



ELSEVIER

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

Why do people watch others play video games? An empirical study on the motivations of Twitch users

Max Sjöblom ^{a, b, *}, Juho Hamari ^{a, c}^a Game Research Lab, School of Information Sciences, University of Tampere, FIN-33014 Tampere, Finland^b Aalto University School of Science, P.O. Box 11000, FI-00076 Aalto, Finland^c Tampere University of Technology, Finland

ARTICLE INFO

Article history:

Received 11 August 2016

Received in revised form

7 October 2016

Accepted 21 October 2016

Available online xxx

Keywords:

Streaming

Uses and gratifications

eSports

Media usage

Let's play

ABSTRACT

This study investigates why people choose to watch others play video games, on services such as Twitch. Through a questionnaire study (N = 1097), we examine five distinct types of motivations from the uses and gratifications perspective: cognitive, affective, personal integrative, social integrative and tension release. Information seeking is shown to be positively associated with the amount of hours that users chose to spend on the service, as well as the amount of individual streamers they choose to watch. Furthermore, we find that tension release, social integrative and affective motivations are positively associated with how many hours people watch streams. We also find that social integrative motivations are the primary predictor of subscription behaviour. This study lays the groundwork for understanding the motivations to consume this emerging form of new media in the context of online games and video streams.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Hundreds of millions of users choose to spend their time watching others play video games through live internet broadcasts, referred to as streams, on services such as Twitch. This type of new media has both been made possible and fueled by the ever increasing bandwidth of networks, advances in video packing and encoding technologies, a user-generated content culture, and, ultimately, by the desire to see others play video games. Today, peer-to-peer internet streaming of video games is a rapidly growing form of media. Recent years have seen services doubling their user base year-on-year, with current figures reaching over a hundred million unique monthly users (Ewalt, 2014; Needleman, 2015; Twitch, 2015).

Streaming is an extremely interesting context for participatory online media, spearheaded by services such as YouTube, that have put the traditional consumer into the role of content creator (Cha, Kwak, Rodriguez, Ahn, & Moon, 2007). Content creators such as PewDiePie challenge traditional media corporations, having over

27 million subscribers on YouTube alone in 2014 and over 40 million at the time of writing, showing the impact a single individual can have on the media landscape (Grundberg & Hansegard, 2014). One might regard streaming as yet another form of broadcast entertainment akin to online videos, but for many users it is a more manifold and holistic communication channel than mere video media content, particularly due to the high levels of interaction. Due to the live-broadcasting nature of video game streaming, it offers a unique relationship between the media creator and media consumer, thus facilitating communication between the two. Other forms of new media such as YouTube have already adopted practices common to social network sites (SNS) (Boyd & Ellison, 2007; Lange, 2007), however video game streaming services take these participatory aspects one step further as the interaction is taking place in real time. Video game streaming also blends two distinct mediums: broadcast media and games. While television spectating has largely been considered to be a unidirectional activity, games are commonly perceived as a multi-directional activity requiring active user participation. Hence, a mixture of these dominant media forms leads to an interesting context of spectating video games with a degree of interaction, thus causing an experience that is more passive than playing games, but at the same time more active than consuming traditional television content.

However, it is not fully clear why peer-to-peer internet

* Corresponding author. Game Research Lab, School of Information Sciences, University of Tampere, FIN-33014 Tampere, Finland.

E-mail addresses: max.sjoblom@uta.fi (M. Sjöblom), juho.hamari@uta.fi (J. Hamari).

streaming gathers such large crowds of spectators, and if this growth is a sign of a more general trend in media consumption and information seeking, or merely a niche form of entertainment. As we do not have a clear grasp of the motives driving consumption behaviour, we see it as paramount to explore these motivations in order to build a deeper understanding. Therefore, in this paper we seek to explore and measure why so many people are choosing to watch others play games over the Internet, focusing specifically on the context of video game streaming which is the largest form of such online live peer-to-peer media production and consumption. We employ data gathered through an online survey ($N = 1097$) and analyse the data by employing structural equation modelling.

2. Background

Video games have had a certain social spectating element to them from their inception. In the early days of arcade games, people would gather around the person playing the game to see how they were doing and to cheer them on (Newman, 2004), and, later, LAN gatherings encouraged face-to-face interaction (Jansz & Martens, 2005). When games moved from the arcades to living rooms, players were no longer subject to the stares of strangers when playing their favourite games. With the emergence of video game streaming, we argue that a part of this social experience has been brought back to the gaming culture. While video games have been the subject of decade's worth of studies within multiple fields of research (for a recent overview see Quandt et al., 2015), real-time video game streaming is a novel development that has potential to contribute to the growing area of games research within the information sciences, media and communication domain.

Streaming typically refers to conveying media content in a way that it is simultaneously consumed by the receiver, as opposed to 'downloading' where the received media content is saved for later consumption. Hence the term *streaming* is more concerned with the delivery method of the medium rather than the exact form of the medium (Gelman, Halfin, & Willinger, 1991). Internet streaming has existed for a long time and in various forms. However, it is important to distinguish between streaming as a technological solution, and the cultural phenomenon of live broadcasts of user-generated content, also commonly referred to as streaming.

2.1. Characteristics of video game streaming

In previous media research, media have been classified on the basis of their fidelity and participatory nature. Media types requiring a higher degree of participation have been coined as cool, while types of media where the information is presented in more abundance and requiring less participation have been called hot (McLuhan, 1994). In research centred on video game streaming, mixed types of media have been shown to be of importance for viewers (Hamilton, Garretson, & Kerne, 2014). The mix of media allows for a highly interactive experience, with the hot media (video content) serving as a facilitator for interaction via the cool media (chat functionalities). The popularity of streamed game titles has been shown to vary greatly over time (Kaytoue, Silva, Cerf, Meira, & Raïssi, 2012). While the most popular games continue to be established eSports, the release of new game titles partially accounts for large fluctuations in the viewer distribution. Additionally, stream popularity was shown to follow a highly skewed Pareto principle, with 10% of individual streamers accounting for 95% of viewers (Kaytoue et al., 2012).

2.2. Uses and gratifications

The question of why people consume different forms of media is

one of the main areas of inquiry in communication and media sciences. In this vein of research, the most prevalent theoretical development and framework is perhaps the Uses and Gratification (UG) theoretical perspective (Katz, Blumler, & Gurevitch, 1973; Katz, Gurevitch, & Haas, 1973; Rubin, 2002; Ruggiero, 2000).

Contrary to previous media theories such as mass society theory, UG considers media to have only a limited effect. UG states that the motivation behind using a certain media is a particular gratification that is sought (Katz, Blumler, & Gurevitch, 1974; Ruggiero, 2000), and posits that the user seeks out their media of choice, as an active audience, rather than the media seeking out the user (Abercrombie & Longhurst, 2007; Baran & Davis, 2006; Wang, Fink, & Cai, 2008). Furthermore, UG states that the media competes for gratification with other sources than only those related to media (Katz, Blumler et al., 1973). Large individual differences can exist, as UG considers users as individuals rather than a larger mass (Katz et al., 1974). Within UG, needs are often classified in five categories (Cognitive, Affective, Personal Integrative, Social Integrative and Tension Release), as presented in Table 1 (Katz, Gurevitch, et al., 1973; West & Turner, 2010).

UG considers media users to be aware of their own usage, and therefore able to provide researchers with an accurate idea of their media consumption habits and motivation (West & Turner, 2010). UG has been used in a wide range of different communication research contexts, such as television (Krcmar & Greene, 1999; Schmitt, Woolf, & Anderson, 2003), personal communication (Ishii, 2006), and also in the notion of multitasking (Wang & Tchernev, 2012). Another area where UG has been heavily used is the online context (Ko, Cho, & Roberts, 2005; LaRose & Eastin, 2004; Papacharissi & Mendelson, 2010; Whiting & Williams, 2013), including online games (Sherry, Lucas, Greenberg, & Lachlan, 2006; Wu, Wang, & Tsai, 2010), Facebook (Joinson, 2008), video streaming (Cha, 2014; Chiang & Hsiao, 2014) and Twitter (Chen, 2011; Johnson & Yang, 2009). In this study, we aim to look at the motives for watching video game streams through the lens of UG.

The nature of video game streaming as a new and yet unexplored medium makes it an interesting target of investigation from the UG perspective, because it enables comparisons to be drawn between it and other, more traditional, forms of media. Watching others play is a highly alluring subject for study, especially since it remains rather unintuitive for many people as to why watching video games would afford meaningful gratifications (especially over playing games oneself). Anecdotally, it has been assumed that watching others play does not provide the same thrills and affordances for escapism as playing games by oneself, as the spectator has less agency over the events of the game. On the other hand, watching others play may provide social gratifications that are commonly absent in a normal single-player experience. Indeed, this social dimension has been shown to be of importance in previous research within video game streaming (Hamilton et al., 2014). Much of the previous research related to spectating video games has concentrated on competitive gaming, commonly called eSports (Hamari & Sjöblom, 2017). Research within eSports has indicated the importance of knowledge acquisition, escapism, social interaction, sharing emotional connections and the competitive atmosphere as important motivators (Cheung & Huang, 2011; Hamari & Sjöblom, 2017; Lee & Schoenstedt, 2011; Scholz, 2012; Weiss & Schiele, 2013; Weiss, 2011). Within the limited research on video game streaming that has been conducted, social interaction, learning and entertainment have been shown to be important aspects of spectatorship (Hamilton et al., 2014; Kaytoue et al., 2012; Shaw, 2013). However, none of the previous research conducted has aimed to quantifiably measure relationships between spectator gratifications and the use of streaming services. Therefore, in this

Table 1
UG need types (West & Turner, 2010, p. 398).

Need type	Description	Media examples
Cognitive	Acquiring information, knowledge, comprehension	Television (news), video ("How to Install Ceramic Tile"), movies (documentaries or films based on history e.g., <i>The Other Boleyn Girl</i>)
Affective	Emotional, pleasant, or aesthetic experience	Movies, television (sitcoms, soap operas)
Personal integrative	Enhancing credibility, confidence, and status	Video ("Speaking With Conviction")
Social integrative	Enhancing connections with family, friends, and so forth	Internet (e-mail, chat rooms, Listservs, IM)
Tension release	Escape and diversion	Television, movies, video, radio, Internet

study we are employing UG as a theoretical guideline to understanding and modelling the relationships between gratifications and media consumption.

2.3. Research model and hypotheses

Based on the theory framework of UG, we investigate the relationship between five types of motivation and four distinct types of usages related to the consumption of video game streams. These usage types are: hours watched, streamers followed, streamers watched, and streamers subscribed to. Hours watched indicates how many hours per week users consume streaming content. It is possible to follow particular broadcasters (or streamers as they are commonly referred to), thus allowing them to be more easily found by users. Streamers watched measures the amount of unique streamers watched per week for an individual user. Users may pay a fee of \$5 to subscribe to an individual streamer, and this is our fourth type of usage investigated. A subscription must be renewed monthly to retain benefits, and additionally, one user may subscribe to not just one, but also a number of streamers. The common benefits for subscription include emoticons exclusive to subscribers, a visual indicator of subscription status in the chat facility, and the possibility to take part in events or raffles aimed solely at subscribers.

Fig. 1 presents the research model based on these five main constructs and their relationship to the usage dependant variables. The five main UG constructs are depicted as latent variables. For clarity, the four types of usage have been grouped into one in our visualisation of the research model, as the relationships between the UG needs and four types of usage are identical to more general notions of usage.

Based on previous research which indicates the importance of entertainment for media usage (Cheung & Huang, 2011; Hamilton et al., 2014; Hanson & Haridakis, 2008; Papacharissi & Mendelson, 2010), we consider hours watched to be particularly affected by an increase in affective motivation. As the entertainment aspect of affective motivation is surely provided by a certain subset of streamers rather than all of the streamers, we expect streamers followed and streamers watched to be positively affected by increased levels of affective motivation. We expect a smaller effect on subscription than other types of usage as, compared to the other three forms, subscription is unlikely to offer enough of a payoff compared to the cost involved for a person driven by affective motivations. Hence, we propose that increased levels of affective motivation will predict an increased level of usage (Hypothesis 1).

Learning and information seeking has been shown to be an integral motivator for usage in several online media contexts (Hamilton et al., 2014; Papacharissi & Mendelson, 2010; Whiting & Williams, 2013). We expect increased levels of cognitive motivation to predict an increased level of usage (Hypothesis 2). Of the four types of usage, we argue that hours watched will especially be

impacted by an increased level of cognitive motivation. By watching for a larger amount of hours, we hypothesise that the learning experience crucial for cognitive motivation will be facilitated. We expect the other three types of usage to also be positively impacted by an increase in cognitive motivation.

We expect hours watched and streamers subscribed to be positively affected by an increased level of personal integrative motivation. In the context of video game streaming, we predict a certain level of social interaction will be required to achieve a level of personal integrative fulfilment, especially as we are focusing on recognition received through the usage of the service. Hence, social aspects such as streamers followed are expected to be positively affected by an increase in personal integrative motivation. We expect a small positive correlation with subscription as we see it impacting upon received recognition on a certain level. Thus we hypothesise that an increased level of personal integrative motivation will predict an increased level of usage (Hypothesis 3).

Social integrative motivations have been shown to positively impact the usage of online media and services in previous research (Chen, 2011; Hamilton et al., 2014; Pai & Arnott, 2013; Scholz, 2012; Sherry et al., 2006; Whiting & Williams, 2013). We expect the same to be true within the context of video game streaming, and that increased levels of social integrative motivation will predict an increased level of usage (Hypothesis 4). We especially expect hours watched and streamers followed to be positively impacted by an increase in social integrative motivation. Subscription furthers social connections and fosters a sense of belonging within the video game streaming community on many levels. As such, this is also the motivational factor where we consider subscription to be the most impacted by an increase in motivation level, as many of the benefits acquired via subscribing are tied to social aspects of the service (Oestreicher-Singer & Zalmanson, 2013).

The notion of tension release and escape having an impact on use is a topic brought up in previous motivation research within online communities (Courtois, Mechant, De Marez, & Verleye, 2009; Hanson & Haridakis, 2008; Lin, 2002; Papacharissi & Mendelson, 2010; Whiting & Williams, 2013). We hypothesise that increased levels of tension release motivation will predict an increased level of usage (Hypothesis 5). In particular, we expect that hours watched will be positively impacted by an increase in tension release motivation, and that streamers watched and streamers followed will also be positively impacted. We expect a large correlation with hours watched, as the tension release motivation is so closely linked to achieving a sense of escape from everyday life. However, we expect a small association with subscription, as it should not be heavily impacted by tension release motives.

3. Methodology

3.1. Sampling

We piloted the study with 19 respondents and launched the

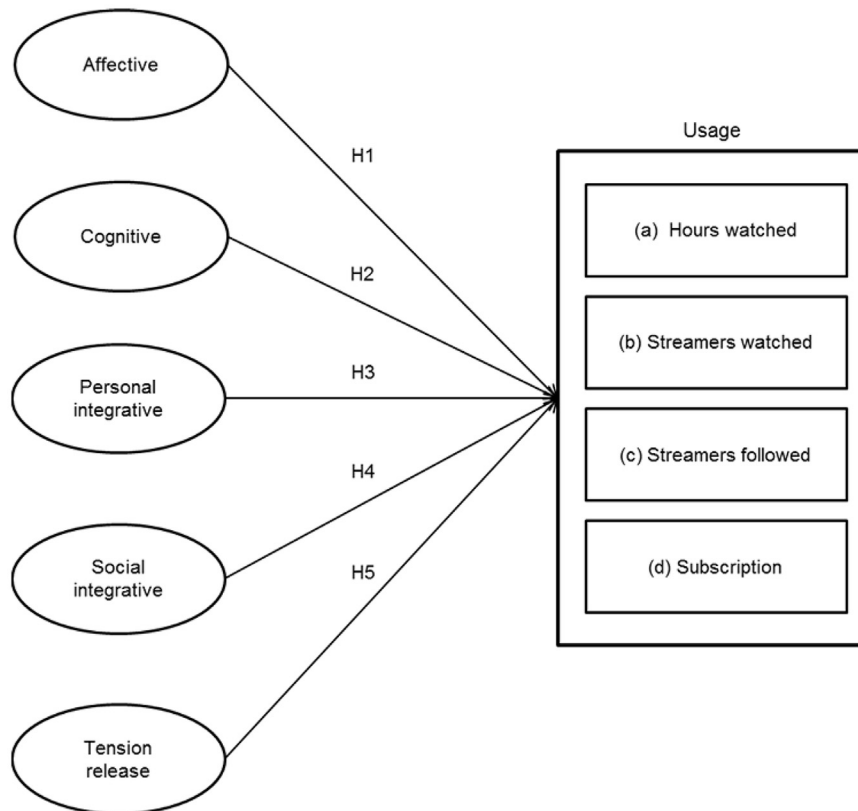


Fig. 1. Research model.

final survey on February 26th, 2015. At launch, the end date was specified as the 21st of March, but this was later extended to the 23rd of March. As a participatory incentive, we offered the chance to win one of six video games from the online store Steam, worth 50 USD or EUR, and a raffle was conducted among valid survey responses after the survey had concluded. The survey was predominantly distributed through social media and social news sites such as Reddit, Twitter and Facebook, as well as a few other forums dedicated to games.

To help filter out invalid responses we omitted respondents who incorrectly answered a check question as well as entries with missing data and finally obtained 1091 valid responses to the survey, representing a 3.2% decrease in respondents from the raw data. Amongst the valid responses, the average age was 22.9 years ($M = 22$, $SD = 5.9$). Female respondents comprised 7.7% of our data. Of our respondents, 93.2% reported that they had registered an account for the Twitch service, had used the service for an average of 22.1 months ($M = 21$, $SD = 14.6$) and 38.7% had acted as a streamer at some point. The demographic details of the respondents are displayed in greater detail in Table 2.

3.2. Measurement

Respondents watched an average of 11.0 h per week ($M = 7$, $SD = 12.1$) and an average of 5.6 different streamers per week ($M = 4$, $SD = 5.0$). Furthermore, respondents followed an average of 26.4 streamers ($M = 10$, $SD = 52.1$) and subscribed to an average of 0.6 streamers ($M = 0$, $SD = 2.5$). Table 3 shows the distributions of dependent variables.

We looked at psychometric factors that can explain the behaviour patterns seen among our respondents, and in this section, we present the psychometric scales used for our nine constructs. All

psychometric items used a 7-point Likert scale (1 indicating “strongly disagree” and 7 indicating “strongly agree”). All of the psychometric items, along with their origin, can be found in Appendix A.

To measure affective motivations, we used the *perceived enjoyment* scale of Venkatesh (2000) and van der Heijden (2004, pp. 695–704). The phrase “the system” was replaced with “Twitch” as applicable, and one additional item was added following the phrasing convention. The cognitive motivations construct consisted of two sub-constructs: *information seeking about game products* and *learning game strategies*. For information seeking about game products, the *usefulness* scale taken from van der Heijden (2004, pp. 695–704), originally used in the hedonic information seeking context, was used as a base and modified accordingly. To build our learning game strategies scale, items from the *information seeking* scale by Papacharissi and Rubin (2000) along with an item taken from the van der Heijden (2004, pp. 695–704) usefulness scale were used. These items were modified to fit the context of video game streaming and learning strategies. For personal integrative motivations, we used the *recognition by peers* scale from Hernandez, Montaner, Sese, and Urquizu (2011). Within social integrative motivations, the *companionship* scale introduced by Smock, Ellison, Lampe, and Wohn (2011), and the *shared emotional connection* scale used by Chavis, Lee, and Acosta (2008) were used. Relating to tension release, the scales of *escapism*, *relaxing entertainment*, and *habitual pass time* previously introduced by Smock et al. (2011) were used.

3.3. Validity & reliability

The model-testing was conducted using component-based PLS-SEM (Partial Least Squares Structural Equation Modelling) which is

Table 2
Demographic distribution of survey.

Factor (unit)	Value	Factor (unit)	Value
Gender (%)	Male	Employment (%)	Student
	Female		Full-time
Age (years)	Average	Part-time	Unemployed
	Median	Income (\$)	<10 000
	SD		10 000–29 999
None	30 000–49 999		
Education (%)	Primary level	50 000–69 999	70 000–89 000
	Secondary level	90 000 up	
	Upper level		

Table 3
Dependant variable grouping (range & percentage of whole).

Group	Hours watched	Streamers watched	Streamers followed	Streamers subscribed to
1	0–2 (21.6%)	0–2 (19.8%)	0–2 (20.2%)	0
2	3–5 (22.5%)	3 (18.7%)	3–6 (20.0%)	1+
3	6–10 (25.0%)	4–5 (30.2%)	7–15 (21.9%)	
4	10.5–20 (17.1%)	6–9 (15.0%)	16–39 (19.0%)	
5	21+ (13.8%)	10+ (16.3%)	40+ (18.9%)	

considered to be more suitable for prediction-oriented studies such as the present study (Anderson & Gerbing, 1988; Chin, Marcolin, & Newsted, 2003). Convergent validity was met since the AVE, CR and Alpha measures exceeded the recommended thresholds (Fornell & Larcker, 1981; Nunnally, 1978). Discriminant validity was met, as the square root of the AVE of each construct was larger than its correlation to any other construct (Chin, 1988; Fornell & Larcker, 1981; Jöreskog & Sörbom, 1996), and each measurement item had the highest loading with its corresponding construct. The results of these validations are displayed in Table 4. The validity of the scales and their individual items can be found in Appendix B.

In order to reduce the likelihood of common method bias, we randomized the order of the measurement items on the survey to limit the respondent's ability to detect patterns between the items (Cook, Campbell, & Day, 1979). Common method bias refers to a situation where there is "variance that is attributable to the measurement method rather than to the constructs the measures represent" (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 879). The sample size (N = 1097) satisfies several different criteria for the lower bounds of sample size for PLS-SEM (Anderson & Gerbing, 1988; Chin & Newstad, 1999; Westland, 2010).

4. Results

The model accounted for 25.8% of the variance for hours

watched, as well as 21.5% for streamers followed and 17% for streamers watched. For subscriptions, the model only accounted for 3.7% of the variance (Fig. 2). Table 5 displays the results for each of the five types of motivation in relation to the four types of usage. From the results we can see how the initial hypotheses are supported. In the following paragraphs we examine the results, using the same notation for statistical significance as used in Table 5 (*p < 0.05, **p < 0.01, ***p < 0.001).

For affective motivations, three of our four hypotheses were supported, with positive relationships seen between the motivation and hours watched (H1a $\beta = 0.144^{**}$), streamers watched (H1b $\beta = 0.134^{**}$) and streamers followed (H1c $\beta = 0.152^{***}$). The relationship to subscription was above the threshold level of 0.05 for statistical significance and thus we could not establish a relationship (H1d $\beta = 0.045$).

For cognitive motivations, we found positive relations with hours watched (H2a $\beta = 0.089^{**}$) as well as streamers watched (H3b $\beta = 0.075^*$), thus supporting two of our hypotheses. Our results for streamers followed (H2c $\beta = 0.007$) and subscription (H2d $\beta = -0.028$) did not exceed the threshold for statistical significance. Coupled with the low correlation, this goes to show that no relevant relationship was to be found.

The personal integrative motivations are of particular interest, as we found an opposite relationship to our hypotheses both for hours watched and streamers watched (H3a $\beta = -0.177^{***}$, H3b

Table 4
Fornell-Larcker criteria (main constructs in bold - values marked with asterisk are expected to correlate strongly with mother construct).

	AVE	CR	Alpha	AFF	COG: PROD	COG: STRAT	COG	PI	SI: COMP	SI: SEC	SI	TR	TR: DIST	TR: ESC	TR: RELAX
AFF	0.749	0.922	0.887	0.865											
COG: PROD	0.773	0.931	0.901	0.431	0.879										
COG: STRAT	0.761	0.927	0.895	0.486	0.438	0.872									
COG	0.550	0.907	0.882	0.539	0.864*	0.831*	0.742								
PI	0.715	0.909	0.867	0.474	0.423	0.310	0.436	0.846							
SI: COMP	0.743	0.896	0.826	0.496	0.394	0.283	0.402	0.546	0.862						
SI: SEC	0.612	0.887	0.840	0.631	0.452	0.326	0.463	0.685	0.614	0.782					
SI	0.537	0.902	0.875	0.643	0.477	0.345	0.489	0.696	0.856*	0.934*	0.733				
TR	0.541	0.921	0.904	0.722	0.455	0.406	0.509	0.455	0.643	0.557	0.660	0.735			
TR: DIST	0.663	0.887	0.829	0.641	0.410	0.364	0.458	0.389	0.559	0.479	0.573	0.902*	0.814		
TR: ESC	0.723	0.886	0.808	0.487	0.363	0.289	0.387	0.406	0.596	0.458	0.572	0.817*	0.603	0.850	
TR: RELAX	0.788	0.917	0.865	0.731	0.405	0.393	0.471	0.395	0.526	0.510	0.576	0.875*	0.680	0.591	0.887

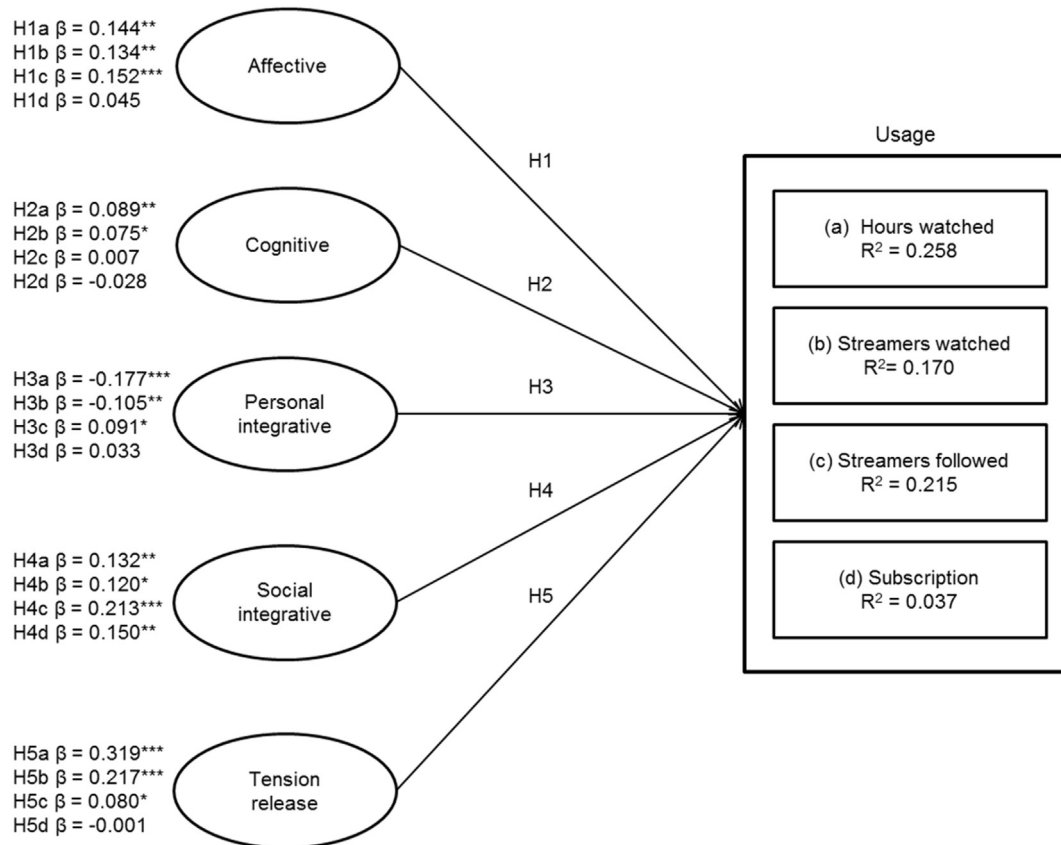


Fig. 2. Results (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

$\beta = -0.105^{**}$). For the relationship between personal integrative motivations and streamers followed, our hypothesis was supported (H3c $\beta = 0.091^*$), however, the relationship between the need type and subscription was found to not be statistically significant (H3d $\beta = 0.033$).

For social integrative motivations, our hypotheses for hours watched (H4a $\beta = 0.132^{**}$), streamers watched (H4b $\beta = 0.120^*$), streamers followed (H4c $\beta = 0.213^{***}$) and subscriptions (H4d $\beta = 0.150^{**}$) were all supported. Notably this is the only need type that showed a statistically significant correlation with subscription.

Finally, for tension release, our hypotheses for hours watched (H5a $\beta = 0.319^{***}$), streamers watched (H5b $\beta = 0.217^{***}$) and streamers followed (H5c $\beta = 0.080^*$) were supported. Once again we found the relationship between the need type and subscription (H5d $\beta = -0.001$) not to be of statistical significance.

5. Discussion & conclusions

In this study we sought to unravel the motivations for watching others play video games on the internet, and to determine which of those motivations would predict how much people watch, and how many streamers they watch, follow and subscribe to. On a general level, our results reveal that all five classes of gratification (cognitive, affective, social, tension release, and personal integrative) were significantly associated with the main outcome variables related to how many hours and how many streamers individual users watch. Interestingly however, we find that personal integrative gratifications are negatively associated with these outcomes. For streamer subscriptions (which entail costs), we find that the gratifications investigated in the study hold less explanatory power, and the only gratification that seems to explain subscribing behaviour is that concerning social integrative motivations.

5.1. Theoretical implications

With the rise of user-generated content as one of the main forms of contemporary media, as discussed earlier (Cha et al., 2007), we find the results of this study to offer deeper insight not only into broadcast media consumption, but also into how consumers approach games as a medium. The rise of user-generated content and live broadcasting of smaller scale video productions, as seen in the case of video game streaming on Twitch, shows no signs of slowing down. This would indicate a larger paradigm shift in how we consume media in our society. The social interaction aspect is, in particular, facilitated by the fact that content is being broadcast in real-time, in contrast to more traditional broadcast media such as television. Games have traditionally been considered to be separate from other forms of media such as television and film (Dovey & Kennedy, 2006). However, through the penetration and diffusion of broadcasted game streams, games are becoming a more manifold media and consequently seeping onto areas of media traditionally separate from games. The results of this study also indicate the simple fact that games fill a very real role for gratifications not only through play, but also through spectating. This can clearly be seen from the associations between motivation factors and hours watched.

When examining the results more closely, tension release was seen as being the strongest positive predictor of how many hours users watched streams. This finding supports our initial hypothesis and is in line with previous research concerning social media (Whiting & Williams, 2013), YouTube (Hanson & Haridakis, 2008), Facebook (Papacharissi & Mendelson, 2010), online services (Lin, 2002), eSports (Hamari & Sjöblom, forthcoming 2017) and Internet use (Courtois et al., 2009). Moreover, tension release seems to be an important motivator when it comes to the other viewing

Table 5
Results (*p < 0.05, **p < 0.01, ***p < 0.001).

R ²	Hours watched			Streamers watched			Streamers followed			Subscriber		
	0.258			0.17			0.215			0.037		
	β	P	CI	β	P	CI	β	P	CI	β	P	CI
Affective	0.144**	0.001	0.058–0.224	0.134**	0.002	0.048–0.216	0.152***	0.000	0.068–0.235	0.045	0.298	–0.041–0.130
Cognitive	0.089**	0.007	0.023–0.155	0.075*	0.037	0.007–0.147	0.007	0.851	–0.062–0.074	–0.028	0.453	–0.099–0.042
Personal integrative	–0.177***	0.000	–0.248to–0.107	–0.105**	0.008	–0.180to–0.030	0.091*	0.021	0.016–0.169	0.033	0.407	–0.044–0.112
Social integrative	0.132**	0.004	0.047–0.220	0.120*	0.020	0.021–0.222	0.213***	0.000	0.126–0.302	0.150**	0.002	0.055–0.242
Tension release	0.319***	0.000	0.240–0.400	0.217***	0.000	0.128–0.300	0.080*	0.048	–0.001–0.153	–0.001	0.984	–0.095–0.093

indicators, as it has a positive impact on not just the number of hours watched, but also on the numbers of streamers watched and streamers followed. This demonstrates that users seeking to fulfil a need for escape and diversion watch a larger amount of streams. The fact that there is no significant relationship between tension release and subscription is, perhaps, unsurprising, as the act of subscription does not necessarily directly affect the needs of tension release. Very few of the tangible benefits acquired from subscribing to a streamer help the user achieve escape or diversion. Due to this lack of concrete incentives, it seems quite natural that there is no significant relationship between them. As mentioned earlier in this study, the most common tangible benefits obtained from subscribing are access to streamer-specific chat emoticons and obtaining a visual indicator next to the user name in the chat functionality. Additionally, some streamers offer access to subscriber-only content, such as the opportunity to play with the streamer. In the context of the online music service Last.fm, activity in the community was seen as a more important indicator of subscription than the consumption of music (Oestreicher-Singer & Zalmanson, 2013). Even though there are significant differences in subscribing to a service and subscribing to an individual streamer, there are still similarities that help offer an explanation for this phenomenon. If community activity is an important predictor, it stands to reason that the needs governed by the tension release category would not directly affect subscription.

In regard to affective motivations, we find three statistically significant associations. Firstly, there is a positive association between affective motivations and hours watched. This is in accordance with our hypothesis and also supported by previous research into streaming (Hamilton et al., 2014; Shaw, 2013), eSports (Cheung & Huang, 2011), social media (Papacharissi & Mendelson, 2010; Whiting & Williams, 2013), and video sharing websites (Cha, 2014; Hanson & Haridakis, 2008). The moderate size of the correlation suggests a person might find the enjoyment they are looking for after a certain amount of usage of the service, after which additional hours become superfluous. In the case of YouTube, the entertainment aspect was important for comedy news watching (Hanson & Haridakis, 2008), and it can be argued that video game streaming falls in a similar area of hedonic consumption. The positive association of affective gratification on how many streamers users watch was equally of moderate size. This could indicate that watching a small number of different streamers, rather than seeking out a larger number of streamers achieves the enjoyment sought from the service. Another explanation could be that the person in question has trouble finding a larger number of streamers that produce content that they think is enjoyable. There was also a positive association with streamers followed, and as streamers followed and streamers watched are quite closely related, it is not surprising to see that these associations were close to each other in size. A person for whom affective motivations are important might very well seek out the same particular streamers time after time, both watching them and choosing to follow them.

As with tension release, no significant relationship was found

between affective motivation and subscription. As previously discussed, the tangible benefits offered by subscription serve as a limiting factor to the types of needs that can be met through subscription. In this context we could expect to find some factors that would contribute to the need for enjoyment and entertainment. For example, we might consider the potential extra content of participatory events for subscribers to contribute something positive to the overall entertainment obtained by a user, and by subscribing the user would then get more opportunities that could lead to increased levels of entertainment. However, our results show only a small correlation that was not statistically significant, so we have to conclude that this hypothetical correlation is not observable in our sample.

Cognitive motivations show a small positive association with hours watched. This positive association supports our original hypotheses of cognitive motivations, and is further supported by previous research within the fields of video game streaming (Hamilton et al., 2014), eSports (Hamari & Sjöblom, forthcoming 2017) and social media (Papacharissi & Mendelson, 2010; Whiting & Williams, 2013). We can see that in the quest for knowledge and information, a user is driven to increased use of the service, even if the increased usage is not large. One reason might be that the value obtained subsides after a short while. It could be that viewers driven by cognitive motivation seek fulfilment for their need for information through other sources rather than streams. As we asked respondents about their attitudes towards learning about game strategies and information seeking about game products, these are needs that can also be met through other channels. Perhaps the live aspect of video game streaming is detrimental to the learning experience compared to video recordings of similar content which are available through services such as YouTube. On the other hand, the live experience and social interaction available between viewer and streamer allows for a level of personalisation that is not possible with pre-recorded material. Previously, learning about games has been shown to be a major reason for starting to watch streams (Hamilton et al., 2014). Based on this research and also the interviews conducted at the start of this study, we expected learning to have one of the more influential correlations, but this was not indicated by our results.

A small positive association is observed for streamers watched. Users for whom cognitive motivations are important might watch only a selected amount of streamers that offer the information and guidance that they are looking for. Interestingly, we observe no significant association for cognitive motivations on streamers followed, and it is notable that this was the only motivation type that did not show a significant association with streamers followed. This seems to indicate that viewers looking to learn might not follow any more streamers than other users do. We might expect a positive association here as not all streamers will be equally enlightening, and it would stand to reason that viewers who have cognitive motivations would follow streamers that they feel teach them something, as this in turn would help them meet their needs.

As with the previous motivations, we do not find a significant

association with subscribing, the reasoning behind this might be similar to that which we have presented for the previous motivation types. The act of subscribing does commonly not offer tangible cognitive benefits. Certain streamers might have days when the chat facility is only open to subscribers, and the streamers then interact more actively. One might argue that this can facilitate a teacher and student relationship that would be beneficial for a viewer driven by cognitive motivations, and hence they would be inclined to subscribe. Especially for cognitive motivations, the notion of perceived value might be of importance. Economic value has been shown to have a significant impact on the willingness to pay for social networking sites (Vock, van Dolen, & de Ruyter, 2013). If a person looks to streamers to supply them with information that might save them money, then paying for the service might seem counterintuitive. However, the extra value gained by subscribing might not exceed the value obtained, and thus create a negative value proposition for a person driven by cognitive needs.

Opposite to that which was expected, personal integrative motivations show a moderate negative correlation with hours watched. As the scale instrument used to measure personal integrative needs was solely focused on recognition, we attempt to explain our findings based on the need for recognition in the personal integrative context. This result is partly in line with previous research in the context of online learning, specifically between the user and their peers (Hernandez et al., 2011). Even though video game streaming is mostly a hedonistic activity, we feel that drawing parallels to online learning is feasible when examining motivations related to recognition, as there can still be a learning component present. The negative relationship between personal integrative motivations and hours watched seems to indicate that the level of recognition obtained from using the service does not fulfil underlying needs. Hence, individuals for whom these needs are important use the service less than others, and these needs are likely fulfilled through other channels. This may be explained by the fact that the social dimension of a channel changes with its size (Hamilton et al., 2014). A stream with a larger amount of viewers also means more people participate in the chat functionality. For popular streamers, the chat activity may become chaotic, and thus eliminate any chance for civilized discourse. As much of obtaining respect from other viewers and streamers relies on being able to use the chat facility to display a certain level of understanding of the game or subject at hand, this presents a clear problem. The scale used in this study did not particularly distinguish between the recognition obtained from streamers and other viewers. One might argue that for certain individuals these two types of recognition are markedly different, as has been shown to be the case when looking at differences in motivational impact between peers and instructors (Hernandez et al., 2011).

As with hours watched, we also find a moderate negative relationship between personal integrative motivations and streamers watched. As seen with hours watched, it seems that watching a larger number of different streamers does not contribute positively to the level of perceived recognition obtained. The negative relationship might also be a sign that the person enjoys a very particular set of streamers, one that is quite small and not easily supplemented by new streamers. A person seeking recognition might have found a few select streamers that offer a high level of interaction, as well as communities that offer support and encouragement to other community members.

Surprisingly, we find a small positive correlation between personal integrative motivations and streamers followed. This is interesting, as for the other types of motivations studied we saw correlations of similar size for streamers watched and streamers followed, but here we find correlations which work in the opposite direction for the same two categories. One explanation for this

might be that while people for whom recognition is important might watch only a small number of streamers, they still follow a larger amount. This might result in the fact that although they watch fewer hours per week than other users, they might want to have a larger selection of appropriate streamers to watch. Following a slightly larger amount of different streamers that suit their needs then allows these users to pick out those they wish to watch during the limited time they spend on the service.

We do not find a significant relationship between personal integrative motivations and subscription. This is somewhat unexpected, as compared to other types of motivations, subscription offers some benefits which are more closely related to personal integrative needs. We argue that by subscribing to a particular streamer, the person in question then belongs to a more exclusive 'social club' of sorts. Belonging to this clique, the person would then receive positive reinforcement from the other subscribers. Perhaps the lack of association here goes to show that this is not the case, and that the subscriber community for a given stream is not of great importance when it comes to receiving recognition.

We find that social integrative motivations correlate with hours watched on a moderate level. This supports our initial hypothesis and stands to reason, as using the service for more hours per week clearly gives a person more opportunities to interact with the rest of the Twitch community. This result is further supported by previous research in video game streaming and eSports (Hamilton et al., 2014; Scholz, 2012), social media (Chen, 2011; Pai & Arnott, 2013; Papacharissi & Mendelson, 2010; Whiting & Williams, 2013), and playing video games (Sherry et al., 2006). These added opportunities for interaction can then translate into positive experiences which fulfil the needs encompassed by social integrative motivations. We might expect the quality of interaction to be of importance for a person for whom social integrative motivations are significant, but we also notice that the pure number of streamers watched is of importance. However, the correlation is still not very large, signifying that a large number of streamers watched is not necessarily valuable in itself.

The correlation with streamers followed is slightly larger than the previous two, indicating that people for whom social integrative motives are important, appreciate the ability to follow streamers. Having a larger group of potential streamers to choose from gives more flexibility in choosing ones the person finds particularly interesting. This added flexibility might then translate to a higher level of social involvement, as the person can choose streams which offer the largest social aspect from a selected list.

Social integrative motivations are the sole types of motivation where we find a significant association with subscription, albeit a moderate one. This indicates that the feeling a person gains from supporting a streamer is an important factor in fulfilling their social integrative needs. By supporting a streamer and following them, the person can develop a deeper involvement with the community and feel involved in a larger part of the communities shared experiences. As subscription activity shows up as an automated message in the chat facility, we observed that other viewers often offer positive encouragement to new and renewing subscribers. The impact of social factors on choosing to subscribe to a service has been shown to be relevant for other online services (Oestreicher-Singer & Zalmanson, 2013), thus strengthening our view that social integrative motives are highly relevant to subscription. Services offering paid subscriptions seldom offer users the possibility to contribute directly to a single content producer, and there is therefore potential for a higher level of social gratification to be obtained through subscription. In the context of video game streaming, when a user subscribes to a streamer, he or she can feel good about supporting that particular streamer and perhaps enabling them to continue producing content.

5.2. Practical implications

Based on the broader observations and theoretical implications presented in the previous section, we would like to further our discussion of gratifications within video game streaming through some recommendations related to practical implications.

From a game development standpoint, the fact that games are being turned from sole playing experiences into spectator experiences increases the amount of facets that should be taken into account in game design. Content creators are increasingly turning to games as a new media of conveying a message to their audience in the form of both video game streaming and videos on services such as YouTube. These game videos serve as a framework for a host of new actors in the media landscape, following a more general paradigm shift away from large scale productions and towards user-generated content. Developers are advised to keep in mind that their products are thus employed in a variety of communicative purposes beyond playing. Streaming has already been shown to have a significant impact when it comes to game sales (Hernandez, 2016), and by taking into account the spectator element of games, companies can achieve a competitive advantage over each other if they can capitalize on this development in a timely manner. How to make a game more appealing for spectators is no easy task, and not an activity this paper aimed to answer, however, we suggest to investigate particularly the social aspects related to both gameplay and game spectatorship as also prompted by the results of the present study.

As was noted earlier in this paper, cognitive motivations, such as information seeking, was not significantly associated with how much people watch streams, while at the same time respondents did report receiving related gratification from stream consumption. This might imply that viewers seek to watch streams for other reasons but might receive cognitive gratification as a by-product. That is to say, users primarily use other forms of media to fully fulfil these cognitive needs. Video sharing services such as YouTube feature a host of videos detailing how to play games, and perhaps a major contributor is the fact that users can pause videos, rewind and watch sections multiple times. This facet is challenging when it comes to live broadcasting, and perhaps rather than only offer archives of live streams, streaming services could look to the possibility of incorporating tools for making communication between streamers and spectators more seamless. This might then, in turn, facilitate learning in the form of something more akin to a teacher-student relationship. Perhaps another angle to approach this, for stream services, is to highlight particularly educative streams in an effort to make it easier for users to find them.

Perhaps the strongest results of the present study highlight the fact that social factors are an immensely important aspect of the consumer experience of streaming. The results show that feeling a sense of community in the watching experience not only increases how much people watch streams, but perhaps more importantly, was also the strongest determinant of following streamers and subscribing. Therefore, it seems clear that game developers, streaming platform developers and streamers alike would be strongly advised to attempt to increase the degree to which the viewers experience communality and sense of belonging. This is particularly true for streamers, as attracting highly dedicated viewers that then transition into subscribers, generating revenue, is something of great interest for the streamer in question. Currently, social aspects on streaming services are mainly facilitated through chat functionalities, following and subscribing, although many streamers take to using ancillary services, such as social media and private discussion groups, to maintain their streaming community.

This goes to show that merely having a chat is not enough for many viewers that are highly dedicated, demonstrating the need for streaming service developers to further integrate tools and services for social interaction into the core activity of stream spectating.

This strong positive effect of community does, however, not carry over to personal integrative motivations and receiving recognition. The negative association found for building one's reputation and watching streams would indicate that there is work to be done within that domain for service developers. While not all forms of media can expect to obtain high levels of gratifications across the board, we argue that by focusing on the problems behind this negative association, one could improve the situation. As discussed previously, a problematic dynamic seems to exist between the amount of viewers and the potential ability to interact in a meaningful way for receiving recognition. That is to say, when channels increase in size, communication through chat becomes more problematic as there is more communication noise generated by the increased number of chat messages. Interestingly, building reputation has been shown to positively affect continued use for video sharing sites such as YouTube (Chiang & Hsiao, 2014), so perhaps through the usage of the recommendation systems used in services like YouTube, streaming services could also increase the personal integrative gratifications obtained from watching streams.

5.3. Future research directions

The topic of this study offers many potentially fruitful avenues for further research. While this study investigated the motivational types commonly used in UG research, there remain factors worthy of study in order to build a deeper understanding of the video game streaming phenomena. For example, comparisons of motivation levels between various types of demographic factors, such as gender, country of residence, education and income could be valuable. Investigating differences between service usage habits could also prove valuable. For example, we could identify differences in player motivations in different types of game genres. Game genres are inherently different, as some games are highly competitive, while others offer more of a free-form playing experience. We believe this not only impacts on the playing experience, but is also reflected in the viewing experience. Subscriptions are a significant indicator of service usage and indicate a willingness to pay for content, however, this study was not able to obtain a high level of prediction when it comes to subscription motivations. Therefore, it would also be of great interest to further investigate the types of motivations that drive subscription behaviour.

Furthermore, the personal integrative motivations investigated in this study were limited to recognition. In future research it might be beneficial to investigate the inclusion of more than one scale for identifying different aspects of personal integrative motivations, especially given the results produced by this study, where we found a negative association between recognition and hours watched.

Disclosure statement

No competing financial interests exist.

Acknowledgements

The research has been carried out as part of research projects (40009/16, 40111/14) funded by the Finnish Funding Agency for Innovation (TEKES).

Appendix A. Psychometric items

Item	Related UG need type	Scale origin	AVE	CR	Mean
Enjoyment (ENJ)	Affective	Venkatesh, 2000	0.75	0.92	5.42
ENJ_1: I find using Twitch to be enjoyable.					
ENJ_2: Using Twitch is exciting.					
ENJ_3: I have fun using Twitch.					
ENJ_4: Using Twitch is entertaining					
Information seeking about game products (IS_PROD)	Cognitive	van der Heijden, 2004	0.77	0.93	4.57
IS_PROD_1: Using Twitch, I can better decide which game I want to play than in the past					
IS_PROD_2: Using Twitch, I am better informed about new games I consider playing					
IS_PROD_3: Using Twitch, I find games I would not otherwise have found.					
IS_PROD_4: Using Twitch, I can better decide whether I want to play a particular game or not					
Learning about game strategies (LSTRA)	Cognitive	Papacharissi & Rubin, 2000	0.76	0.93	5.3
LSTRA_1: Watching Twitch, I am better informed about new game strategies					
LSTRA_2: Watching Twitch helps me get information on learning to play games.					
LSTRA_3: Watching Twitch helps me look for information on game tricks.					
LSTRA_4: Watching Twitch helps me see what game tactics are out there.					
Recognition (REC)	Personal integrative	Hernandez et al., 2011	0.72	0.91	4.1
REC_1: I like when other Twitch users take my comments into account					
REC_2: I feel good when my comments prove to other Twitch users that I have knowledge about the game being played.					
REC_3: I try that my comments improve my reputation among other Twitch users.					
REC_4: I like when streamers on Twitch take my suggestions into consideration.					
Companionship (COMP)	Social integrative	Smock et al., 2011	0.74	0.90	3.57
COMP_1: Using Twitch, I don't have to be alone.					
COMP_2: I use Twitch when there's no one else to talk or be with					
COMP_3: Using Twitch makes me feel less lonely					
Shared emotional connection (SEC)	Social integrative	Chavis et al., 2008	0.61	0.89	3.81
SEC_1: It is very important to me to be a part of the Twitch community.					
SEC_2: I spend time with other Twitch community members a lot and enjoy spending time with them.					
SEC_3: I expect to be a part of the Twitch community for a long time.					
SEC_4: Members of the Twitch community have shared important events together.					
SEC_5: Members of the Twitch community care about each other.					
Escape (ESC)	Tension release	Smock et al., 2011	0.72	0.89	4.18
ESC_1: Using Twitch, I can forget about school, work, or other things					
ESC_2: Using Twitch, I can get away from the rest of my family or others					
ESC_3: Using Twitch, I can get away from what I'm doing.					
Distraction (DIST)	Tension release	Smock et al., 2011	0.66	0.89	5.03
DIST_1: Using Twitch is a habit, just something I do.					
DIST_2: When I have nothing better to do, I use Twitch.					
DIST_3: Using Twitch passes the time away, particularly when I'm bored					
DIST_4: Using Twitch gives me something to do to occupy my time.					
Relaxation (RELAX)	Tension release	Smock et al., 2011	0.79	0.92	5.38
RELAX_1: Watching Twitch allows me to unwind.					
RELAX_2: Watching Twitch relaxes me					
RELAX_3: Watching Twitch is a pleasant rest					

Appendix B. Discriminant validity of psychometric items, corresponding scale values bolded

	ENJ	IS_PROD	LSTRA	REC	COMP	SEC	DIST	ESC	RELAX
COMP_1	0.454	0.345	0.240	0.518	0.900	0.590	0.456	0.522	0.456
COMP_2	0.409	0.293	0.257	0.388	0.796	0.443	0.552	0.507	0.438
COMP_3	0.419	0.376	0.239	0.495	0.885	0.545	0.452	0.513	0.468
DIST_1	0.485	0.339	0.316	0.313	0.440	0.391	0.754	0.479	0.490
DIST_2	0.467	0.309	0.303	0.267	0.425	0.340	0.825	0.406	0.511
DIST_3	0.596	0.368	0.312	0.350	0.500	0.425	0.882	0.564	0.645
DIST_4	0.529	0.316	0.255	0.332	0.451	0.403	0.789	0.507	0.557
ENJ_1	0.855	0.353	0.418	0.352	0.369	0.480	0.555	0.382	0.599
ENJ_2	0.804	0.362	0.418	0.462	0.462	0.592	0.482	0.451	0.584
ENJ_3	0.908	0.384	0.417	0.417	0.466	0.585	0.584	0.420	0.686
ENJ_4	0.890	0.393	0.432	0.417	0.424	0.532	0.591	0.440	0.655
ESC_1	0.431	0.293	0.250	0.337	0.518	0.389	0.563	0.874	0.536
ESC_2	0.333	0.298	0.214	0.357	0.491	0.390	0.415	0.785	0.418
ESC_3	0.467	0.335	0.269	0.346	0.513	0.392	0.548	0.888	0.543
IS_PROD_1	0.384	0.895	0.398	0.395	0.381	0.405	0.381	0.324	0.351
IS_PROD_2	0.387	0.916	0.466	0.378	0.334	0.414	0.351	0.311	0.347

(continued)

	ENJ	IS_PROD	LSTRA	REC	COMP	SEC	DIST	ESC	RELAX
IS_PROD_3	0.372	0.800	0.280	0.360	0.351	0.415	0.356	0.318	0.377
IS_PROD_4	0.376	0.900	0.377	0.357	0.323	0.361	0.358	0.326	0.356
LSTRA_1	0.450	0.354	0.904	0.249	0.225	0.272	0.324	0.241	0.347
LEARN_2	0.429	0.472	0.877	0.302	0.280	0.318	0.326	0.261	0.364
LSTRA_3	0.397	0.367	0.822	0.295	0.287	0.295	0.319	0.273	0.339
LSTRA_4	0.417	0.323	0.884	0.233	0.193	0.252	0.300	0.233	0.319
REC_1	0.431	0.378	0.252	0.903	0.483	0.614	0.358	0.340	0.360
REC_2	0.353	0.307	0.268	0.814	0.429	0.507	0.280	0.339	0.298
REC_3	0.365	0.337	0.227	0.806	0.459	0.629	0.274	0.318	0.292
REC_4	0.448	0.403	0.305	0.856	0.471	0.554	0.398	0.376	0.381
RELAX_1	0.537	0.372	0.274	0.317	0.445	0.416	0.530	0.532	0.850
RELAX_2	0.688	0.348	0.368	0.362	0.482	0.460	0.634	0.533	0.915
RELAX_3	0.713	0.359	0.400	0.370	0.472	0.480	0.643	0.510	0.896
SEC_1	0.466	0.364	0.225	0.613	0.570	0.848	0.369	0.387	0.398
SEC_2	0.394	0.343	0.193	0.597	0.509	0.823	0.309	0.334	0.339
SEC_3	0.666	0.412	0.347	0.494	0.462	0.747	0.537	0.426	0.512
SEC_4	0.511	0.343	0.309	0.476	0.408	0.725	0.387	0.355	0.396
SEC_5	0.446	0.308	0.219	0.484	0.439	0.762	0.283	0.290	0.359

References

- Abercrombie, N., & Longhurst, B. J. (2007). *The Penguin dictionary of media studies*. Penguin.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423.
- Baran, J. S., & Davis, K. D. (2006). *Mass communication theory: Foundation and future*. Boyd, d. M., & Ellison, N. B. (2007). Social network Sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13, 210–230.
- Cha, J. (2014). Usage of video sharing websites: Drivers and barriers. *Telematics and Informatics*, 31, 16–26.
- Cha, M., Kwak, H., Rodriguez, P., Ahn, Y., & Moon, S. (2007). I tube, you tube, everybody tubes: Analyzing the world's largest user generated content video system. In *Proceedings of the 7th ACM SIGCOMM conference on internet measurement* (pp. 1–14). ACM.
- Chavis, D. M., Lee, K. S., & Acosta, J. D. (2008). The sense of community (SCI) revised: The reliability and validity of the SCI-2. In *2nd international community psychology conference*. Lisbon.
- Chen, G. M. (2011). Tweet this: A uses and gratifications perspective on how active twitter use gratifies a need to connect with others. *Computers in Human Behavior*, 27, 755–762.
- Cheung, G., & Huang, J. (2011). Starcraft from the stands: Understanding the game spectator. In *CHI '11 proceedings of the SIGCHI conference on human factors in computing systems* (pp. 763–772). New York: ACM.
- Chiang, H.-S., & Hsiao, K.-L. (2014). YouTube stickiness: The needs, personal, and environmental perspective. *Internet Research*, 25(1), 85–106.
- Chin, W. W. (1988). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Lawrence Erlbaum Associates.
- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189–217.
- Chin, W. W., & Newstad, P. R. (1999). Structural equation modeling analysis with small samples using partial least squares. In R. Hoyle (Ed.), *Statistical strategies for small sample research* (pp. 307–341). Thousand Oaks: Sage Publications.
- Cook, T. D., Campbell, D. T., & Day, A. (1979). *Quasi-experimentation: Design & analysis issues for field settings* (Vol. 351). Boston: Houghton Mifflin.
- Courtois, C., Mechant, P., De Marez, L., & Verleye, G. (2009). Gratifications and seeding behavior of online adolescents. *Journal of Computer-Mediated Communication*, 15, 109–137.
- Dovey, J., & Kennedy, H. W. (2006). *Game cultures: Computer games as new media: Computer games as new media*. McGraw-Hill Education.
- Ewalt, D. M. (2014, 1 16). *How big is Twitch's Audience? Huge*. Retrieved 6 6, 2016, from Forbes: <http://www.forbes.com/sites/davidewalt/2014/01/16/twitch-streaming-video-audience-growth/>.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Gelman, A. D., Halfin, S., & Willinger, W. (1991). On buffer requirements for store-and-forward video on demand service circuits. In *Global telecommunications conference* (pp. 976–980). Phoenix: IEEE.
- Grundberg, S., & Hansegard, J. (2014). *YouTube's biggest draw plays games, earns \$4 million a year*. Retrieved October 29, 2015, from The Wall Street Journal: <http://www.wsj.com/articles/youtube-star-plays-videogames-earns-4-million-a-year-1402939896>.
- Hamari, J., & Sjöblom, M. (2017). What is eSports and why do people watch it? *Internet Research*, 27(2). <http://dx.doi.org/10.1108/IntR-04-2016-0085>.
- Hamilton, W. A., Garretson, O., & Kerne, A. (2014). Streaming on twitch: Fostering participatory communities of play within live mixed media. In *CHI '14 proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1315–1324). New York: ACM.
- Hanson, G., & Haridakis, P. (2008). YouTube users watching and sharing the news: A uses and gratifications approach. *The Journal of Electronic Publishing*, 11(3).
- van der Heijden, H. (2004). *User acceptance of hedonic information systems*. MIS Quarterly.
- Hernandez, D. (2016). *Game creator success on Twitch: Hard numbers*. Retrieved 6.10.2016 from Twitch: <https://blog.twitch.tv/https-blog-twitch-tv-game-creator-success-on-twitch-hard-numbers-688154815817>.
- Hernandez, B., Montaner, T., Sese, F. J., & Urquiza, P. (2011). The role of social motivations in e-learning: How do they affect usage and success of ICT interactive tools? *Computers in Human Behavior*, 6, 2224–2232.
- Ishii, K. (2006). Implications of Mobility: The Uses of Personal Communication Media in Everyday Life. *Journal of Communication*, 56(2), 346–365.
- Jansz, J., & Martens, L. (2005). Gaming at a LAN event: The social context of playing video games. *New media & society*, 7(3), 333–355.
- Johnson, P. R., & Yang, S.-U. (2009). Uses and gratifications of Twitter: An examination of user motives and satisfaction of Twitter use. In *Communication technology division of the annual convention of the association for education in journalism and mass communication*. Boston.
- Joinson, A. N. (2008). Looking at, looking up or keeping up with people? Motives and use of Facebook. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1027–1036). ACM.
- Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Scientific Software International.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *The Public Opinion Quarterly*, 37(4), 509–523.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In E. Katz, & J. G. Blumler (Eds.), *The uses of mass communications: Current perspectives on gratifications research* (pp. 19–34). Beverly Hills, CA: Sage.
- Katz, E., Gurevitch, M., & Haas, H. (1973). On the use of the mass media for important things. *American Sociological Review*, 38(2), 164–181.
- Kaytoue, M., Silva, A., Cerf, L., Meira, W. J., & Raïssi, C. (2012). Watch me playing, I am a professional: A first study on video game live streaming. In *WWW '12 companion proceedings of the 21st international conference companion on World Wide Web* (pp. 1181–1188). New York: ACM.
- Ko, H., Cho, C.-H., & Roberts, M. S. (2005). Internet uses and gratifications: A structural equation model of interactive advertising. *Journal of Advertising*, 34(2), 57–70.
- Krcmar, M., & Greene, K. (1999). Predicting exposure to and uses of television violence. *Journal of Communication*, 49(3), 24–45.
- Lange, P. G. (2007). Publicly private and privately Public: Social networking on YouTube. *Journal of Computer-Mediated Communication*, 13, 361–380.
- LaRose, R., & Eastin, M. S. (2004). A social cognitive theory of Internet uses and gratifications: Toward a new model of media attendance. *Journal of Broadcasting & Electronic Media*, 24(3), 358–377.
- Lee, D., & Schoenstedt, L. J. (2011). Comparison of eSports and traditional sports consumption motives. *The ICHPER-SD Journal of Research in Health, Physical Education, Recreation, Sport & Dance*, 6(2), 39.
- Lin, C. A. (2002). Perceived gratifications of online media service use among potential users. *Telematics and Informatics*, 19, 3–19.
- McLuhan, M. (1994). *Understanding media: The extensions of man*. MIT Press.
- Needleman, S. E. (2015, 1 29). *Twitch's viewers reach 100 million a month*. Retrieved 6 6, 2016, from The Wall Street Journal: <http://blogs.wsj.com/digits/2015/01/29/twitchs-viewers-reach-100-million-a-month/>.
- Newman, J. (2004). *Video games*. New York: Routledge.
- Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Oestreicher-Singer, G., & Zalmanson, L. (2013). Content or community? a digital

- business strategy for content providers in the social age. *MIS Quarterly*, 37(2), 591–616.
- Pai, P., & Arnott, D. C. (2013). User adoption of social networking sites: Eliciting uses and gratifications through a means–end approach. *Computers in Human Behavior*, 29, 1039–1053.
- Papacharissi, Z., & Mendelson, A. (2010). 12 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). Routledge.
- Papacharissi, Z., & Rubin, A. M. (2000). Predictors of internet use. *Journal of Broadcasting & Electronic Media*, 44(2), 175–196.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879–903.
- Quandt, T., Van Looy, J., Vogelsang, J., Elson, M., Ivory, J. D., Consalvo, M., et al. (2015). Digital games research: A survey study on an emerging field and its prevalent debates. *Journal of Communication*. <http://dx.doi.org/10.1111/jcom.12182>.
- Rubin, A. M. (2002). The uses-and-gratifications perspective of media effects. In J. Bryant, & D. Zillmann (Eds.), *Media effects: Advances in theory and research*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Ruggiero, T. E. (2000). Uses and gratifications theory in the 21st century. *Mass Communication & Society*, 3(1), 3–37.
- Schmitt, K. L., Woolf, K. D., & Anderson, D. R. (2003). Viewing the Viewers: Viewing behaviors by children and adults during television programs and commercials. *Journal of Communication*, 53(2), 265–281.
- Scholz, T. M. (2012). New broadcasting ways. In *IPTV – The case of the starcraft broadcasting scene*. World media economics & management conference.
- Shaw, A. (2013). *E-Sport spectator motivation*. Fairfax: George Mason University.
- Sherry, J. L., Lucas, K., Greenberg, B. S., & Lachlan, K. (2006). Video game uses and gratifications as predictors of use and game preference. In P. Vorderer, & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 213–224).
- Smock, A. D., Ellison, N. B., Lampe, C., & Wohn, D. Y. (2011). Facebook as a toolkit: A uses and gratification approach to unbundling feature use. *Computers in Human Behavior*, 27(6), 2322–2329.
- Twitch. (2015). *2014 retrospective*. Retrieved 6 6, 2016, from Twitch: <https://www.twitch.tv/year/2014>.
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, 11(4), 342–365.
- Vock, M., van Dolen, W., & de Ruyter, K. (2013). Understanding willingness to pay for social network sites. *Journal of Service Research*, 16(3), 311–325.
- Wang, Q., Fink, E. L., & Cai, D. A. (2008). Loneliness, gender, and parasocial interaction: A uses and gratifications approach. *Communication Quarterly*, 56(1), 87–109.
- Wang, Z., & Tchernev, J. M. (2012). The “Myth” of media Multitasking: Reciprocal dynamics of media multitasking, personal needs, and gratifications. *Journal of Communication*, 62(3), 493–513.
- Weiss, T. (2011). Fulfilling the needs of eSports consumers: A uses and gratifications perspective. In *Proceedings of the 24th bled eConference “eFuture: Creating solutions for the individual, organisations and society”*. Bled, Slovenia.
- Weiss, T., & Schiele, S. (2013). Virtual worlds in competitive contexts: Analyzing eSports consumer needs. *Electronic Markets*, 23(4), 307–316.
- Westland, J. C. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications*, 9(6), 476–487.
- West, R. L., & Turner, L. H. (2010). *Introducing communication Theory: Analysis and application*. Boston, MA: McGraw-Hill.
- Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach. *Qualitative Market Research: An International Journal*, 16(4), 362–369.
- Wu, J.-H., Wang, S.-C., & Tsai, H.-H. (2010). Falling in love with online games: The uses and gratifications perspective. *Computers in Human Behavior*, 26, 1862–1871.