

# Explaining Viewers' Emotional, Instrumental, and Financial Support Provision for Live Streamers

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## ABSTRACT

On live streams, viewers can support streamers through various methods ranging from well-wishing text messages to money. In this study ( $N=230$ ) we surveyed viewers who had given money to a streamer. We identified six motivations for why they gave money to their favorite live streamer. We then examined how factors related to viewer, streamer, and viewer-streamer interaction were associated with three forms of social support provision: emotional, instrumental, and financial support. Our main findings are: parasocial relationship was consistently correlated with all three types of social support, while social presence was only related with instrumental and financial support; interpersonal attractiveness was associated with emotional and instrumental support and lonely people were more likely to give instrumental support. Our focus on various types of social support in a live streaming masspersonal platform adds a more detailed understanding to the existing literature of mediated social support. Furthermore, it suggests potential directions for designing more supportive and interactive live streaming platforms.

## Author Keywords

Live streaming; social support; parasocial; tangible support; emotional support; financial support; presence; social TV

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

## INTRODUCTION

Live streaming involves transmitting audio and/or visual media via the Internet in real time and is becoming a popular form of media [17]. Twitch.tv, one of the primary live streaming platforms, has approximately 10 million daily active users and more than 2.2 million creators of content per month [45]. So far live streaming has been used for many different purposes, ranging from the coverage of breaking

news and sharing live video content of gameplay to discussing television shows and cooking, just to name a few.

Yet live streaming is much more than a live broadcast. It contains an interactive element between streamers and viewers that makes it a type of social television [22] that has been theorized and prototyped decades ago (see [49] for historical overview of social TV systems) but is only now being realized on the consumer market. Especially, live streams have been considered more engaging than other media such as video games, online shopping, and webcasts due to the experiences of immediacy and immersion they provide [16]. Prior research of live streaming in the context of the platform Twitch has pointed out that they are like “third places” where people come together to form communities [17,22,28] and engage in interactive “performances” [33]. The development of social bonds and community also create interesting norms where viewers tend to imitate other viewers' behavior, especially those who are considered leaders within the community [41].

This new social phenomenon of live streaming raises new research questions of how it functions as a facilitator of computer-mediated communication since multiple types of communication are taking place simultaneously on this platform. Live streaming contains a broadcasting element, where one person transmits content to a large number of anonymous viewers. In this sense, it is mass communication. However, it also has an interpersonal element—streamers can interact with viewers by addressing their comments verbally or conducting real time text chat. This type of hybrid communication is called masspersonal [21] but very little research has been done to explore how these interactions manifest in the context of live streaming.

Interactive social media (e.g., Facebook and online social games) has been well documented for its supportive functions in online users' social lives [43,51,52]. Yet how and why live streaming, as an emerging form of social television, mediates social support is a novel area of research. In particular, prior literature on mediated social support often focuses on informational or emotional support, but live streaming is unique from other social media in that it facilitates more tangible forms of support such as exchange of money and virtual gifts, making it a valuable research site for understanding tangible forms of interaction.

In this paper we report an empirical study of live streaming viewers' motivations to give money to their favorite streamer

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and how factors related to viewer, streamer, and viewer-streamer interaction affect three forms of social support provision: emotional, instrumental, and financial support. As most of the literature to date on financial exchange in social media have mostly been in the context of transactions [55], our work contributes to HCI and CSCW by shedding light on how financial exchange can be perceived, understood, and interpreted as tangible support in social media.

Live streaming is an excellent context to examine financial exchange because it is a relatively new but rapidly growing phenomena. In June 2016, Twitch introduced “cheering” in which viewers can purchase a digital currency called a “bit” with real money. These bits then can be used to purchase emotes that when typed into chat, a portion of what the viewer spent to buy the emote goes to the streamer. This “tipping program” generated \$6 million in the second half of 2016 alone for Twitch [4]. In China, where live streaming “has become a viable source of income for many” the industry was worth \$3 billion 2016, a 180% year-on-year increase [23].

Our focus on live streaming as a unique, masspersonal platform for varied types of social support provision, including emotional, instrumental, and financial, also adds nuanced particularities to the existing literature of mediated social support and suggests potential directions for designing more supportive and interactive live streaming platforms.

### **SOCIAL SUPPORT PROVISION**

Social support is a multidimensional construct, that while has yet to gain consensus in the academic community about what those dimensions are [6], studies consistently show a distinction between support that requires some physical or tangible component (e.g., instrumental aid, goods, services, money) and non-tangible support (e.g., emotional concern, information) [2,46]. In HCI, potential for social support has also been used interchangeably with social capital, with mostly a focus on *the potential to receive* informational and/or emotional support through one’s connections [11,26].

In this study, we focus on provision of social support, confining the definition to the *giving* of social support and not receipt. We examined three types of social support that viewers can provide to streamers: instrumental, emotional, and financial. Instrumental support refers to the provision of assistance or services, where one can help another by doing something. Emotional support refers to the giving of affection, encouragement, or caring. Financial support refers to provision of money. Here, instrumental and financial both represent tangible forms of support. We chose not to look at informational support and community support because these did not make sense in the context of examining dyadic relationships between viewers and streamers.

There is limited research on tangible support as most studies on provision of social support in online communities/ social media have been conducted to study contributing informational support [3,19,20] or emotional support [10]

to online forums. Thus tangible support in the form of assistance has been mostly documented in the area of online gaming. Many studies have examined collaboration among players and how players help each other to solve complex problems as well as mundane in-game tasks [30,48,52]. Supportive behaviors in games, however, are not just instrumental, but also emotional [13,14], as reciprocity of supportive behaviors can lead to feelings of closeness [50].

The types of relationships that develop in gaming, however, are questionably related to the types of relationships that develop between streamers and viewers through a live streaming medium. Although both are forms of computer-mediated communication, there are similarities and differences about the two contexts that may or may not make prior research on relationships in gaming applicable.

First, from an interpersonal perspective, there is an imbalance in modality—viewers are able to see and hear streamers, but streamers are only able to read what viewers type. There are some exceptions; some streamers incorporate third-party software that enable viewers to also participate verbally but this is not yet a widespread practice).

Second, games that require collaboration usually have a shared goal, which is not something that is often seen in the context of live streaming.

Finally, from the mass communication/broadcasting perspective of live streaming, the communication between viewers and streamers are very unbalanced in terms of resources available: streamers have to interact with multiple viewers, which splinters their attention, while the viewer may be able to allocate 100% of their attention to the streamer. This asymmetric communication may influence social support provisions in ways that we do not yet theoretically understand.

Given the relatively exploratory nature of the research, we had two general research questions that guided our design of the study:

**RQ1.** Why do people give money to livestreamers?

**RQ2.** What factors are associated with provision of different types of social support?

Due to the exploratory nature of this study, for the first research question, we decided to take a qualitative approach with no apriori categories or hypotheses in mind. The intention of this approach was to take a broad perspective by asking viewers who had already given money to streamers about why they did so, so as to seek all possibilities, and to leave room for unforeseen findings.

For the second research question, we relied on extant literature by focusing on streamer-viewer interaction on Twitch to identify factors that could be potentially related to provision of social support. We discuss these factors in the following section.

## **FACTORS THAT ARE RELATED TO PROVISION OF SOCIAL SUPPORT**

### **Characteristics Related to Streamer**

Over the years, many studies have demonstrated the impact of attractiveness on tangible benefits. For example, physically attractive individuals are more likely to receive a job offer (e.g., [44]), teachers have higher expectations of attractive students' intelligence and future success [36], and acceptance into high-status social groups is also positively correlated with attractiveness [25]. Furthermore, interpersonally attractive (likeable) individuals are more likely to receive positive evaluations [8] and be considered a credible source [32]. These are just some examples of the many ways that attractiveness can influence audience reactions. Thus, it is likely that interpersonal and physical attractiveness will have an impact on supportive behaviors in live streaming audiences, although it is unclear whether attractiveness will have the same influence on emotional support as it would on tangible support (i.e., instrumental and financial).

### **Characteristics Related to Streamer-Viewer Relationship**

#### *Parasocial Relationships*

Parasocial relationships refer to enduring relationships and feelings of emotional closeness with a character or celebrity [9]. Parasocial relationships were first defined by Horton and Wohl [18] as a "seeming face-to-face relationship between spectator and performer" (p. 1). The "seeming" relationship is because in traditional media such as television, movies, or radio, the audience did not have an actual relationship with the character or celebrity. Thus, parasocial relationships refer to the relationships we develop with individuals we have never met (e.g., characters from *Friends*, YouTube stars, or hosts of shopping networks). Rubin and Perse [37] further defined parasocial relationships and discussed three distinct dimensions: cognitive, affective, and behavioral. Cognitive parasocial interaction refers to the degree to which people pay attention to the person with whom they have developed the relationship, affective parasocial interaction refers to the degree to which they identify with the subject, and behavioral parasocial interaction refers to the degree to which they react to the person by talking to them or about them. The stronger the parasocial relationship, the more people will pay attention to, identify with, and engage with the subject of the relationship. Parasocial relationships have been found to be quite influential—stronger relationships were found to be related to viewing and attention [34], brand attitudes [7,24], viewing frequency [15], purchase behaviors [15], purchase intentions [12], and positive word-of-mouth intentions [12] among others.

In some sense, live streamers are celebrities or personalities that are similar to the traditional sense of a performer [33] and in many streams, consistent viewers sometimes call themselves "fans". Thus we may expect that parasocial relationships are related to intention to give social support,

but it is uncertain if parasocial relationships will relate to all three types of social support in the same way.

#### *Interactivity*

One of the defining characteristics of live streaming that distinguishes it from traditional television or movies is that viewers have the opportunity to interact with streamers almost in real time, which makes it a more immersive experience [16,27]. Of course, not all streamers actively engage conversations with their viewers, and the interactivity may vary widely between viewers even with the same streamer (especially as viewership grows, it becomes more difficult for the streamer to individually interact with viewers) [40]. Thus every viewer's perception of interactivity with the streamer will be very different. Since interacting with the streamer adds a personal element to the viewer's experience, we would expect that more interactivity between streamer and viewer will be associated with greater intentions to give emotional, instrumental, and financial support. We looked at two types of interactivity: direct verbal interaction between the viewer and streamer, and the streamer's frequency of eye contact with the camera.

#### *Social Presence*

Social presence [42] is a theoretical framework to assess the "degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship" (p.65) and is a popular construct when examining computer-mediated relationships [31]. Streamers and viewers are most often now physically collocated, so social presence can be a measure of how much they feel they are together during the mediated activity and how similar the interaction is to one that would happen in a face-to-face situation. Social presence was identified as a potentially important variable during the online observations; viewers seemed very aware of the physical surroundings of the streamer and would often comment on things like peripheral video and audio, as if they too were in the same space. For example, if a police siren went off in the background and was audible to viewers, viewers would comment on it; they would also ask about things that they saw on the video that was in the background of the streamer, such as something that appeared in the window, a shadow, or a cat lurking around.

Given the immersiveness of live video, it stands to reason that viewers may feel a strong sense of social presence, but whether or not social presence will have an equal role in explaining instrumental, emotional, and financial support is an open question.

#### **Characteristics related to viewer**

Finally there are several characteristics related to the viewer that may influence their likelihood of giving support to the streamer.

How long the viewer has been watching the stream and how frequently they watch may be control factors—one would expect that the history of viewing may be an indicator of how much the viewer likes the streamer.

Interest in the actual content of the stream is another individual factor that could play a role in social support provision. This contrasts with the streamer characteristic of attractiveness—it could be that even though the viewer does not find the streamer attractive physically or interpersonally, they value the content that is being delivered and are willing to offer social support. In this case, we may expect that interest in content would be more strongly related to financial support than emotional support.

Finally, the individual's psychological wellbeing, such as their feelings of loneliness, could be associated with willingness to give social support. Although there is no strong theory that suggests lonely people will be more likely to give support, there have been many anecdotal accounts in the news media of lonely men in China buying and bestowing virtual gifts to female live streamers [47,54]. Thus we may be able to see if there is a relationship between loneliness and provision of financial support.

## METHODS

### Data Collection

We collected data using a 15-minute online survey that was constructed based on factors related to provision of social support discussed in the previous section. This survey included both closed and open-ended questions. Participants were first asked to name their favorite live streamer, the URL of the channel (to make sure the participants were not making something up), and what platform they watched the livestream on. The subsequent main questions focused on how they felt about their favorite streamer and characteristics about the streamer, themselves, and their interaction with the streamer, if they had had any.

We used multiple online platforms to recruit participants, including Mechanical Turk, Facebook pages, Reddit, Twitch, and direct messaging people on Twitter who posted about donating on Twitch. As the study required that participants be viewers who had given some form of financial support in the past, only English-speaking adults (18 or above) who had previously given money to a streamer were allowed to take the survey. Screener questions were utilized to ensure that all participants met this criteria in addition to the language requirement. In this study we only report responses of participants who were recruited through Mechanical Turk since response rates from other online platforms were fewer than 20, which was insufficient for in-depth data analysis. Participants were paid \$3 for their participation in the survey; this was slightly higher than the market rate for survey completions on Mechanical Turk because industry insiders and prior research [56] suggested that less than 10% of viewers actually gave money. As a result, 250 responses were collected. After eliminating people who wrongly answered attention questions (e.g.,

“please mark 5 for this question, it is to see if you are paying attention”) and/or wrote gibberish (random typing) as answers for open-ended questions, 230 responses were used for the final analysis.

Our participants were 71% male, with an average age of 30 ( $SD=7.17$ ); our youngest participant was 18 and the oldest was 57 years. The perceived age of the favorite streamer was predominantly between 25 and 34 (61.2%) followed by 18 to 24 (22.8%) and 35 to 44 (11.2%). The sex of the favorite live streamer was mostly male (83.5%). Most participants said that they watched their favorite live streamer on Twitch (68.1%), followed by Facebook Live (10.8%), YouTube Live (5%), and Periscope (3%). Other platforms included Patreon, UStream, Instagram, Mixer, and private websites, such as a [night]club that hosted a livestream on its own website.

Digital gaming (68.1%) was the most popular live streaming content, followed by creative (e.g., painting, music, cooking) (6.9%), random things in the streamer's real life (also known as IRL) (6.5%), talk shows (5.6%), board games (4.3%), and social eating (1.7%). Other content included beauty, animals, activism, guns, religious commentary, and tech solutions. The prevalence of digital gaming content may be due to the high percentage of Twitch viewers, as gaming is the main content on that platform.

On average, participants had been watching their favorite live streamer for about 15 months; 52% reported that they had been watching for over one year and 11% had been watching for more than three years. In terms of frequency of viewing, 9.5% watched once a month or less, 20.7% watched two to three times a month, 18.1% watched once a week, 34.5% watched two to three times a week, and 17.2% watched more than three times a week. The average amount of hours spent per week watching their favorite streamer was 6.14 ( $SD=7.09$ ), with 6% reporting 20 hours or more per week.

We asked participants to check all the methods they used to give money to their favorite streamer. Some transactions were done through the streaming platform (31.7%), but participants also used third-party apps such as Paypal (30.2%) and Venmo (6%), and crowdfunding sites like Kickstarter (7.3%). For the 138 participants who viewed through Twitch, they reported giving an average of 1123 bits<sup>1</sup> ( $SD=7707$ ) but this distribution was highly skewed as the biggest donor had given 80,000 bits (about \$1120 USD) to their favorite streamer. A few participants also reported sending gifts to their favorite streamer, including watches, chocolates, fan art, postcards, sex toys, and in-game “skins” or points. The average amount of money participants donated to their favorite streamer was \$7. Most participants (55%) donated \$10 or less, but 11.2% donated \$40 or more.

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<sup>1</sup> About \$15.72 USD. Bits are a Twitch-specific currency and have to be purchased with real money

## Measures

All three support scales were from Cutrona and Russell's social provisions dimensions [5], with wording of the items minimally altered to fit the context of live streaming. Statements were rated from 1 (Never) to 6 (Absolutely).

Emotional support ( $M= 4.72$ ,  $SD= .98$ , Cronbach's  $\alpha=.91$ ) assessed participants' provision of emotional support through verbal means. The four items were: "I would say nice things to indicate my support," "I would tell them encouraging things," "I would try to make them feel better," "I would try to express my support to them somehow."

Instrumental support ( $M= 2.86$ ,  $SD= .67$ ,  $\alpha=.86$ ) assessed participants' intention to provide tangible support in the form of services. The items were: "I will help them if they really need," "If something went wrong, I would help them," "They could count on me to help them," "They could count on me in an emergency."

Financial support ( $M= 4.39$ ,  $SD= .92$ ,  $\alpha= .95$ ) assessed participants' intention to provide some material means of tangible support, such as money or gifts. The items were: "If they were hosting a fundraiser I would contribute," "I would give money to them to help with their livelihood," "I would give them money to support their efforts," "I would give them a gift to show my appreciation."

Interpersonal Attractiveness ( $M= 5.41$ ,  $SD= 1.09$ ,  $\alpha =.89$ ) was measured using Reysen's [35] 9-item likeability scale. It included items such as "This person is friendly" and "This person is likeable." Responses were ordered as a 7-point Likert-type scale with endpoints "Strongly Disagree" and "Strongly Agree".

Physical Attractiveness ( $M= 4.66$ ,  $SD= 1.15$ ,  $\alpha =.80$ ) was measured using McCroskey and McCain's [29] 8-item scale. It included items such as "I think he/she is quite handsome/pretty" and "he/she is very sexy looking." Responses were ordered as a 7-point Likert-type scale with endpoints "Strongly Agree" (7) and "Strongly Disagree" (1).

Parasocial Relationships ( $M= 3.78$ ,  $SD= .61$ ,  $\alpha = .91$ ) was measured using Rubin, Perse, and Powell's [38] 15-item scale on parasocial relationships in television viewing. Parasocial relationships were defined as perceived friendship or relationship with the streamer despite limited to no two-way interactions. It included items such as "The video clip showed me what the streamer is like" and "I think the streamer is like an old friend." Responses were ordered as a 7-point Likert-type scale with endpoints "Strongly Agree" (7) and "Strongly Disagree" (1).

Interactivity ( $M= 2.80$ ,  $SD= 1.08$ ,  $\alpha =.92$ ) referred to how much the streamer interacted directly with the viewer. We asked the participants rate how often the streamer 1) acknowledges them specifically, 2) mentions them by name, and 3) responds to something they wrote in chat from 1(never) to 5 (always).

Respect for streamer's ability ( $M= 3.36$ ,  $SD= .58$ ,  $\alpha =.83$ ) asked about how much the viewer valued the skills of their favorite streamer. The four items were "I think my favorite streamer is good at what they do," "I respect what they do," "I value their skills and abilities," and "I admire my favorite streamer's talents" rated from 1 (strongly disagree) to 5 (strongly agree).

Presence was measured using 5 items ( $M= 61.79$ ,  $SD= 20.31$ ,  $\alpha =.83$ ) based on social presence scales used by Nowak and Biocca [31] that was adapted to be relevant to the context of live streaming. The items were preceded by "When you're watching your favorite livestreamer, to what extent..." followed by "...did you feel able to assess the streamer's reactions to what you wrote in chat?" "...is watching them like a face-to-face-meeting?" "...do you feel like you're in the same room with them?" on a sliding scale from 1 to 100.

Loneliness ( $M= 2.27$ ,  $SD= .78$ ,  $\alpha =.97$ ) was measured using the UCLA 20-item loneliness scale [39]. It included items such as "I am unhappy doing so many things alone" and "I have nobody to talk to". Participants could respond to each item with one of four options: Often (4), Sometimes (3), Rarely (2), or Never (1).

## RESULTS

### Explaining Motivations for Support

To explore RQ1, a qualitative analysis was conducted to code and interpret responses to the open-ended questions. This method was used to focus on the first-person and narrative accounts of participants' perceptions and understandings of how and why they gave money to live streamers, in order to offer rich and detailed descriptions of their varied motivations to support streamers. Specifically, the first author closely read through participants' narratives and came up with a preliminary set of codes that described the main motivations of the viewer. All authors then iteratively discussed the codes and grouped them into categories, to summarize the fundamental aspects of participants' motivations and practices to provide streamers with support. At last, all authors carefully read through all quotes from participants' own accounts and sampled those that best represented each category.

Our findings show that viewers were willing to give money to streamers for a variety of reasons. In this section we present six themes of their motivations emerging in our data.

### *Paying for Entertainment*

Many participants explained that a primary reason for them to donate money to the streamers was to pay for the entertaining experiences they enjoyed. For example, many highlighted how they felt obliged to pay the streamers because they had so much fun watching their streaming:

*Streaming is his livelihood and donating 20 bucks for 100+ hours of entertainment is a good deal.*  
(Male, 26)

*Wanted to show my support, and it felt right to pay for the hours of entertainment I enjoy.* (Female, age 29)

*To me, DrDisrespectLIVE is very entertaining, very different from most other streamers. Not only is he good at the games he plays, but he never fails to make me laugh with his gimmick and commentary.* (Male, age 25)

For them, their support (usually in the form of money) was both necessary (“it felt right”) and worthwhile (“a good deal”) because it was their way to show their appreciation for the entertainment that the streamers provided. Therefore, supporting the streamers would acknowledge their efforts. Some participants even noted that watching live streaming had become a better entertainment for them because it was more fun and less expensive than watching TV or movies:

*I like the content and I enjoy watching it. I pay much more for cable TV and don't get near the enjoyment so it's nice to give even a little bit of something to show I appreciate the streamer.* (Male, 45)

*I get more entertainment out of that than I got going to a couple movies, so I figured donating ten dollars was more than fair for his time entertaining me.* (Male, 31)

In sum, many viewers would support (at least financially) streamers for the entertaining experiences they received – because the content was “new,” “funny,” or trustworthy, as the following quotes show:

*You get to have these little glimpses into situations that are completely new to you. You get to learn about new people and see how they live their life. It's pretty awesome!* (Male, 37)

*I like her content very much. She's funny and attentive to her viewers. She also plays the piano sometimes on her streams.* (Female, 22)

*They have provided in depth content of political, spiritual, and other matters to many people. [...] It's always a pleasure hearing them talk about current events. I trust what they report more than main stream media that is propaganda to the core now.* (Male, 26)

Especially, such support is often considered a fair trade (e.g., paying for a pleasant and satisfactory experience) and can last for a long time, as a participant described, “They’ve provided years of entertainment for me and my friends.” (Male, 25)

#### **Helping Streamer Sustain and Improve Content**

While many viewers supported streamers because they were entertained by their streaming content, some other viewers donated money because they would like to help the streamers sustain and improve their content. Viewers were aware that creating desirable content often required a substantial

amount of efforts and resources (e.g., time, space, equipment, and materials), which could be a high cost for streamers. Therefore, they were willing to donate money so the streamers could afford to create high quality content. For example:

*She runs a mostly beauty channel, and donating money allows her to purchase more products to review and demo.* (Female, 35)

*To help sustain their feed. They need money to buy cameras and pay for places to show in their videos.* (Male, 25)

In addition, some viewers realized the potential value of the streaming content and wanted to encourage the streamers to keep improving their content, as the following responses show:

*I wanted them to use the funds to further independent media.* (gender unknown, 25)

*Enjoyed their content, appreciated their work and wanted to incentivize them to keep doing so.* (Male, age 29)

*I love her art, she inspires me, and I want her to continue to do it, so I thought I would send her money to motivate her.* (Male, 26)

For these viewers, they were motivated to support streamers not solely because the content was entertaining but because it was also meaningful for them in some ways (“further independent media,” “inspires me”). Therefore, their donations would keep such content around or even make higher quality content possible.

#### **Compensation for Learning**

Some viewers felt that they not only enjoyed the content and would like to encourage streamers to make more but also learned useful lessons by watching the content. Such learning experiences thus became the pulse for them to donate to the streamers. Since gameplay was one of the most popular types of streaming content, many participants mentioned how they supported the streamers because they used the streaming content as a vivid learning resource to improve their own game skills (e.g., “how to play a lot of characters”):

*The streamer is one of the best game players. I watch him to learn some game skills.* (Male, 26)

*His videos helped me learn to play Minecraft, to earn a bit badge* (Female, 38)

*I've learned a lot from him in how to play a lot of characters that I enjoy in the game he streams. I had some extra cash and thought I'd donate as a way to show thanks and give some support.* (Male, 34)

In addition to gaming, viewers also gained other skills by watching the streaming content. For example, two participants described how they would like to pay the

streamers because they learned about painting and music production and also received personal feedback from the streamers:

*He teaches really good painting techniques that enhance what I learn in a class I'm taking. I do feel like I should pay for what I'm learning.* (Female, 47)

*For music production tips and personal feedback and mastering services.* (Male, 38)

Therefore, for these viewers, their donations were similar to the concept of paying tuition and showing gratitude for the lessons they gained by watching the streaming content.

#### **Emotional Attachment**

Some other viewers focused more on the streamers than the streamed content. The streaming content may have led them to the streamers, but it was the streamers' personalities that motivated them to donate money. In many cases, money donations (i.e., tangible support) became a way through which they expressed intangible support (e.g., emotional support) to the streamers, as this quote shows:

*I just genuinely like imaqtpie, because he's so charismatic. It also gives me a chance to speak with him because I can broadcast my message. He usually responds to money donations, naturally.*" (Male, 26)

In the following examples, participants expressed that though they still paid attention to the content, the very reason why they wanted to support the streamers was because they cared about the streamers:

*She did a Facebook livestream about some struggles she was having in her personal life, and I just thought about how much she has helped me out in my daily life by sharing, and I wanted to help her out a little to make her feel better.* (Female, 38)

*I have been watching TotalBiscuit's videos and streams ever since he started on YouTube and prior to live-streaming on Twitch. He developed cancer and was forced to take time off for treatment. Donating to his live-streams was a means of helping to offset his treatment costs, keep the live-stream going, and in a sense giving back to him for all the content that he put out in the past and the entertainment that he has provided me with. It also served as a means to show my appreciation for continuing to live-stream despite having to fight a life-threatening illness.* (Male, 31)

*His [has] sheer dedication as a family man to make awesome vlogs on YouTube. He is a genuine, kind-hearted person.* (Male, 23)

In contrast to the first two motivations, these viewers supported the streamers without an explicit expectation of receiving higher quality content from them in return. Instead, they supported the streamers simply because they had

established a certain kind of emotional attachment to the streamers. In some situations, content even did not matter, as this participant noted:

*He's very stupid and constantly almost ruins his life and I have to support him so he doesn't accidentally die.* (Female, 21)

In sum, for these viewers supporting the streamers was not an exchange for content but to exhibit their appreciation and fondness for the streamers because of their personalities (e.g., "*what motivated me is how much he engages with the chat and how his personality is truly himself.*" Male, age 22), friendliness, or attitude (e.g., "*He helped me through a lot of rough patches over the over the past few years by his attitude and general friendliness.*" Male, 27). For them, donating money had become a useful channel to signal some of their deepest feelings toward the streamers, as this participant summarized, "*I don't think of it purely as 'donating' -- more so, showing supporting and being a fan.*" (Male, 25).

#### **Desire for Interaction**

Some viewers may or may not have emotional attachment to the streamers. Yet they were still willing to support the streamers (either donating money or expressing verbal support) as a way to seek more social interaction. Sometimes they focused on interacting with the streamers so as to establish some connections:

*To show my support to the streamer, but also to as a way of interacting with the streamer. It was also entertaining at the time, and I consider it money well spent. I would probably not do it again, unless it was a spur of the moment decision to connect to the streamer in some way.* (Male, 25)

For them, such connections may or may not lead to emotional attachment in the future. However, at this moment they appreciated the reciprocity of such interaction – a way of getting to know a specific person online.

In contrast, some other viewers supported the streamers so they could interact with other viewers in general. They could broadcast their support (messages or donations) in public channels (e.g., Twitch chat window) to draw other viewers' attentions, which may lead to further interactions, as the following two participants remarked:

*Watching a live stream and interacting with the chat is also a form of networking. If you're ever feeling down, go watch a stream that might calm you down. Interact with the chat. A majority of them may be trolls but quite a few of them are also quite nice.* (Male, 24)

*I don't like to go out much, I'm kind of agoraphobic i guess, so watching and interacting on live streams fills that connection void for me.* (Male, 44)

For these viewers, it was the desire to interact with people (e.g., other online viewers) that drove them to support the

streamers. Their support had become a way to fulfill their need to be cheered up (e.g., “*If you're ever feeling down, go watch a stream that might calm you down*”), being connected, and avoiding feelings of loneliness by engaging in online social interactions.

#### *To Help Solve Offline Social Issues*

At last, some viewers' decisions to support the streamers were beyond the intention to receive higher quality streaming content or connect to the streamers. Rather, they used their support as a way to help solve a wide range of meaningful social issues in the offline world. For example, some viewers donated because they liked to help solve a few current political and ideological debates:

*I was watching his live feed from Standing Rock<sup>2</sup> and supported his coverage of the protests that were happening. (Female, 25)*

*I really liked what she was saying about gender and sexuality choices in videogames, and I wanted to support her for that. (Male, 50)*

Some appreciated the streamers' contributions to animal affairs and would like to help:

*They save animals in animal shelters, mainly cats and dogs. They live stream though Facebook's Social Good Forum. (Male, 57)*

*Alana quit her job full time to take on the cats that no one else wants and they get to live out their life with her without being put to sleep. This is what motivated me to donate. (Female, 49)*

Along similar lines, some used their online donations as a way to support charity and research:

*It was to go towards St. Jude's Hospital, which is a great cause that I donate often. (Female, 30)*

*He was doing it for a charity, I believe it was AIDS research. There was also another charity one he did for disadvantage children. (Male, 34)*

For these viewers, the streaming content drew their attention to events or issues happening in the offline world, or aligned with their existing concerns regarding such events/issues. Therefore, it motivated them to support the streamers – not for the quality of the content or for the streamer as a likeable character but for promoting more offline actions to solve such issues.

#### **Modeling Support**

To answer RQ2 on the factors related to provision of different types of social support, we ran a series of linear regression models with willingness to give emotional, instrumental, and financial support as the dependent variables. Independent variables included characteristics of

the streamer (interpersonal and physical attractiveness), characteristics of the viewer (age, gender, loneliness, interest in streaming content, length of acquaintance, frequency of viewing), and interactive elements (streamer's personal interaction with viewer, parasocial relationship, presence, eye contact with camera). We did not see any statistical differences in the dependent variables based on platform, so the models included all platforms. Table 1 summarizes coefficient values.

#### *Explaining Emotional Support*

The model explained 57% of variance (adjusted R square = .54),  $F(12, 201) = 21.90, p < .001$ . Interpersonal attractiveness and physical attractiveness were both related to willingness to give verbal support. Respect for the streamer and parasocial interaction were also positively related to emotional support intentions but presence was not.

#### *Explaining Instrumental Support*

The model explained 48% of variance (adjusted R square = .45),  $F(12, 201) = 1.60, p < .001$ . Lonely people were more likely to express instrumental support intentions. Interpersonal attractiveness was positively related to instrumental support intentions but physical attractiveness was not significant. Parasocial interaction and presence were both positively associated.

#### *Explaining Financial Support*

The same linear regression model was used to explain willingness to give financial support. The model explained 52% of variance (adjusted R square .49),  $F(12, 201) = 18.22, p < .001$ . Women were more likely to give financial support but age and loneliness were not significant predictors. Viewers who respected the streamer's abilities were more likely to indicate financial support intentions. Interpersonal and physical attractiveness of the streamer along with interactivity with the streamer at a personal level were not significantly related to financial support intentions. Parasocial relationship, however was a positive predictor, and higher presence explained higher intentions to give financial support. The streamer's ability to maintain eye contact with the camera was also positively related to intention toward financial support.

#### **DISCUSSION**

While we separated emotional, instrumental, and financial support in our quantitative analysis, it is important to note that in our qualitative investigation, the three types of social support were strongly interrelated, and some participants engaged in all three. Findings from our quantitative analysis indicate that parasocial relationship was consistently correlated with all three types of social support.

Overall, these findings indicate that parasocial relationships are a powerful predictor for support – and construct that is important in explaining supportive intentions in a live

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<sup>2</sup> Standing Rock was where Native Americans were protesting the construction of the Dakota Access Pipeline

	<i>Viewer's intention to give favorite streamer...</i>		
	Emotional Support	Instrumental Support	Financial Support
<i>Streamer characteristics</i>			
Interpersonal attractiveness	.22**	.23**	.13
Physical attractiveness	.15**	-.03	-.02
<i>Viewer characteristics</i>			
Age	.09	-.01	-.06
Sex <sup>1</sup>	-.03	.02	-.13*
Loneliness	.04	.19***	.02
Interest in streaming content	.25***	.12	.21**
Length of streamer acquaintance	-.08	.08	-.08
Frequency of viewing	-.03	.09	.06
<i>Interactive elements</i>			
Streamer-viewer interaction	.10	.09	.02
Parasocial relationship	.25**	.30***	.27**
Presence	-.02	.14*	.22***
Streamer's eye contact with camera	.09	-.04	.13*
<i>R (Adjusted R square)</i>	.75 (.54)	.69 (.45)	.72 (.49)

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; <sup>1</sup> 0=female, 1=male

**Table 1. Regression models explaining viewers' intention to give emotional, instrumental, and financial support to their favorite live streamer. Values represent standardized beta coefficients.**

streaming environment. This provides further support for live streaming as being conceptually masspersonal, as people are developing (at least what they consider to be) relationships through the medium. Parasocial relationships were a very popular variable in older studies of television [1,38] but in those studies, the interaction between the actor and viewer did not actually exist. Live streaming facilitates actual interaction, and while it is limited to some degree, it will be interesting to take a closer look at how parasocial relationships are different in this context in future research.

Social presence was only related with instrumental and financial support and not emotional support. As both instrumental and financial are types of tangible support, this provides a unique understanding of how the feeling of togetherness is a key factor in explaining tangible support. This is especially useful for streamers who are trying to make money—for themselves or charity—or for people who are trying to use the live streaming medium to mobilize others to take action. We suggest that streamers who want to utilize this finding look into the many studies that have examined both social and technical factors that predict social presence, such as embodiment and reciprocity, indicating opportunities for immersive technologies such as better sound, video, and virtual reality among others.

We were somewhat surprised that interpersonal attractiveness was only associated with emotional and instrumental support, and physical attractiveness was only associated with emotional support, indicating that attractiveness may not as important as some research might indicate. On the one hand, this finding could mean that provision of emotional support is about the streamer and provision of financial support is more about the content.

Another interpretation of this is that people are only willing to say nice things to nice and good-looking people. This may be somewhat disappointing for streamers who are trying to bank on being a friendly person, but it also could be uplifting for those who are not physically attractive to know that they could still get money from streamers.

Unlike the anecdotal reports on lonely men in China giving money to female live streamers, our dataset did not show a relationship between loneliness and financial support. This could be due to cultural differences, as our sample was all English-speaking individuals mostly from the U.S. This study did not examine cultural differences, but given the prevalence of live streaming culture in Asia, future studies may want to take into consideration that the cultural practices in different regions may widely vary.

#### **Financial Exchange as Tangible Support**

Financial exchange is not new in social media platforms. For example, online transactions of (monetary) gifting has been considered a form of social currency to manage group dynamics in online communities [53]. Yet money giving online is rarely considered related to social support but a simple “trade.” A novel finding from this study is that, though some viewers did use their donations of money for exchange (e.g., entertainment), many others tended to perceive and interpret their activities of money giving as a form of tangible support – either for the streamers or for the content or issues presented by the streamers. More importantly, their donations of money materialized other forms of support (e.g., donating money to show emotional support). In this way, tangible support has become a carrier to exhibit intangible support in a mediated environment.

Now that many live streaming platforms have incorporated different types of unique digital currencies, future research may want to investigate whether there are differences in how people feel about financial support that is a direct payment of money versus a virtual gift that has to be bought with money.

### **Masspersonal Platforms Afford Support**

As we pointed out at the beginning of the paper, live streaming platforms are unique social spaces because they are embedded with multiple modes of computer-mediated communication simultaneously, making them masspersonal platforms. This hybrid also leads to unique ways through which they mediate and afford social support.

The variation of the ways people provide social support and the wide range of different types of streams that participants of this study were viewing made it difficult for us to tease out effects of any specific affordance or technical feature. One notable finding, however, was the null effect of streamer-viewer interaction, which was a scale in which we asked participants how much they interacted directly with the streamer. It could be that the mass communication nature of live streaming is not suitable for facilitating this type of direct interaction. For streamers with relatively smaller audiences, direct interactions could still be feasible, but for larger audiences, it is physical impossible for the streamer to engage in these direct interactions simultaneously with large numbers of people. However, streamers are increasingly incorporating bots and human moderators to help moderate the chat portion of the stream. In future research, it may be interesting to see if the direct interaction viewers have with bots and/or human moderators also relates to how supportive they feel about the streamer.

The null effect of streamer-viewer interaction paired with the finding that streamer's eye contact with the camera was positively related to financial support intentions suggests that it is not the interaction that is ineffective but the limited means in which to do so. In this study we were only able to identify one behavioral measure of interaction through eye contact but there may be other forms worth investigating in the future. This also means that there may be many design opportunities for platforms to help their streamers directly interact more with viewers, such as having a dashboard of real-time user engagement metrics.

### **Limitations and Future Work**

When asked about how much they donated to their favorite streamer to date, we saw a long tail distribution, where most people gave less than \$10 but some people gave more than \$1,000. Money was given to the streamer both on and outside of the streaming platform, as well as through third-party vendors. This has become an emerging phenomenon because within-platform means of paying streamers were relatively new or non-existent on certain platforms prior to 2017. Therefore, future studies are needed to further explicate different types of financial support, especially as platforms integrate more features for monetization. For example, we

did not consider "subscribing" (a form of monthly payment to streamers that is unique to Twitch) as a form of financial support in this study and only looked at direct payments of money or gifts but these concepts may indicate different meanings for different viewers. We did not see any statistical differences between platforms regarding our dependent variables, but this does not mean there are qualitative differences do not exist, especially as platforms and norms of their usage evolve. Moreover, this study did not differentiate livestreams based on their content, but as the qualitative findings imply, some motivations are more specific to certain types of content and not others.

Importantly, our findings center on viewers who had already given money to streamers instead of all viewers, and rely on a convenience sample that was recruited from Mechanical Turk, thus is not representative of all live stream viewers. As live streaming literature is still in a nascent stage, future researchers may also want to consider large-scale descriptive work to understand the live streaming population to enable better sampling methods and assess cross-platform differences.

### **CONCLUSION**

Is giving money to one's favorite live streamer a charitable donation, compensation for entertainment/education services, or form of social support? When asking people who have already given money to streamers in the past, our qualitative results found that viewers had wide range of reasons on why they gave money to streamers in the past. Some viewed the financial exchange as extremely transactional (e.g., paying for what I received as a service) while others associated emotional connections and care with their monetary contribution.

Using a social support lens to distinguish emotional, instrumental, and financial support, we asked participants how willing they would be to offer these different types of social support in the future. Our statistical models indicate that social presence is an indicator of tangible support intentions—both instrumental and financial—and parasocial relationships are a positive predictor of all three support types.

Our focus on live streaming as a unique, masspersonal platform for varied types of social support provision builds on literature of social support in mediated social systems and especially adds to our understanding of tangible support provision (i.e., instrumental and financial support), which is relatively understudied compared to information or emotional support. With more individuals becoming part time or full time live streamers, as well as the growing utilization of live streaming for online shopping experiences, fundraising, and education, we hope that our findings will be the starting point of increased interest in the tangible aspects of social support from both applied and theoretical perspectives.

## REFERENCES

1. Philip J. Auter. 1992. TV that talks back: An experimental validation of a parasocial interaction scale. *Journal of Broadcasting and Electronic Media* 36, 2: 173–182. <http://doi.org/10.1080/08838159209364165>
2. Manuel Barrera. 1986. Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology* 14, 4: 413–445. <http://doi.org/10.1007/BF00922627>
3. Katherine Y. Chuang and Christopher C. Yang. 2010. Helping you to help me: exploring supportive interaction in online health community. *Proceedings of the 73rd ASIS&T Annual Meeting on Navigating Streams in an Information Ecosystem - Volume 47* 47: No.9. Retrieved September 17, 2017 from <http://dl.acm.org/citation.cfm?id=1920344&CFID=809185747&CFTOKEN=79139081>
4. Jessica Conditt. 2017. Twitch’s in-chat tipping program generated \$6 million in 2016. *Engadget*. Retrieved from <https://www.engadget.com/2017/02/15/twitch-streamers-bits-6-million-year-in-review-2016/>
5. Carolyn E. Cutrona and Daniel W. Russell. 1987. The provisions of social relationships and adaptation to stress. *Advances in Personal Relationships* 1, 1: 37–67.
6. Carolyn Cutrona, Daniel Russell, and Jayne Rose. 1986. Social support and adaptation to stress by the elderly. *Psychology and Aging* 1, 1: 47–54.
7. Mary Conway Dato-on and Marc Fetscherin. 2012. Brand Love: Interpersonal or Parasocial Love Relationship? In *Consumer-Brand Relationships: Theory and Practice*. Routledge, 151–166. Retrieved from [http://www.brand-management.usi.ch/Abstracts/Monday/BrandrelationshipsipIII/Monday\\_BrandrelationshipIII\\_Fetscherin.pdf](http://www.brand-management.usi.ch/Abstracts/Monday/BrandrelationshipsipIII/Monday_BrandrelationshipIII_Fetscherin.pdf)
8. Michael Delucchi and Susan Pelowski. 2000. Liking or learning? The effect of instructor likeability and student perceptions of learning on overall ratings of teaching ability. *Radical Pedagogy* 2.
9. Jayson L. Dibble, Tilo Hartmann, and Sarah F. Rosaen. 2016. Parasocial Interaction and Parasocial Relationship: Conceptual Clarification and a Critical Assessment of Measures. *Human Communication Research* 42, 1: 21–44. <http://doi.org/10.1111/hcre.12063>
10. Derek Doran, Samir Yelne, Luisa Massari, Maria-Carla Calzarossa, LaTrelle Jackson, and Glen Moriarty. 2015. Stay Awhile and Listen: User interactions in a crowdsourced platform offering emotional support. *Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2015 - ASONAM '15*, ACM Press, 667–674. <http://doi.org/10.1145/2808797.2809311>
11. Nicole B. Ellison, Jessica Vitak, Rebecca Gray, and Cliff Lampe. 2014. Cultivating social resources on social network sites: Facebook relationship maintenance behaviors and their role in social capital processes. *Journal of Computer-Mediated Communication* 19, 4: 855–870.
12. Marc Fetscherin. 2014. What type of relationship do we have with loved brands? *Journal of Consumer Marketing* 31, 6/7: 430–440. <http://doi.org/10.1108/JCM-05-2014-0969>
13. Guo Freeman, Jeffrey Bardzell, and Shaowen Bardzell. 2016. Revisiting Computer-Mediated Intimacy: In-game marriage and dyadic gameplay in Audition. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16*, ACM Press, 4325–4336. <http://doi.org/10.1145/2858036.2858484>
14. Guo Freeman, Jeffrey Bardzell, Shaowen Bardzell, and Susan C. Herring. 2015. Simulating Marriage: Gender roles and emerging intimacy in an online game. *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing - CSCW '15*, ACM Press, 1191–1200. <http://doi.org/10.1145/2675133.2675192>
15. August E. Grant, K. Kendall Guthrie, and Sandra J. Ball-Rokeach. 1991. Television Shopping: A Media System Dependency Perspective. *COMMUNICATION RESEARCH* 18, 6: 773–798. <http://doi.org/10.1177/009365091018006004>
16. Oliver L. Haimson and John C. Tang. 2017. What Makes Live Events Engaging on Facebook Live, Periscope, and Snapchat. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17*, ACM Press, 48–60. <http://doi.org/10.1145/3025453.3025642>
17. William A. Hamilton, Oliver Garretson, and Andruid Kerne. 2014. Streaming on twitch: Fostering participatory communities of play within live mixed media. *Proceedings of the 32nd annual ACM conference on Human factors in computing systems (CHI '14)*, ACM Press, 1315–1324. <http://doi.org/10.1145/2556288.2557048>
18. Donald Horton and R Richard Wohl. 1956. Mass communication and para-social interactions: Observations on intimacy at a distance. *Psychiatry* 19: 215–229. <http://doi.org/10.1017/CBO9781107415324.004>
19. Jina Huh. 2015. Clinical Questions in Online Health Communities. *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing - CSCW '15*, ACM Press, 1488–1499. <http://doi.org/10.1145/2675133.2675259>
20. Joshua Introne, Bryan Semaan, and Sean Goggins. 2016. A Sociotechnical Mechanism for Online Support Provision. *Proceedings of the 2016 CHI Conference on*

- Human Factors in Computing Systems - CHI '16*, ACM Press, 3559–3571.  
<http://doi.org/10.1145/2858036.2858582>
21. Brandon Van Der Heide Joseph B. Walther, Caleb T. Carr, Scott Seung W. Choi, David C. DeAndrea, Jinsuk Kim, Stephanie Tom Tong. 2011. Interaction of interpersonal, peer, and media influence sources online: A research agenda for technology convergence. In *A Networked Self: Identity, Community, and Culture on Social Network Sites*, Zizi Papacharissi (ed.). Routledge, New York, NY, 17–38.
  22. Mehdi Kaytoue, Arlei Silva, Loïc Cerf, Wagner Meira, and Chedy Raïssi. 2012. Watch me playing, i am a professional: A first study on video game live streaming. *Proceedings of the 21st international conference companion on World Wide Web (WWW '12) Companion*, ACM Press, 1181–1188.  
<http://doi.org/10.1145/2187980.2188259>
  23. Luke Kelly and Yue Wang. 2017. China’s booming live streaming market has reached its zenith. *Forbes*. Retrieved from  
<https://www.forbes.com/sites/ljkelly/2017/09/08/the-booming-chinese-live-streaming-market-has-reached-its-zenith/#6677212b2ab3>
  24. Johannes Knoll, Holger Schramm, Christiana Schallhorn, and Sabrina Wynistorf. 2015. Good guy vs. bad guy: The influence of parasocial interactions with media characters on brand placement effects. *International Journal of Advertising* 34, 5: 720–743.  
<http://doi.org/10.1080/02650487.2015.1009350>
  25. Anne C. Krendl, Nicole S. Magoon, Jay G. Hull, and Todd F. Heatherton. 2011. Judging a book by its cover: The differential impact of attractiveness on predicting one’s acceptance to high- or low-status social groups. *Journal of Applied Social Psychology* 41, 10: 2538–2550. <http://doi.org/10.1111/j.1559-1816.2011.00824.x>
  26. Cliff Lampe, Jessica Vitak, Rebecca Gray, and Nicole Ellison. 2012. Perceptions of facebook’s value as an information source. *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems - CHI '12*, ACM Press, 3195–3204.  
<http://doi.org/10.1145/2207676.2208739>
  27. Pascal Lessel, Alexander Vielhauer, and Antonio Krüger. 2017. Expanding Video Game Live-Streams with Enhanced Communication Channels: A case study. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*, ACM Press, 1571–1576.  
<http://doi.org/10.1145/3025453.3025708>
  28. Danielle Lottridge, Frank Bentley, Matt Wheeler, et al. 2017. Third-wave livestreaming: Teens’ long form selfie. *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services - MobileHCI '17*, ACM Press, 1–12. <http://doi.org/10.1145/3098279.3098540>
  29. James C. McCroskey and Thomas A. McCain. 1974. The measurement of interpersonal attraction. *Speech Monographs* 41, 3: 261–266.  
<http://doi.org/10.1080/03637757409375845>
  30. Bonnie Nardi and Justin Harris. 2010. Strangers and friends: Collaborative play in World of Warcraft. *International Handbook of Internet Research*: 395–410. <http://doi.org/10.1007/978-1-4020-9789-8>
  31. Kristine L. Nowak and Frank Biocca. 2003. The Effect of the Agency and Anthropomorphism on Users’ Sense of Telepresence, Copresence, and Social Presence in Virtual Environments. *Presence: Teleoperators and Virtual Environments* 12, 5: 481–494.  
<http://doi.org/10.1162/105474603322761289>
  32. Gordon L. Patzer. 1983. Source credibility as a function of communicator physical attractiveness. *Journal of Business Research* 11, 2: 229–241.  
[http://doi.org/10.1016/0148-2963\(83\)90030-9](http://doi.org/10.1016/0148-2963(83)90030-9)
  33. Anthony J. Pellicone and June Ahn. 2017. The Game of Performing Play: Understanding streaming as cultural production. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17*, ACM Press, 4863–4874.  
<http://doi.org/10.1145/3025453.3025854>
  34. Elizabeth M Perse. 1990. Media involvement and local news effects. *Journal of Broadcasting & Electronic Media* 34, 1: 17–36.  
<http://doi.org/10.1080/08838159009386723>
  35. Stephen Reysen. 2005. Construction of a new scale: The Reysen likeability scale. *Social Behavior and Personality* 33, 2: 201–208. Retrieved from  
<http://www.sbp-journal.com/index.php/sbp/article/view/1391>
  36. Vicki Ritts, Miles L. Patterson, and Mark E. Tubbs. 1992. Expectations, Impressions, and Judgments of Physically Attractive Students: A Review. *Review of Educational Research* 62, 4: 413–426.  
<http://doi.org/10.3102/00346543062004413>
  37. Alan M. Rubin and Elizabeth M. Perse. 1987. Audience Activity and Television News Gratifications. *Communication Research* 14, 1: 58–84.  
<http://doi.org/10.1177/009365087014001004>
  38. Alan M. Rubin, Elizabeth M. Perse, and Robert A. Powell. 1985. Loneliness, parasocial interaction, and local television news viewing. *Human Communication Research* 12, 2: 155–180.  
<http://doi.org/10.1111/j.1468-2958.1985.tb00071.x>
  39. Dan Russell, Letitia Anne Peplau, and Mary Lund Ferguson. 1978. Developing a Measure of Loneliness. *Journal of Personality Assessment* 42, 3: 290–294.  
[http://doi.org/10.1207/s15327752jpa4203\\_11](http://doi.org/10.1207/s15327752jpa4203_11)
  40. Rainforest Scully-Blaker, Jason Begy, Mia Consalvo,

- and Sarah Christina Ganzon. 2017. Playing along and playing for on Twitch: Livestreaming from tandem play to performance. *Proceedings of the 50th Hawaii International Conference on System Sciences: 2026–2035*. Retrieved from <http://hdl.handle.net/10125/41400>
41. Joseph Seering, Robert Kraut, and Laura Dabbish. 2017. Shaping Pro and Anti-Social Behavior on Twitch Through Moderation and Example-Setting. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing - CSCW '17*, ACM Press, 111–125. <http://doi.org/10.1145/2998181.2998277>
  42. John Short, Ederyn Williams, and Bruce Christie. 1976. *The social psychology of telecommunications*. John Wiley & Sons, London, UK.
  43. Charles Steinfield, Joan M. DiMicco, Nicole B. Ellison, and Cliff Lampe. 2009. Bowling online: social networking and social capital within the organization. *Proceedings of the fourth international conference on Communities and technologies*, ACM, 245–254. <http://doi.org/10.1145/1556460.1556496>
  44. Michael J. Tews, Kathryn Stafford, and Jinfei Zhu. 2009. Beauty revisited: The impact of attractiveness, ability, and personality in the assessment of employment suitability. *International Journal of Selection and Assessment* 17, 1: 92–100. <http://doi.org/10.1111/j.1468-2389.2009.00454.x>
  45. Twitch.tv. About Twitch. Retrieved September 16, 2017 from <https://www.twitch.tv/p/about/>
  46. Robert Weiss. 1974. The Provisions of Social Relationships. *Doing Unto Others*, 17–26.
  47. Chris Weller and Rachel Butt. 2016. Millions of lonely Chinese bachelors are turning to live-streams for human contact. *Business Insider*. Retrieved from <http://www.businessinsider.com/chinese-bachelors-livestreams-2016-7>
  48. Dmitri Williams, Nicolas Ducheneaut, Li Xiong, Yuanyuan Zhang, Nick Yee, and Eric Nickell. 2006. From tree house to barracks: The social life of guilds in World of Warcraft. *Games & Culture* 1: 338–361.
  49. D Yvette Wohn and Eun-Kyung Na. 2011. Tweeting about TV: Sharing television viewing experiences via social media message streams. *First Monday* 16, 3: 1–13. Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/3368/2779>
  50. Donghee Yvette Wohn. 2016. From Faux-Social to Pro-Social: The Mediating Role of Copresence in Developing Expectations of Social Support in a Game. *Presence: Teleoperators and Virtual Environments* 25, 1: 61–74. [http://doi.org/10.1162/PRES\\_a\\_00246](http://doi.org/10.1162/PRES_a_00246)
  51. Donghee Yvette Wohn, Caleb T. Carr, and Rebecca A. Hayes. 2016. How Affective Is a “Like”? The Effect of Paralinguistic Digital Affordances on Perceived Social Support. *Cyberpsychology, Behavior, and Social Networking* 19, 9: 562–566. <http://doi.org/10.1089/cyber.2016.0162>
  52. Donghee Yvette Wohn, Yu-hao Lee, Jieun Sung, and Torger Bjornrud. 2010. Building common ground and reciprocity through social network games. *Proceedings of the 28th of the international conference extended abstracts on Human factors in computing systems - CHI EA '10*, ACM Press, 4423–28. <http://doi.org/10.1145/1753846.1754164>
  53. Ziming Wu and Xiaojuan Ma. 2017. Money As a Social Currency to Manage Group Dynamics: Red Packet Gifting in Chinese Online Communities. *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, 2240–2247. <http://doi.org/10.1145/3027063.3053153>
  54. Yingzhi Yang. 2017. In China, live-streaming apps soothe the lonely souls and create fortunes. *LA Times*. Retrieved from <http://www.latimes.com/world/asia/la-fg-china-live-streaming-20161128-story.html>
  55. Xinyi Zhang, Shiliang Tang, Yun Zhao, Gang Wang, Haitao Zheng, and Ben Y. Zhao. 2017. Cold hard e-cash: Friends and vendors in the Venmo digital payment system. *Proceedings of ICWSM*, 1–10.
  56. Zhenhui Zhu, Zhi Yang, and Yafei Dai. 2017. Understanding the Gift-Sending Interaction on Live-Streaming Video Websites. *Social Computing and Social Media: Human Behavior LNCS*, 1028: 274–285. [http://doi.org/10.1007/978-3-319-58559-8\\_23](http://doi.org/10.1007/978-3-319-58559-8_23)