

# 因為 Jimmy Kimmel 想知道：遊戲實況觀看動機預測觀看時間及愉悅感

林日璇

## 摘要

遊戲實況是目前受歡迎的娛樂，包含專業電競及休閒遊戲遊玩。本研究透過自我決定理論及使用與滿足架構，探索閱聽人觀看遊戲實況的動機。透過 383 位台灣大學生的問卷樣本，10 項觀看動機為：觀察學習、社交互動、避免壓力、避免喚起、缺乏勝任感、追隨潮流、尋求資訊、打發時間、迷、及習慣。這些動機解釋遊戲實況觀看愉悅感 47.5% 的變異性。一些遊戲實況觀看動機與實際主動遊玩遊戲及運動觀看的動機不同。遊戲實況觀看是閱聽人替代主動遊玩遊戲的策略，是共同遊玩的一種方式，其特色在於透過實況主、觀看者、及觀看社群之間的互動所創造出來的共同經驗以及合作式共創遊玩內容。本研究提出由理論發展的遊戲觀看動機量表，並提出其應用方式及未來研究方向。

- ◎ 關鍵字：Twitch、自我決定理論、使用與滿足、愉悅感、遊戲實況、觀看動機
- ◎ 本文作者林日璇為國立政治大學傳播學院廣告系副教授、台灣政經傳播研究中心成員。
- ◎ 聯絡方式：Email：tammylin@nccu.edu.tw；通訊處：11605台北市文山區指南路二段64號。
- ◎ 收稿日期：2017/11/15 接受日期：2018/03/19

# Because Jimmy Kimmel Wants to Know: Motivations for Watching Game Streaming as Predictors of Viewing Time and Enjoyment

Jih-Hsuan Tammy Lin

## Abstract

Game streaming that features professional and casual game play shared by players has become a popular form of entertainment. This study explores the motivations for watching game streaming through self-determination theory and the uses and gratification framework. A sample of 383 Taiwanese university students revealed 10 factors: observational learning, social interaction, stress avoidance, arousal avoidance, incompetence, trend following, information seeking, time killing, fandom, and habit. These factors explained 47.5% of the variance in viewer enjoyment. Some motivations of viewers differ from those of individuals engaged in active game play or traditional sports viewing. Watching game streaming is a tactic employed by audiences as a substitute for active game play and is a strategic approach for engaging in entertainment. The shared experience and collaborative creation of game content through interactions among streamers, spectators, and the community are unique features of game streaming and an example of “tandem play.” This study proposes a theoretically informed game streaming motivation scale, thereby contributing to the literature and indicating directions for future research. The applicability and implications of this scale are discussed.

- ⊙ Keywords: enjoyment, game streaming, motivation, self-determination theory, Twitch, uses and gratifications
- ⊙ Corresponding author: Jih-Hsuan Tammy Lin is an Associate Professor in the College of Communication and Taiwan Institute for Governance and Communication Research at

National ChengChi University, Taiwan, e-mail: tammylin@nccu.edu.tw, address: No.64,  
Sec 2, Zhinan Road, WenShan District, Taipei, Taiwan, 11605.

⊙ Received: 2017/11/15 Accepted: 2018/03/19

In late 2015, talk show host Jimmy Kimmel poked fun at those who watched game streaming and suggested that they were idiots because he really did not understand the appeal. “I don’t get it. To me, watching another person play video games is like going to a restaurant and having someone eat your food for you. If you like them [games], play them. When I was a kid, you only watched other kids playing video games when you ran out of quarters, and then you’d stand there” (Kimmel, 2015). The joke backfired (i.e., GamerGaze), angering many viewers in the large game streaming community, and left audiences to wonder why more people spend time watching other people casually play video games instead of playing the games themselves.

Game streaming featuring live eSport events and casual game play as well as pre-recorded content shared by professional and recreational players has become a popular form of entertainment. PewDiePie, a successful game-streaming celebrity, generated 15 million US dollars by uploading videos of himself playing different games to YouTube (Berg, 2016). In 2016, more than 100 million unique users visited Twitch every month; as of 2017, Twitch has 9.7 million daily active users and more than 2 million monthly streamers (Smith, 2017). More than half of Twitch users watch streaming videos for more than 20 hours per week (Smith, 2017). According to Quantcast (2015), 25% of the viewing traffic came from the U.S., followed by Germany, Brazil, Russia, and Taiwan. South Korea and China have dominated, with 612 million dollars of the global market. The market is growing rapidly: in 2015, aiming to compete with Twitch, the largest game-streaming platform in this huge market, YouTube launched YouTube Gaming, a video platform specifically dedicated to video game content.

Game streaming refers to a technology that transmits live and on-demand game content (IHS, 2014) through online video platforms. The content not only offers game competitions but also provides demonstrations of game-play strategies and related content from any game player. In this paper, the term “game streaming” refers to both professional and casual game-related competitions, content, demonstrations and creations. Few studies have discussed the game-streaming phenomenon (Hamilton, Garretson, & Kerne, 2014; Pires & Simon, 2015). Most studies that have analyzed related empirical data have focused on communication

within the streaming community (Nascimento et al., 2014), such as building a model to predict the number of messages sent during a chat session, or have exclusively examined eSports (Seo & Jung, 2016).

With its rapidly growing market, much remains unknown about this popular form of entertainment. Understanding user motivations is one common approach to understanding a new phenomenon related to communication technology. The “uses and gratification” framework has been employed to assess user motivations to explain time spent playing digital games (Sherry, Lucas, Greenberg, & Lachlan, 2006) and enjoyment of MMORPG (massively multiplayer online role-playing games) (Yee, 2006). Recently, self-determination theory has emerged as a new approach to explain need satisfaction as enjoyment in entertainment (Peng, Lin, Pfeiffer, & Winn, 2012; Tamborini et al., 2011). Game streaming contains a unique chat feature for audiences and streamers to interact and experience the progress of a game together (Smith, Obrist, & Wright, 2013). Do audiences have different motivations for watching game streaming compared with active game play or sports viewing? This study employed both the uses and gratifications (U&G) framework and self-determination theory to illuminate the motivations of people who spend time watching game streaming. Theoretically, the results from this study contribute to discussions of the concept of “play” (Huizinga, 1949) and suggest that game streaming is a form of play (Cheung & Huang, 2011).

## **Game Streaming**

Video games are often a social technology, ranging from co-playing in one’s living room (i.e., tandem play; Consalvo, Begy, Ganzon, & Scully-Blaker, 2016) to watching others play at a public arcade to participating in the current generation of streaming technology. Before the introduction of popular streaming platforms such as Twitch and YouTube, players would watch or share gameplay by playing games on public servers, thus allowing others to watch (examples of such servers include Nethack and Dugone Crawl). In other words, watching other people playing games online is nothing new. However, the emergence of easy-to-use online live streaming platforms has led to the popularity of game-streaming

phenomenon. The most popular game-streaming site is Twitch, which was formed in 2011 as a game-tailored version of the general-interest streaming site Justine.tv.

### **Essentials of game streaming**

In addition to professional gaming broadcasts, Twitch has become a platform for video gamers to share their game play with friends or other players. Gamers who either broadcast live games or upload recorded sessions are called streamers (Pires & Simon, 2015). Streamers either play or demonstrate their attempts to play various games alone or with friends or rivals. Notably, streamers often include their comments, faces, and/or body language as part of their content to express their emotions during broadcasts. Various streamers have become famous worldwide because of their distinctive personalities and “performance” styles (Lin, Bowman, Lin, & Chen, 2017). For example, “Tung-sheng” has earned US \$3000 a month because of his infamous (but entertaining) cursing at teammates during League of Legends competitions. Unlike streamers, viewers are spectators who “follow the in-game experience, but are not direct participants in the game” (Cheung & Huang, 2011, p. 764).

### **Other ways to engage in game streaming**

In addition to live streaming or recorded playback of game play, game-streaming platforms provide other ways for audiences to participate. For example, most platforms feature text-based chat rooms or channels in which viewers can comment on live broadcasts and interact with streamers and/or other viewers in real time. This design provides a platform for a rich game play experience in which viewers can interact with a) the streamer and b) other viewers in the chatroom simultaneously through text-based chat channels. Therefore, streamers can incorporate real-time feedback from spectators as part of their streaming performance.

These unique features distinguish game streaming from YouTube videos and traditional TV game shows. Game-streaming features provide audiences with several options to engage in streaming content, including both watching live or recorded game play and actively

participating in social interactions with both the streamers and other viewers (Seo & Jung, 2016). Accordingly, game streaming has been considered a participatory community (Hamilton et al., 2014) characterized not only by its openness to everyone but also by the fact that the platform enables users to engage in shared activities. Game play is no longer a solo or small-group event but a collaborative event shared by streamers and spectators alike. Both sociability and the “sheer pleasure of being together” (Simmel & Hughes, 1949) are attractive motivations and experiences for social connections. These are distinctive phenomena from game play or show watching. Therefore, understanding why people spend time and enjoy game streaming is an important precursor to studying the culture and dynamics of these communities.

RQ1: What are the motivations for watching game streaming?

## Study 1

Following approaches similar to those used in previous studies (Sherry et al., 2006; Yee, 2006), this study conducted both a qualitative exploration of factors to design scale items (study 1) and a quantitative survey (study 2) to finalize the scale dimensions and items. First, two research assistants explored qualitative feedback from a written course activity for a MOOC (massive online open course) titled “Digital games and society,” hosted on XueTang, the largest MOOC platform in China, with more than eight thousand students from Taiwan and China. Course activities asked students to share their comments on the course discussion board concerning why they like to watch game streaming and their thoughts about game streaming. All course activities were voluntary, resulting in 58 items of feedback. All participants were explicitly informed that this feedback would be examined in an initial analysis designed to develop a game-streaming scale. All participants used their alias when posting comments. Following the analysis approach of Krueger and Casey (2014), two research assistants then analyzed the qualitative material and extracted dimensions that arose as consistent themes. The author and these research assistants subsequently reviewed all the dimensions and created scales by adapting scales from the previous literature. We structured

their feedback using self-determination theory and the U&G framework.

### **Motivations for Watching Game Streaming**

Self-determination theory (Ryan & Deci, 2000) identifies three intrinsic motivations that predict psychological well-being and players' game play enjoyment (Ryan, Rigby, & Przybylski, 2006). First, the need for competence refers to the need to feel capable of fulfilling a game challenge. Second, the need for relatedness refers to the need to feel connected with other social beings. Finally, the need for autonomy refers to the need for players to feel that they can have control over media choices and can exercise free will to make decisions. Researchers have found that game features effectively satisfy these three needs, thus increasing enjoyment of game play (Peng et al., 2012; Tamborini et al., 2011).

Active game play and watching game streaming are different mechanisms; the previous factor demands a more complex cognitive process than merely watching so that users can actively make decisions and control the characters (Lin, 2013a; Peng, 2008). Most motivations identified during the qualitative exploration also fit into the self-determination framework, which is discussed next.

#### **Autonomy**

Autonomy concerns whether an individual can control his/her free will to initiate behavior without external influences. For game-streaming viewers, both choosing to watch highlights of game content and watching other people play the game without personally engaging provide more control over one's time. Game streaming becomes a substitute for active game play to save time while having fun (Cheung & Huang, 2011). As opposed to playing the game personally, game streaming can provide a more flexible approach for spectators to control their time and tasks. For example, several participants indicated that when they do not have time to personally play the game, they choose to watch game streaming to vicariously experience the game. Specifically, on-demand content permits a time-shifting option for these spectators, enabling them to continue to enjoy game content



without having to surmount the game's obstacles personally. In addition, spectators do not have to worry about "getting hooked" by the game because game play is time-consuming and comes with the risk of losing and having to start over. For those with limited time to play a game—or those with limited skill sets for certain difficult games—game viewing allows them to customize their game-consuming experience according to their own preferences. For example, one participant stated, "I always get lost in the game map and spend lots of time playing the game. If I watch the experienced streamers who have precise hunch playing the game, I can save a lot of time." Therefore, in this study, this motivation for watching game streaming is known as "autonomous time saving."

In addition, watching others play games increases the distance between audiences and game characters (Klimmt, Hefner, & Vorderer, 2009). Game streamers thus became a mediated agent between the game character and audiences. Audiences choose to watch game play so that they will not become frightened or stressed from playing the game themselves through decreased emotional attachment, particularly with certain horror games (e.g., *The Last of Us*, *Outlast*, etc.). Participant Li (female) shared, "I was careful and stressed most of the time when I played the game; however, I felt so relaxed when watching game streaming and even felt that it was funny at times." Watching game play permits spectators to use their free will to decide how they want to consume game content, thus satisfying their need for autonomy. They will not be forced to spend too much time or become scared simply because they want to understand the game content. It can be argued that these approaches enable engagement in game streaming to obtain the satisfaction of autonomy while being able to experience the game through streamers' demonstrations. Therefore, the "stress avoidance" motivation (i.e., reducing stress by watching others play the game rather than playing the game oneself) is derived from qualitative feedback.

### **Competence**

Competence refers to the perception of one's ability to complete tasks or achieve goals. Game-streaming viewers can vicariously gain the satisfaction of competence by

watching a skillful streamer conquer a difficult battle. The competence of playing the game can be separated into two dimensions—one that refers to players' own skills in conquering games and the other that refers to players' inability to process the gore or horror elements in games (Lynch & Martins, 2015). Therefore, streaming horror-game play is very popular in the streaming community (Smith et al., 2013). From the qualitative analyses, horror games topped the choice of game streaming content.

Audiences feel incapable of coping with a horror atmosphere to continue (or even to try) a game, preferring to watch other people playing these games as a buffered way to experience the storyline. By watching others play the game, audiences feel as though they are with the streamer and gain the satisfaction of competence. Based on the two dimensions of game-playing competence, two motivations are derived: “incompetence” (i.e., lacking the skills or self-efficacy to play the game) and “arousal avoidance” (i.e., choosing to watch game streaming because the game is too exciting or gory). For example, regarding incompetence, participant O (female) stated that “especially for those games requiring high playing skills, I prefer watching game streaming because my game skills are dull and I respond slowly to all the challenges. I often get stuck playing this kind of game.” Regarding arousal avoidance, participant L (female) indicated that the horror puzzle-solving games frightened her and she failed repeatedly. Therefore, she chose to start watching horror game streaming instead of actively playing the game herself to avoid being too frightened.

Another motivation that emerged as an important competent dimension is “observational learning” (Bandura, 2001), which is drawn from social cognitive theory. Observational learning is an approach whereby humans gain experience with regard to a specific task. Audiences watch game streaming to observe other players' strategies to overcome obstacles or pass a level in the game. Participant W (male) indicated that he loved to watch streaming content offered by Amaz, who could precisely predict the opponents' moves and showed superb skills even when using bad card combinations in the game “HearthStone.” “Amaz is one of the few streamers that I can learn game skills from while being entertained” (participant W). By imitating or observing other players' trial-and-error processes in game play,

audiences may increase their self-efficacy and play the game more successfully (Bandura, 2001).

### **Relatedness**

Finally, relatedness concerns people's social needs. Audiences perceive a greater level of social connection watching a YouTube video with others (Haridakis & Hanson, 2009). In live game streaming, viewers enjoy serving as an assistant for streamers to monitor game details through chat rooms (Cheung & Huang, 2011). In addition, the hybrid form of game streaming contains game graphics, streamer reactions, and chat (Hamilton et al., 2014), providing a rich social context for viewers to interact both with each other and with streamers. This type of co-connected co-viewing (Pittman & Tefertiller, 2015) experience fosters a sense of community and viewers play roles while participating in synchronous or asynchronous forms of game streaming. Participant W stated, "Twitch has its own unique chat culture. Audiences use memes from Kappa and Failfish to express their live reactions." Furthermore, viewers are motivated to watch game streaming as a social tool so that they can chat with their friends. These are all motivations for viewers to gain the satisfaction of relatedness. Therefore, "social interaction" is a key motivation for audience participation in this collective community through chats between viewers and streamers and other audiences.

A related motivation is "trend following," meaning that audiences watch game streaming because others are doing so. As some participants indicated, discussing game streaming has become a social activity among their networks, prompting the participants to watch games to stay current with social trends. The extrinsic motivation of social pressure may contribute to such behavior (Reinecke, Vorderer, & Knop, 2014). Research (Reinecke et al., 2014) has shown that, because of social pressure, students use Facebook because their friends are using it.

"Fandom," a chief motivation for sports viewing (Pegoraro, 2013), also emerged from the qualitative feedback as an important motivation for watching game streaming. When audiences are fond of certain streamers, they can subscribe to their channels for free or to

donate money to them (not required). Viewing the game-streaming content of their favorite game streamers is one way that viewers can support them (Scully-Blaker, Begy, Consalvo, & Ganzon, 2017). The count of “viewers” is simply an indicator of the streamers’ popularity. This social support is a way of gaining the satisfaction of relatedness.

### **Other motivations**

In addition to the above motivations, participants indicated other motivations consistent with the U&G framework. This framework (Katz, Gurevitch, & Hass, 1973) is commonly employed to explore the motivations of media use and time use. The central hypothesis of the U&G framework is that media users actively seek to use media or certain media features to satisfy their needs. For game streaming, “time killing,” a common motivation of social media use (Papacharissi & Mendelson, 2011), has also emerged as a main motivation for game streaming. Several participants shared that especially while they are eating meals alone in their dorms, watching game streaming has become a good option to kill time. Moreover, “information seeking” (Papacharissi & Mendelson, 2011) refers to watching game streaming to gain game-related information to use as references or evaluations to guide purchasing decisions. For example, participant S indicated that he usually watched game streaming to decide whether to purchase certain titles. Lastly, the “habit” factor complements the “active use” limit from the U&G framework (LaRose, 2010). All these factors have emerged as key motivations in developing this study’s scale for game streaming.

## **Study 2**

### **Utility of Motivation Scales**

#### **Viewing time**

Participation time has become a widespread, important index employed by researchers to understand why audiences use a new media or platform such as video games (Sherry et al.,

2006) and general social media (Papacharissi & Mendelson, 2011). Specifically, viewing time has been considered a better metric for eSports/game-streaming traffic than other traditional rating metrics, such as unique cookies and/or the number of unique visits. Thus, this study will explore which motivations best predict viewing time.

RQ2: What motivations predict game-play viewing time?

### **Enjoyment**

Another underexplored variable is viewer enjoyment from watching game streaming. Enjoyment of entertainment media has been defined as satisfying three needs: autonomy, competence, and relatedness (Peng et al., 2012; Tamborini et al., 2011). Enjoyment is thus an outcome of the need satisfaction of a set of functional needs, such as satisfying the need to watch the stream instead of playing the game through mediated agency (autonomy), incompetence at playing a game oneself (competence), or the need to obtain social connectedness from chatting with streamers and other audiences (relatedness).

RQ3: What motivations predict enjoyment?

### **Perceived participation**

Within social cognitive theory, Peng (2008) has theorized active game play as a mediated enactive experience and game play watching as a mediated observational experience. The key difference between these two experiences is the interactivity afforded by digital games (Lin, 2013a, 2013b). Observing game play only allows viewers to follow gamers' thoughts and progress in the game; it does not give them power to steer actions. Nevertheless, in the context of game streaming, shared experiences make viewers feel as though they are part of the game—i.e., perceived participation. In most cases, spectators engage in shared experience either by commenting on game streaming with other spectators or by engaging in direct interaction with streamers, thus potentially contributing to streamers' decision-making processes. In these cases, game play might not be controlled exclusively by the streamer but instead can be affected by incorporating spectators' comments. The

vicarious experience thus becomes shared participation among streamers, spectators, and the community.

RQ4: Which motivations predict spectators' perceived participation in game streaming?

## Method

### Measurements

#### Derivation of scale items

Based on the qualitative text analyses and the literature, the research team developed the scale described below. To create the scales, we extracted descriptions from the qualitative feedback and adapted existing scales. “Observational learning” focuses on gaining knowledge about how to pass a game level. Bandura’s definition of observational learning was adapted to the game-streaming context (e.g., “learning skills, such as strategies for passing a level, from other players” and “observing other people’s skills”). “Information seeking” refers to the process through which viewers gain information related to the specific game streamed, which influences their decisions about playing or purchasing said game. This factor was adapted from the information-seeking scale of Papacharissi and Mendelson (2011). The author created the fandom factor, which drew on fandom literature concerning sports communication (Pegoraro, 2013). Building on the “chat” item from the gaming motivation scale of Yee (2006), the author expanded the “social interaction” factor. “Trend following” was adapted from the trend-following scale of Papacharissi and Mendelson (2011). “Time killing” was also adapted from Papacharissi and Mendelson (2011). “Habit” was adapted from Verplanken and Orbell (2003) and was used to indicate a lack of awareness with regard to watching game streaming (e.g., “Watching game streaming is part of my (daily, weekly, monthly) routine”).

Other factors were created based on qualitative descriptions, such as “stress avoidance” (e.g., “Compared with playing the video game, I don’t feel as stressed when watching game

streaming”); “autonomous time saving” (e.g., “Because I do not have time to play video games, watching game streaming saves time,” “[I watch game streaming] to learn a game’s content in a brief period of time,” and “Game streaming condenses the content of the game; therefore, I experience the game more efficiently”); “arousal avoidance” (“Some of the game content is too exciting for me to play”); and “incompetence” (“Some games are beyond my skill level”). The author also adapted the current need satisfaction scale (Peng et al.) to reflect the self-determination concept in the above motivations. Furthermore, a “no money” factor was identified based on the qualitative feedback, indicating that audiences watched game streaming because they lacked money to buy the game. The research team created two more factors: the “comparing” factor (i.e., when viewers compare a streamer’s gaming skills with their own) and the “surveillance” factor (i.e., when viewers track other players’ game progress and practice status).

### **Dependent variables**

Enjoyment ( $\alpha = .92$ ,  $M = 5.18$ ,  $SD = 1.22$ ) consisted of seven items (Peng et al., 2012), including “watching game streaming is fun,” “I enjoy watching game streaming,” “I am willing to keep watching game streaming,” and a reverse-coded item, “I feel bored watching game streaming.” Weekly time watching game streaming ( $M = 834.54$  minutes, equal to 13.9 hours,  $SD = 742.79$ , median = 723, mode = 1089, range = 6243) was measured by asking participants how many days they watched game streaming in an average week and the minutes they spent watching game streaming on those days. Watching time was calculated based on days per week multiplied by minutes per day.

### **Procedure**

The first version of the quantitative questionnaire was pretested in the same MOOC to ensure that the wording was clear and that scale reliability was good. Official data collection began in Taiwan, 2 weeks after the pilot test. Taiwan has been among the top five countries with the most game-streaming viewing time worldwide and therefore is suitable for this study

(Quantcast, 2015). All students at a northern university where the researcher was employed were invited to participate in the study. Survey recruitment requests for student participants were sent through daily campus announcement emails twice over two weeks, and a follow-up reminder email was sent in the third week. A raffle of two hundred TW\$100 (i.e., US\$3.30) cash prizes was provided as an incentive.

## Participants

Four hundred and seventy students took the survey; 383 of these students (81.4%) had watched game streaming and constituted this study's sample. Those who had not watched game streaming skipped the scale questions; thus, they did not qualify for the analyses. No consensus exists regarding how large a sample should be to be considered sufficient for factor analyses. Comfrey and Lee (1992) indicated the following sample-size standards: 100 = poor; 200 = fair; 300 = good; 500 = very good; and 1000 = excellent. Therefore, comprising 383 students, the current sample size is considered sufficiently large and good for factor analyses. The mean age of the participants was 21.71 ( $SD = 3.57$ ), 63.2% were male, and the average participant had watched game streaming for 1.5 to 2 years on average. Participants indicated their primary streaming site as Twitch (45.4%), followed by YouTube (32.4%), Justin.tv (5.5%), Youku (2.6%), BaiDu (2.1%), Biliili (1.8%), and Piko Live (1.0%) (a Taiwanese streaming Web site), among other platforms. Participants indicated they watched the following game genres most often: real-time strategy, such as League of Legends (48.8%), followed by role-playing games (33.7%), adventure (23.2%), shooting (22.2%), action role-playing (20.1%), casual app mobile games (18.8%), action games (18.0%), simulation role-playing (16.7%) and other genres. More than half of the participants (51.4%) subscribed to streaming channels. Only 9.9% had broadcasted or shared recorded game-streaming content.

## Results

### Motivations for Watching Game Streaming



RQ1 explores the motivations for watching game streaming. In this study, an exploratory factor analysis (EFA) was employed because all scales and items were created and organized based on participants' qualitative feedback and the previous literature. Therefore, EFA is suitable for exploring the initial formation of these emerging scale dimensions (Costello & Osborne, 2011). Because behavioral factors are typically correlated in social science studies, this study implemented six rounds of factor analysis using the scree plot and eigenvalues greater than one to determine the number of factors, as well as the maximum likelihood method and direct oblimin rotation (Costello & Osborne, 2011). Three one-item factors in the first round were deleted, such as no money to purchase the game and no access either to the game or to the narration, because factors cannot have fewer than three items (Costello & Osborne, 2011). Two other factors from the second round were removed because of cross loadings at the .32 loading threshold, including the *comparing* factor (e.g., "to compare the streamer's skills with mine") and the *surveillance* factor (e.g., "to observe other players' game progress").

Eleven factors were extracted in the third round of factor analysis, which explained 78.64% of the variance. To further narrow the scale, 10 items that had loadings of less than .70 were deleted in the fourth round, and 10 factors ("autonomous time saving" was not a factor) were extracted. Five more items had loadings that were slightly lower than .70, and all items (i.e., three) associated with the "autonomous time saving" factor were removed in the fifth round. Because it had a communality score of less than .6, the "learning the latest games" item was removed in the sixth round. The sixth round was the final round of the factor analysis and delivered 10 factors, which explained 82.03% of the variance. All the items had communality scores of greater than .6, and these 10 factors had eigenvalues of greater than 1.

The scree plot also suggested the extraction of 10 factors. The detailed factor items, loadings, and scale information are shown in Table 1. The correlations of all factors are shown in Table 2. Based on Table 2, all factors have low to moderate correlations with each other, supporting the oblique rotation method in the factor analysis. Fandom has moderate

correlations with most of the other variables, including stress avoidance, social interaction, incompetence, time killing, and habits, compared to the magnitude of correlations with other variables. In the factor loading tables (Table 1), the five factors have negative loadings, whereas other factors display positive loadings. This finding may demonstrate the different motivation sets or clusters among participants. Those who are fans of streamers watch game streaming for entertainment and thus have strong correlations with these factors. Others who are not fans of particular streamers watch game streaming to learn skills, avoid arousal, follow trends, or seek information. Interpreting Tables 1 and 2 together, this study suggests that audiences watch streaming for entertainment or strategically for information and vicarious experiences.

Tests of the reliability and validity of the scale factors were conducted<sup>1</sup> (Table 3). According to Hair, Black, Babin, and Anderson (2010), composite reliability should be  $> 0.70$  for good reliability, average variance extracted (AVE)  $> 0.50$  indicates excellent convergent validity, and maximum shared variance (MSV)  $< AVE$  and average shared variance (ASV)  $< AVE$  both indicate excellent discriminant validity. The analysis showed that all scale factors had excellent reliability and convergent and discriminant validity.

---

1. The author split the sample into two parts. The first half of the sample was tested for the exploratory factor analysis, and the second half of the sample was tested for the validity test. The results are the same.

Table 1  
*Exploratory Factor Analysis of Motivations for Watching Game Streaming*

<i>Item (variances)</i>	<i>Loading</i>	<i>Alpha</i>	<i>Mean</i>	<i>SD</i>
<i>Fandom (28.03%)</i>		.949	4.15	1.71
It is a way to encourage the streamer.	.922			
I can support the streamer.	.946			
I can support the streamer.	.946			
I can feel my enthusiasm increase when I watch.	.717			
<i>Observational learning (12.41%)</i>		.963	4.83	1.45
To learn skills from other players, such as strategies to pass a level.	.937			
To imitate skills from other players, such as strategies to pass a level.	.936			
To gain knowledge related to game and gaming skill.	.835			
To be inspired by new gaming skills.	.857			
To develop a new way of gaming.	.788			
Because I think it is a way to advance my own skills.	.854			
To compensate for my lack of skill at the game.	.826			
To observe other players' skills.	.799			
To fully understand other players' skills.	.822			
<i>Stress avoidance (10.84%)</i>		.921	4.39	1.59
Compared to playing the video game, game streaming makes me less scared.	-.737			
Compared to playing the video game, watching game streaming makes me less frightened.	-1.012			
Compared to playing the video game, I don't feel as stressed when watching game streaming.	-.840			
<i>Arousal avoidance (7.24%)</i>		.965	3.25	1.76
Some of the game content is too gory for me to play.	.939			
Some of the game content is too exciting for me to play.	.907			
Some of the game content is too cruel for me to play.	.977			
<i>Social Interaction (4.60%)</i>		.968	3.20	1.75
I exchange instant messages and ideas through comments and chat on streaming platforms.	-.935			
I instantly express my opinion through comments and chat on streaming platforms.	-.965			
I instantly discuss gaming progress through comments and chat on streaming platforms.	-.923			
I interact with other viewers through comments and chat on streaming platforms, for instance, discussing gaming skills.	-.935			
I comment on a streamer's performance through comments and chat on streaming platforms.	-.819			
<i>Incompetence (4.20%)</i>		.944	4.45	1.60
Some games are beyond my skill levels.	-.874			

It is impossible for me to deal with unforeseen situations while playing games.	-.900			
Some games are too complicated for me to control.	-.921			
<i>Time Killing (4.02%)</i>		.944	4.70	1.52
Watching game streaming is a way to kill time.	-.920			
When I have nothing to do, I pass the time watching game streaming.	-.984			
Watching game streaming is a way to avoid boredom.	-.797			
<i>Habit (4.00%)</i>		.954	2.91	1.69
Watching game streaming belongs to my (daily, weekly, monthly) routine.	-.751			
I have no need to think about watching game streaming.	-.809			
It makes me feel weird if I do not watch game streaming.	-.897			
Not watching game streaming makes me feel like I haven't done something yet.	-.907			
Watching game streaming has become part of my life.	-.931			
<i>Information seeking (3.48%)</i>		.929	4.22	1.72
To have more information about the latest game.	.844			
To have more information about a game that I don't know.	.926			
To learn the characteristics of different games.	.873			
<i>Trend Following (3.22%)</i>		.863	3.18	1.60
People around me are watching game streaming, so I want to watch it.	.746			
People around me recommend watching game streaming.	.918			
People around me discuss game streaming with me.	.727			

### **Motivation, Viewing Time, Enjoyment, and Perceived Participation**

Regarding the motivations predicting viewing time (RQ2), a hierarchical linear learning, fandom, social interaction, habit, and stress avoidance all positively predicted and explained 55.8% of the variance in perceived participation. Table 4 shows the standardized regression coefficients for RQ2 to RQ4. No signs of auto-correlation or multicollinearity were found in these three regressions.

With respect to the motivations predicting enjoyment (RQ3), the same hierarchical linear regression analysis showed that six of the 10 factors significantly predicted enjoyment and explained 47.5% of the variance. Except for “arousal avoidance,” which negatively predicted enjoyment, other factors (fandom, observational learning, stress avoidance, time killing, and habit) all positively predicted enjoyment. Being a fan exhibited the largest

predictive power on enjoyment, followed by time killing and habit.

RQ4 explores the factors predicting spectators' perceived participation in game streaming. A hierarchical linear regression with the same steps indicated that observational learning, fandom, social interaction, habit, and stress avoidance all positively predicted and explained 55.8% of the variance in perceived participation. Table 4 shows the standardized regression coefficients for RQ2 to RQ4. No signs of auto-correlation or multicollinearity were found in these three regressions.

Table 2  
Pearson Correlations Between 10 Motivations

	Fandom	Observational learning	Stress avoidance	Arousal avoidance	Social interaction	Incompetence	Time Killing	Habit	Info seeking	Trend Following
Fandom	1									
Observational learning		1								
Stress avoidance			1							
Arousal avoidance				1						
Social interaction					1					
Incompetence						1				
Time Killing							1			
Habit								1		
Information seeking									1	
Trend Following										1

\*\*\* $p < .005$ , \*\* $p < .01$ , \* $p < .05$ . N = 383.

Table 3  
*Reliability and Validity of the Scale Factors*

	Composite reliability	Average variance extracted	Maximum shared variance	Average shared variance
Fandom	.951	.831	.267	.145
Observational Learning	.957	.715	.109	.048
Stress avoidance	.927	.810	.242	.099
Arousal avoidance	.965	.903	.175	.046
Social interactions	.968	.859	.226	.110
Incompetence	.944	.850	.242	.083
Time Killing	.947	.856	.214	.095
Habit	.955	.810	.267	.146
Information seeking	.930	.817	.186	.085
Trend following	.866	.683	.233	.092

Table 4  
*Standardized Regression Coefficients of Hierarchical Multiple Regressions Predicting Viewing Time, Enjoyment, and Perceived Participation When Watching Game Streaming*

Predictor	Enjoyment	Time	Perceived Participation
Step1			
Sex (male =1)	.156***	-.015	.168***
Age	-.127**	-.027	-.084
$R^2$	.038	.001	.034
Step2			
Sex (male =1)	.005	-.094	.045
Age	-.078	-.003	-.055
Fandom	.236***	.111	.258***
Observational learning	.134**	.019	.317***
Stress avoidance	.135**	-.034	.206***
Arousal avoidance	-.157***	-.032	.040
Social interaction	.015	.059	.107*
Incompetence	.025	.056	-.014
Time killing	.327***	.062	.030
Habit	.166**	.230***	.186***
Information seeking	-.027	-.040	-.015
Trend following	-.057	-.170**	-.002
$R^2$	.475	.100	.558

\*\*\* $p < .005$ , \*\* $p < .01$ , \* $p < .05$



## General Discussion

Huizinga (1949) argued that human culture is rooted in play, which is “a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy, and the consciousness that is different from ordinary life” (Huizinga, 1949, p. 28). Active game playing is thus considered a perfect example of free and voluntary play (Caillois & Barash, 1961), which consists of rules and is distinct from ordinary life. The emergence of streaming technology has introduced a unique social aspect of collective game play, which involves two or more players with various motivations for engaging in a game and which qualifies as part of “tandem play” (Consalvo et al., 2016). Therefore, understanding the motivations for watching game streaming as a form of collective play helps defining this new form of “tandem play,” further contributing to the construction of “play” (Huizinga, 1949) in the sphere of entertainment.

In following this theoretical development and identifying additional motivations, researchers can further compare different forms of play, for instance, watching other people playing video games versus participating in active game play. In this study, 10 factors were identified, which explain 82% of the variance in the sample and 48% of the variance in the enjoyment associated with watching game streaming. Some of these game-streaming viewers’ motivations differed from those of active game players, shifting away from the common factors found in traditional U&G research.

### Social Interaction in Streaming “Play”

Two major phenomena were shown in these motivations. First, the unique feature of the chat function embedded in game-streaming platforms (which reflected the “social interaction” motivation) allows audiences to directly interact with streamers and assist players in games, making game streaming a social technology that is distinct from other entertainment forms of media. The findings indicate that game streaming represents a

“mediated shared participation” in games as because several prominent motivational factors indicate that spectators watch streaming to enjoy “shared interaction and content creation” among streamers, audiences, and other commenters. The importance of the social interaction motivation as a factor in predicting perceived participation implies that the unique interaction style exhibited in game streaming forms a participatory community (Hamilton et al., 2014).

This subject should also be discussed in conjunction with the need satisfaction of relatedness. Audiences can interact with other spectators to enjoy the “sheer pleasure of being scared together” (Simmel & Hughes, 1949) through streamers’ eyes and active play. Audiences can also collaboratively ask streamers to explore the gore content to a particular degree so that people can experience the narration together, enjoying the unique shared experience. Because most video games provide a high level of freedom for players to engage in game narratives, any moment in the game adventure could be unique. Therefore, audiences also experience unique shared experiences with streamers, making interaction a unique memory.

### **Game Streaming as a Mediated Substitute for Active Game Play**

The other main phenomenon of game streaming is “mediated observational participation” in which audiences choose to watch streamers playing the game instead of actively playing the game themselves because of their lack of competence in terms of their gaming skills (i.e., incompetence) and their ability to cope with either the stress (i.e., stress avoidance and incompetence) induced by playing the game or the gore content (i.e., arousal avoidance). Therefore, watching streamers play the game allows these audiences to substitute by engaging in the game from a distance, with streamers as a buffer, perhaps providing another layer in which audiences can engage. Audiences can actively choose to interact with the game narration and content through this mediated observational approach, supporting the U&G hypothesis, autonomy and the competence aspects of need satisfaction.

This approach suggests that watching game streaming is a tactic employed by audiences based on their intrinsic needs and gratifications. Participants watch others playing games

rather than directly play the game themselves because they decide to seek entertainment vicariously. Several motivations that emerged from studies were the opposite to the motivations of active game play. For example, audiences play games to gain heightened arousal (Sherry et al., 2006). However, in this study, participants watch other people play games to avoid direct and intense arousal and stress. Whereas game players seek competence from active game play (Sherry et al., 2006; Yee, 2006), game streaming audiences watch games because they feel incompetent. Watching game streaming is a strategic approach for engaging in entertainment.

### **Other Motivations**

Observational learning is another important motivation observed in this study. Audiences respond to streaming videos to learn game tactics and pass levels efficiently or more creatively, thus supporting the observational learning approach outlined in social cognitive theory (Bandura, 2001). Audiences were motivated to watch game streaming because they wanted to learn new techniques to try in active game play, which related to their competence needs.

In this study, habit was a consistent and powerful predictor of all the dependent variables. It positively predicted enjoyment, the amount of time spent watching game streaming and perceived participation. Therefore, habit is an important non-active and non-conscious motivation for audiences. Recurrent and active choices to watch game streaming may contribute to this long-term habit. This finding shows that in Taiwan, game streaming has become a habitual form of entertainment. According to this approach, seeking enjoyment or satisfaction becomes an intrinsic need and a habitual choice for audiences, corresponding with the “habit” and “time killing” motivations. This area should be given more attention in future research.

Among these 10 factors, fan motivation (the relatedness aspect) exerted the greatest predictive power and showed that fans establish strong communities to support the game-streaming community. Their willingness to support and cheer for streamers leads

to enjoyment and perceived participation. Observational learning (competence) and stress avoidance (autonomy and competence) represented the second and third strongest motivations, respectively. Future research should explore how these motivations relate to need satisfaction and enjoyment.

Surprisingly, “autonomous time saving” did not emerge as a motivation in the final factor analysis. Time saving refers to a strategic motivation in the context of the game streaming phenomenon. Instead of playing games themselves, watching game streaming or highlighted content from the game provides an efficient way for game enthusiasts to familiarize themselves with a game in a short time. In some cases, playing through several entire games could be time-consuming. Personal incompetence in a game skill or a lack of time to grow a competent character in role-playing games also inhibit gamers from engaging in games. Game streaming provides an alternative approach for these enthusiasts to interact with games through observing others’ game play. In addition to saving a tremendous amount of time to play the game themselves, they can also sample different games efficiently. Although time saving was not among the final motivations, future research should continue exploring this aspect and the ways in which it influences game-streaming behavior.

Interestingly, trend following negatively predicted viewing time. This factor is an extrinsic motivation derived from social pressure, but participants were generally reluctant to watch game streaming as a way of socially interacting with friends or joining their conversations. This negative association suggests that this factor decreases participants’ intrinsic needs to watch game streaming. Therefore, they may spend a limited time on watching game streaming as an investment in their social needs.

### **Applicability for Future Research**

Self-determination theory has promise as a framework to study certain aspects of the phenomenon of game streaming. Specifically, this study showed that game streaming provides autonomous choices for audiences to freely decide how they want to engage with game content featuring this unique dimension as opposed to other media consumption. It is

plausible to hypothesize that certain motivations contribute to enjoyment through the need satisfaction of autonomy, competence, and relatedness. For example, the trend-following motivation may provide the satisfaction of relatedness, but the involuntary motivation to watch game streaming caused by social pressures can limit enjoyment and viewing time.

Another important issue in game streaming is the social aspect of chatting interaction between audiences and streamers. How do lurking and active chatters differ in their enjoyment of game streaming? How do different methods of participation in chatting such as collaboratively engaging in games or simply commenting with others influence perceived participation and need satisfaction? Similarly, by using the competence-related motivations, including “incompetent,” “stress avoidance,” and “arousal avoidance,” researchers can examine how different levels of incompetence affect users’ choices concerning streaming content and enjoyment.

Furthermore, this study demonstrates that there might be two sets of motivation clusters for entertainment and for strategic watching motivations. Thus, future research could further classify different types of audiences based on various motivations.

## **Limitations**

First, although viewing time is an important index in the industry, the 10 motivations identified in this study only explained 10% of the variance. Surprisingly, “fan” motivation did not predict viewing time. More evidence is required to identify the factors predicting viewing time. Second, this study focuses only on enjoyment and viewing time as the main dependent variables and does not explore spectators’ donation and subscription behavior. These could be outcome variables of several motivations for need satisfaction. In addition, because these are important indices for marketing opportunities, more research is encouraged to understand other various spectator experiences. For example, does the motivation of habits predict donations and subscriptions? Are individuals who gradually form the habit of watching certain streamers’ content more likely to donate and subscribe to the channels? Fandom might also lead to these outcome behaviors. For example, does fandom provide a

strong explanation for donation behavior? Does fandom have various levels of predictive power between audiences who donate and those who subscribe to the channel for free? In the current fandom subscale, items such as “I can support the streamer” and “it is a way to encourage the streamer” implicitly include motivations to engage in supportive behavior such as paid donations and subscribing for free. Future research could consider donation and subscription as the foci of the main outcome behaviors of these motivations. Furthermore, future research could test the explanatory power of these variables on these supportive behaviors. Third, because the students in this sample were recruited from Taiwan, the findings can only be generalized to Taiwanese students. Further validation via other types of samples is needed. Finally, when exploring motivations for game streaming, this study did not separate professional eSports from casual game-play sharing, which may involve different entertainment mechanisms requiring additional exploration.

### **Theoretical Contributions**

In exploring viewers’ motivations, this study reveals game streaming as a unique form of play known as tandem play (Consalvo et al., 2016). Viewers participated in this co-constructed performance through various layers of social interactions between streamers and other audiences. Viewers also strategically chose game streaming as an approach to engage in games based on their perceived competence (i.e., game skills) and their evaluations of the demands of the games. These motivations highlight the flexibility among viewers to gain need satisfaction from game streaming, thereby contributing to entertainment research. Based on both the U&G framework and self-determination theory, this study shows how these motivations can serve to guide future research on game streaming.

## References

- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26. doi:10.1146/annurev.psych.52.1.1
- Berg, M. (2016, December 5). The highest-paid YouTube stars in 2016: PewDiePie remains No.1 with \$15 million. *Forbes*. Retrieved from <https://goo.gl/z6ydV6>
- Caillois, R., & Barash, M. (1961). *Man, play, and games*. Urbana, IL: University of Illinois Press.
- Cheung, G., & Huang, J. (2011). *Starcraft from the stands: Understanding the game spectator*. Paper presented at the SIGCHI Conference on Human Factors in Computing Systems, Vancouver, BC, Canada.
- Comfrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Consalvo, M., Begy, J., Ganzon, S., & Scully-Blaker, R. (2016, June). *Tandem play: Theorizing sociality in single-player gameplay*. Paper presented at the 66th international communication association conference, Fukuoka, Japan.
- Costello, A. B., & Osborne, J. W. (2011). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research and Evaluation*, 10, 1-9.
- Hair, J.F., Black, W. C., Babin, B., & Anderson, R. E. (2010). *Multivariate data analysis. 7th ed.* Upper Saddle River, NJ: Prentice-Hall.
- Hamilton, W. A., Garretson, O., & Kerne, A. (2014, April). *Streaming on twitch: Fostering participatory communities of play within live mixed media*. Paper presented at the SIGCHI Conference on Human Factors in Computing Systems, Toronto, Canada.
- Haridakis, P., & Hanson, G. (2009). Social interaction and co-viewing with YouTube: Blending mass communication reception and social connection. *Journal of Broadcasting and Electronic Media*, 53, 317-335. doi:10.1080/08838150902908270
- Huizinga, J. (1949). *Homo Ludens: A study of the play-element in culture*. London:

Routledge & Kegan Paul.

IHS. (2014, May 30). Soaring eSports viewership driven by online video platforms. *IHS Markit*. Retrieved from <https://goo.gl/MT1KHi>

Katz, E., Gurevitch, M., & Haas, H. (1973). On the use of the mass media for important things. *American Sociological Review*, *38*, 164–181. doi:10.2307/2094393

Kimmel, J. (2015, August 28). *YouTube's new video game watching service*. [Video file]. Retrieved from <https://www.youtube.com/watch?v=Ji9KmXwrA5Y>

Klimmt, C., Hefner, D., & Vorderer, P. (2009). The video game experience as “true” identification: A theory of enjoyable alterations of players’ self-perception. *Communication Theory*, *19*, 351-373. doi:10.1111/j.1468-2885.2009.01347.x

Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research*. Thousand Oaks, CA: Sage Publications.

LaRose, R. (2010). The problem of media habits. *Communication Theory*, *20*, 194-222. doi:10.1111/j.1468-2885.2010.01360.x

Lin, J.-H. (2013a). Do video games exert stronger effects on aggression than film? The role of media interactivity and identification on the association of violent content and aggressive outcomes. *Computers in Human Behavior*, *29*, 535–543. doi:10.1016/j.chb.2012.11.001

Lin, J.-H. (2013b). Identification matters: A moderated mediation model of media interactivity, character identification, and video game violence on aggression. *Journal of Communication*, *63*, 682-702. doi:10.1111/jcom.12044

Lin, J.-H., Bowman, N., Lin, S.-F., & Chen, Y.-S. (2017, May). *Setting the digital stage: Defining game streaming as a new media experience*. Paper presented at the 2017 International Communication Association, San Diego, CA.

Lynch, T., & Martins, N. (2015). Nothing to fear? An analysis of college students' fear experiences with video games. *Journal of Broadcasting and Electronic Media*, *59*, 298-317. doi:10.1080/08838151.2015.1029128

Nascimento, G., Ribeiro, M., Cerf, L., Cesário, N., Kaytoue, M., Raissi, C., ... Meira, W.



- (2014, October). *Modeling and analyzing the video game live-streaming community*. Paper presented at the Web Congress (LA-WEB), 2014 9th Latin American, Ouro Preto, Brazil.
- Papacharissi, Z., & Mendelson, A. (Ed.). (2011). Toward a new(er) sociability: Uses, gratifications and social capital on Facebook. In S. Papathanassopoulos (Ed.), *Media perspectives for the 21st century* (pp. 212- 230). Abingdon, UK: Routledge.
- Pegoraro, A. (2013). Sport fandom in the digital world. In P. Pederson (Ed.), *The Routledge handbook of sport communication* (pp. 248-258). New York, NY: Routledge.
- Peng, W. (2008). The mediational role of identification in the relationship between experience mode and self-efficacy: Enactive role-playing versus passive observation. *Cyberpsychology & Behavior, 11*, 649-652. doi:10.1089/cpb.2007.0229
- Peng, W., Lin, J. H., Pfeiffer, K. A., & Winn, B. (2012). Need satisfaction supportive game features as motivational determinants: An experimental study of a self-determination theory guided exergame. *Media Psychology, 15*, 175-196. doi: 10.1080/15213269.2012.673850
- Pires, K., & Simon, G. (2015, March). *YouTube live and Twitch: A tour of user-generated live streaming systems*. Paper presented at the 6th ACM Multimedia Systems Conference, Portland, USA.
- Pittman, M., & Tefertiller, A. C. (2015). With or without you: Connected viewing and co-viewing Twitter activity for traditional appointment and asynchronous broadcast television models. *First Monday, 20* (7). Retrieved from <https://www.ojphi.org/ojs/index.php/fm/article/view/5935/4663>. doi:10.5210/fm.v20i7.5935
- Quantcast. (2015). twitch.tv. Retrieved August 25, 2015, from <https://www.quantcast.com/twitch.tv#trafficCard>.
- Reinecke, L., Vorderer, P., & Knop, K. (2014). Entertainment 2.0? The role of intrinsic and extrinsic need satisfaction for the enjoyment of Facebook use. *Journal of Communication, 64*, 417-438. doi:10.1111/jcom.12099
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic

- motivation, social development, and well-being. *American Psychologist*, *55*, 68-78. doi: 10.1037/110003-066X.55.1.68
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*, 344-360. doi: 10.1007/s11031-006-9051-8
- Scully-Blaker, R., Begy, J., Consalvo, M., & Ganzon, S. C. (2017, January). *Playing along and playing for on Twitch: Livestreaming from tandem play to performance*. Paper presented at the 50th Hawaii International Conference on System Sciences, Hawaii, USA.
- Seo, Y., & Jung, S. U. (2016). Beyond solitary play in computer games: The social practices of eSports. *Journal of Consumer Culture*, *16*, 635-655. doi:10.1177/1469540514553711
- Sherry, J. L., Lucas, K., Greenberg, B. S., & Lachlan, K. (2006). Video Game uses and gratifications as predictors of use and game preference. *Playing Video Games: Motives, Responses, and Consequences*, *24*, 213-224.
- Simmel, G. & Hughes, E. (1949). The sociology of sociability (transl.). *American Journal of Sociology*, *55*, 254-261. doi:10.1086/220534
- Smith, C. (2017, September 8). By the numbers: 43 Amazing twitch stats. [Blog post]. *Digital Marketing Ramblings*. Retrieved from <http://expandedramblings.com/index.php/twitch-stats/>
- Smith, T., Obrist, M., & Wright, P. (2013, June). *Live-streaming changes the (video) game*. Paper presented at the 11th European conference on Interactive TV and video, Como, Italy.
- Tamborini, R., Grizzard, M., David Bowman, N. D., Reinecke, L., Lewis, R. J., & Eden, A. (2011). Media enjoyment as need satisfaction: The contribution of hedonic and nonhedonic needs. *Journal of Communication*, *61*, 1025-1042. doi:10.1111/j.1460-2466.2011.01593.x
- Verplanken, B., & Orbell, S. (2003). Reflections on past behavior: A self-report index of habit strength. *Journal of Applied Social Psychology*, *33*, 1313-1330. doi: 10.1111/

j.1559-1816.2003.tb01951.x

Yee, N. (2006). Motivations for play in online games. *Cyberpsychology & Behavior*, 9, 772-775. doi:10.1089/cpb.2006.9.772

