the mechanism of *pk*. During the timeframe of *pk*, the streamer who is losing is normally required to perform some physical movements, like an imitation of horse-riding or chest-expanding exercises. For the final punishment, the practices include painting the face with lipstick and doing 10 squats while moving the hips in an S-shape. These physical movements that occur in the process of *pk* have implicitly sexualised connotations. Chinese social media platforms have strict rules that prohibit sexually explicit content, following the state's regulation on Internet pornography. However, being familiar with both the state's regulation and the platforms' policies, female streamers are instructed by their managers to "play the edge balls" (Cunningham, Craig, & Lv, 2019, p. 729) and catch the attention of the male viewers by performing implicitly sexualised mannerisms. Incorporating the mechanism of *pk* into the live-streaming chatroom interface reveals platforms' intentions to capitalise on female streamers' bodies and performances, shaping the streamer-viewer relationship as an affective interpersonal one that is achieved and maintained through the monetary flow of virtual gifts.

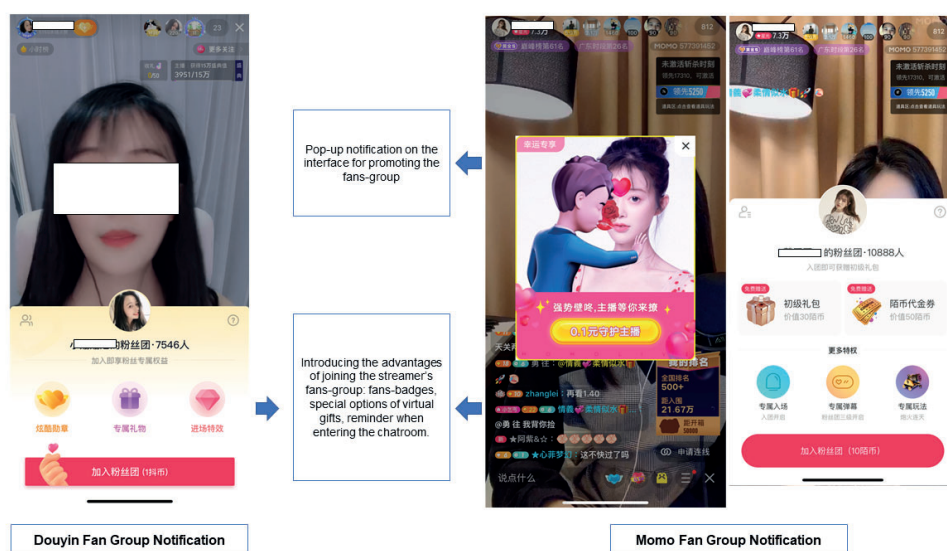


Figure 6. The interfaces of live-streaming chatrooms with the options of joining the fan group.

Another technical artefact that platforms use to complicate the streamer-viewer relationship is the subscription option, which is named “joining the fan group”. The viewer is required to pay a small monthly fee to maintain membership within the fan group. Twitch has a similar setting, allowing viewers to subscribe to a live-streaming channel. In Taylor’s (2018) study of Twitch users, she discovered that Twitch moderators consider themselves as having more honour and duty than fans, since they are closer to the performer than other users. The configuration of the relationship between moderators and performers on Twitch uses the discourse of fandom. In the case of showroom live-streaming in China, besides the utilisation of fandom, the action of joining the fan group has gendered implications though both the naming and the graphic design: The action of joining the fan group is normally called *shouhu* (lit. “guarding”), implying that the female streamer is a beautiful but fragile “princess” while male viewers are her “knights” who have the power to protect her (see Fig. 6). The vocabulary and the graphic design of the pop-up notification are strongly gendered. The princess-knights symbolism represents a romantic imaginary in which the princess (the female streamer) is the authority and the knights (male viewers) devote their loyalty and power to protect her. Their loyalty in live-streaming is understood as their active online time in the live-streaming chatroom, while their power is demonstrated through their capacity to send virtual gifts. By joining the fan group, users can receive a specially designed fan badge that is attached to their username and an additional visual reminder when they enter the chatroom. The attention-grabbing design of fan badges and the reminders serve as emotional cues that direct the streamer’s attention to certain users who have established an affective relationship with her. Accord-

ingly, she is reminded to spend additional time and effort maintaining the interpersonal relationship with these viewers.

Conclusion

In this study, the walkthrough method was used to examine the live-streaming interfaces of Douyin and Momo, particularly focusing on the functional, sensory, and cognitive aspects of the interface design, following the framework of discursive interface analysis. Although Douyin and Momo position the live-streaming function in their apps differently, the prevalence of virtual gifting, the mechanism of *pk*, and the fan group subscription option combine to reveal the commercial nature of showroom live-streaming for both platforms. The interfaces establish a norm of paying for attentive interactions in live-streaming chatrooms. The functional, sensory, and cognitive affordances of live-streaming chatrooms are combined to achieve a content monetisation scheme that capitalises on female streamers' affective responses and intimacy. The design of virtual gifting indicates and normalises the gender division in live-streaming chatrooms: The viewers or consumers and gift-senders are men, while the performers and gifts-receivers are women. The mechanism of *pk*, or competitions between two streamers, and the fan group subscription option are implemented on the margin of the interface and are not as visible or prevalent as virtual gifting. However, they are carefully designed to supplement and increase the monetisation capacity of the virtual gifts and the strength of affective interactions. Through various visual representations, as well as the placement and the gendered naming of different features, the interface design implies that the affective interactions between female streamers and their male viewers should be based on heteronormative romantic feelings and intimacies. This design logic also impacts the bodily performance of female streamers. Their material bodies are both entangled and compliant with the visual effects of the interface, including their presentation of emotion when receiving virtual gifts and their implicitly sexualised physical movements during *pk*.

Feminist film scholar Laura Mulvey (1975) discusses the gaze of male spectators towards women on the cinema screen, where spectators view women's bodies and faces as the mere bearers of meaning. In other words, female actors are rendered passive and objectified through the lens of the camera, which is often operated by men. In the case of showroom live-streaming, the interface is a mediated environment that exposes female streamers to the male gaze—the gaze of male spectators. At the same time, unlike female actors being filmed, female streamers are active content producers who are in charge of their self-presentation. The live-streaming interface is reminiscent of John Berger's (2008, p. 47) writing:

Men look at women. Women watch themselves being looked at. This determines not only most relations between men and women but also the relation of women to themselves.

The surveyor of woman in herself is male: the surveyed female. Thus, she turns herself into an object and most particularly an object of vision: a sight.

Considering the phenomenon of live-streaming in the light of Berger's writing on classical artworks, the showroom live-streaming interface appears to construct and normalise the condition of men looking at women and women watching themselves being looked at. Although both streamers and viewers occupy the position of *users* on these social media platforms, their embodied and subjective experiences are profoundly different.

This study addresses streamer-interface-viewer engagement, accounting for the users' cognitive, emotional, and bodily experiences caused by the interface. The live-streaming interface design simultaneously constructs two subjects. The "ideal" viewer is a heterosexual man who is empowered through the consumption of the virtual gifts he gives, whereas the "ideal" streamer is an attentive young woman who conducts emotional labour and affective performances to meet the needs of the male consumers. The study's findings suggest that the discursive and affective power of the interface design firmly establishes and reinforces a gendered power relationship between female streamers and their male viewers in the live-streaming showroom. To further explore the formation of this gendered dynamic and to understand how gender influences the operation of the live-streaming industry in China, future research could involve interviews with users and streamers. Researchers could also address other emerging uses of live-streaming, such as e-commerce live-streaming, and examine if other types of ideal users are produced differently.

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