

Department of Computer Science

Spectating play

Investigating motivations for watching others play games

Max Sjöblom

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games

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The games industry has, during the past decades, evolved into one of the largest forms of entertainment on the planet, surpassing previous entertainment industry giants such as the movie industry. While video games have existed for 60 years, a more recent phenomenon is the cultural activity of watching others play. While one might easily comprehend the reasons for choosing to engage in active playing of video games, the motivations for watching others do so, is one that perplexes many. Thus, this dissertation aims at investigating the motivations for spectating others playing video games.

The first topic that this dissertation covers is that of competitive video games, more commonly called esports (electronic sports). Through a seminal publication on esports, we help both define what the concept means, as well as empirically investigate motivations for spectating esports through the internet. This is then continued with a comparative study, utilizing data for both online spectating and live attendance of esports to further our understanding of what drives people to consume esports content.

The second approach of this dissertation is to look at the cultural phenomenon of video game live streaming, in this dissertation simply referred to by the term streaming. Streaming has become a popular pastime for many people, and for many also a career path on the Twitch platform, often in tandem with other forms of content creation on platforms such as YouTube. This dissertation studies the phenomenon of streaming through three separate studies. The first looks at motivations for consuming streaming content through the lens of uses and gratifications, while the second study delves deeper into the specifics of different types of streaming content and game genres. The third study focuses particularly on the social motivations present, and how these influence modes of engagement on the Twitch platform.

All of the five studies within this dissertation employ quantitative analysis methods, using large-scale international survey studies as the primary data collection instrument. This approach enables us to generate high level understanding of behavioral motivations related to these phenomena. Through the use of sophisticated statistical modelling methods in the form of partial-least squares structural equation modelling (PLS-SEM), we are able to investigate which motivational factors predict continued usage, among other factors. Through five distinct scientific studies, this dissertation is able to effectively describe the motivations for consuming content in relation to two forms of spectating play: esports & game streaming. This dissertation, and the publications within, serves as one of the first empirical and quantitative investigations into the realm of spectating play.

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Författare

Max Sjöblom

Doktorsavhandlingens titel

Spectating play: investigating motivations for watching others play games

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Under de senaste decennierna har spelindustrin utvecklats till en av världens ledande former av underhållning och passerat traditionella jättar inom underhållningsindustrin såsom filmindustrin. Datorspel har funnits i snart 60 år men ett kulturellt fenomen som är betydligt nyare är att vara åskådare när andra spelar. Att förstå vad som lockar människor att spela datorspel är kanske inte svårt, men vad som kan vara svårare att förklara är varför miljontals människor världen över väljer att istället titta på när andra spelar. Avsikten med denna avhandling är därför att utforska de motivationer som leder till att människor vill bli åskådare då andra spelar datorspel.

Det första ämnet som denna avhandling utreder gäller tävlingsspelet, oftast känt som e-sport (elektronisk sport). De publikationer som presenteras i denna avhandling definierar både vad konceptet e-sport innebär och undersöker empiriskt vilka motiveringar det finns att bli e-sportåskådare på internet. Denna utredning åtföljs av en jämförande studie som använder data insamlade från åskådare på internet och åskådare som deltar i e-sportevenemang på plats, med avsikt att ytterligare öka vår förståelse för vad som driver människor att konsumera e-sport.

Det andra ämnet som är i fokus i denna avhandling är en studie i ett kulturellt fenomen där människor som spelar datorspel sänder sitt spelande på internet i realtid, något som i denna avhandling beskrivs med termen streaming. Streaming har för många blivit ett mycket populärt tidsfördriv och många har också sett detta som en möjlighet att göra karriär på Twitch-plattformen, ofta i samverkan med andra former av skapande av innehåll på plattformar i stil med YouTube. I denna avhandling utforskas streaming via tre skilda studier. Den första studien granskar motivationen att konsumera streaminginnehåll utgående från användarteorin (uses and gratifications), medan den andra studien gräver djupare i olika slags streaminginnehåll och spelgenrer. Den tredje studien fokuserar särskilt på den sociala motivationen och hur denna påverkar sättet att engagera sig på Twitch-plattformen.

Alla fem studier som presenteras i denna avhandling använder sig av kvantitativa forskningsmetoder och tillämpar breda sampel bestående av en stor mängd internationella respondenter insamlade via frågeformulär. Detta betraktelsesätt gör det möjligt att utforska motivationer på en hög abstraktionsnivå. Med hjälp av sofistikerade metoder för att analysera statistiska modeller, såsom PLS-SEM, kan vi med hjälp av de mätta motivationerna förutspå bland annat framtida användning. Genom fem skilda vetenskapliga studier beskriver denna avhandling effektivt vad som motiverar människors konsumtion av innehåll i relation till två huvudsakliga sätt att vara åskådare när andra spelar: e-sport och streaming av spel. Denna avhandling och de publikationer som ingår är ett av de första försöken att kvantitativt och empiriskt utforska den värld där människor är åskådare när andra spelar.

Nyckelord esports, streaming, mediakonsumtion**ISBN (tryckt)** 978-952-60-8469-5**ISBN (pdf)** 978-952-60-8470-1**ISSN (tryckt)** 1799-4934**ISSN (pdf)** 1799-4942**Utgivningsort** Helsingfors**Tryckort** Helsingfors**År** 2019**Sidantal** 169**urn** <http://urn.fi/URN:ISBN:978-952-60-8470-1>

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I might not exactly have known what I set out for when I started my PhD. While I still might not know exactly what I am doing, these years have given me many experiences, and luckily also left me several publications richer.

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What would a doctoral degree be without some tough questions? For taking the task of functioning as my opponent at the doctoral defense, a huge thank you goes to professor Mia Consalvo!

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Science may at times be daunting, but I have had an excellent base to start from, thanks to my parents, and an academic tradition in my family going back several generations. Many thanks for this!

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The ancient Greeks acknowledged the value of cultivating not only the mind, but also the body. I am grateful that at the time I started this dissertation process I also found a new sport, and I would like to thank everyone part of the community at North Engine for creating an atmosphere that makes physical exercise not only fun, but also challenging & rewarding on a level new to me.

Finally, a thank you to Andrew & the rest of the crew at Kaffa, for providing a stimulating place to write, and providing ample amounts of caffeine.

Helsinki, March 2019

Max Eric Sebastian Sjöblom

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List of Abbreviations

AVE	Average variance extracted
CB-SEM	Covariance-based structural equation modeling
CCG	Collectible card game
CR	Composite reliability
FPS	First-person shooter
IRL stream	Streams covering the day-to-day activities of the broadcaster
MLR	Multiple linear regression
MMO	Massively multiplayer online
MOBA	Multiplayer online battle arena
MSSC	Motivation scale for sports consumption
OLR	Ordinal linear regression
PLS-SEM	Partial least squares structural equation modeling
RPG	Role-playing game
RTS	Real-time strategy
SDT	Self-determination theory
UG	Uses and gratifications

List of Publications

This doctoral dissertation consists of a summary and of the following publications which are referred to in the text by their numerals.

1. Hamari, J., & Sjöblom, M. (2017). What is eSports and why do people watch it? *Internet research*, 27(2), 211-232. <https://doi.org/10.1108/IntR-04-2016-0085>
2. Sjöblom, M., & Hamari, J. (2017). Why do people watch others play video games? An empirical study on the motivations of Twitch users. *Computers in Human Behavior*, 75, 985-996. <https://doi.org/10.1016/j.chb.2016.10.019>
3. Sjöblom, M., Törhönen, M., Hamari, J., & Macey, J. (2017). Content structure is king: An empirical study on gratifications, game genres and content type on Twitch. *Computers in Human Behavior*, 73, 161-171. <https://doi.org/10.1016/j.chb.2017.03.036>
4. Hilvert-Bruce, Z., Neill, J. T., Sjöblom, M., & Hamari, J. (2018). Social motivations of live-streaming viewer engagement on Twitch. *Computers in Human Behavior*, 84, 58-67. <https://doi.org/10.1016/j.chb.2018.02.013>
5. Sjöblom, M., Macey, J., & Hamari, J. (revision under review). Digital athletics in analogue stadiums: comparing gratifications for engagement between live attendance and online spectating of esports. *Internet Research*.

Author's Contribution

Publication 1: What is eSports and why do people watch it?

The author planned the survey used for data collection, and was responsible for conducting the data collection. Additionally, the author participated in conducting the quantitative analysis. The author also participated as one of the primary authors in the writing and revision process, writing approximately 50% of the content.

Publication 2: Why do people watch others play video games? An empirical study on the motivations of Twitch users.

The author was the primary designer of the survey used for data collection, and was responsible for conducting the data collection. Additionally, the author conducted the quantitative analysis and performed the relevant measurements of validity. The author also participated as one of the primary authors in the writing and revision process, writing approximately 70% of the content. The author handled the submission process.

Publication 3: Content structure is king: An empirical study on gratifications, game genres and content type on Twitch.

The author was the primary designer of the survey used for data collection, and was responsible for conducting the data collection. Additionally, the author conducted the quantitative analysis and performed the relevant measurements of validity. The author also participated as one of the primary authors in the writing and revision process, writing approximately 70% of the content. The author handled the submission process.

Publication 4: Social motivations of live-streaming viewer engagement on Twitch.

The author contributed to designing the main survey used for data collection. Additionally, the author contributed to analyzing findings and doing thorough revision reworks to the article, including redoing analysis with new methods and reporting measurements of validity.

Publication 5: Digital athletics in analogue stadiums: comparing gratifications for engagement between live attendance and online spectating of esports.

The author was responsible for the design of the survey, as well as collecting the online data set. The author planned and participated in the collection of data at a live event. The author was also responsible for conducting the PLS-SEM and t-test quantitative analyses in the publication, and writing approximately 60% of the manuscript. The author handled the submission process.

1. Introduction

During the past three decades, video games have transformed from a niche form of entertainment, to one of the largest entertainment industries on earth. These days, video games are enjoyed in particular by young males, but also increasingly by people of various ages and backgrounds (Brown, 2017). A population study in Finland revealed that approximately 75% of people play digital games, and around 60% play actively (Kinnunen et al., 2018), indicating that games are a truly mainstream form of entertainment. Video games have become important not only culturally (Dovey and Kennedy, 2006), but also from a business perspective. As an anecdote of this, the game *Grand Theft Auto 5* is estimated to be the most profitable entertainment product of all time, surpassing several of the highest grossing films (Cherney, 2018).

Games have been heavily studied, and indeed spawned a wholly new field in *game research* (see e.g. Quandt et al., 2015). Game research has been particularly prominent within communications and applied psychology, focusing on what motivates people to play games (Hamari and Keronen, 2017; Jansz and Tanis, 2007; Vahlo et al., 2017; Yee, 2006), and how games affect the people playing them (Elson and Ferguson, 2014). While there is an active discourse in popular media regarding various aspects of video games (positive and negative), a majority of people are likely to understand why people choose to spend time playing games, particularly considering how commonplace games have become in our modern society (Brown, 2017; Kinnunen et al., 2018).

A more perplexing phenomena is why people choose to watch others play games, when they could be playing themselves? This question has only arisen recently, as the last five to ten years have seen the emergence of one of the fastest growing forms of new entertainment media, namely game video content. Hundreds of millions of people around the world are choosing to head to services such as Twitch and YouTube to see other individuals play a plethora of video games (Taylor, 2017). In 2018, the online video streaming service Twitch attracted 15 million unique daily users (Twitch, 2017), rivalling the size of many large cable television networks in the US (Gilbert, 2018). At the same time, the *gaming* category on YouTube is among the three most popular categories.

Video games are not the only form of play that have attracted spectators throughout history, and one might argue that humans have spectated play for a long time, in the form of various physical games. One particular division of play and games that has had an element of spectatorship for a very long time is

sport (Holt, 1990; McChesney, 1989). However, when talking about the concept of “spectating play”, this dissertation particularly references watching the play of video games, rather than for example yard games, board games or sports.

It is not only the consumption of game video content that has grown, but also the production of such content in the form of pre-recorded video and live streaming which has increased significantly. Currently, game video content creation has become a popular pastime, and for many people has evolved from a hobby to a form of profession. Indeed, individuals such as Pewdiepie (a Swedish YouTuber focusing on game related content) currently attract more viewers than many organizations operating in more traditional forms of media (Grundberg and Hansgard, 2014), having more than 67 million subscribers at the time of writing.

While the consumption and production of game video has been growing in general, so has the area of competitive gaming, colloquially referred to as esports. Industry reports estimate that the esports industry currently attracts approximately 380 million viewers, generating \$906 million annually, and this is predicted to increase to 557 million viewers and \$1650 million in revenue by 2021 (Newzoo, 2018). The roots of competitive video games go back to the original arcades (Newman, 2004) where players and spectators would exist simultaneously, and later on, through the emergence of small and large scale LAN events (Griffiths et al., 2003; Jansz and Martens, 2005), where people would meet up and play against others. These types of events have further been facilitated by the internet, and the improved infrastructure that allows players around the world to play high fidelity video games against each other, with a virtually indistinguishable delay in the actions taking place. Contemporary esports are primarily consumed online, but many large esports tournaments also offer the possibility to see the action unfold live at large stadium scale events (Taylor, 2012).

While the phenomenon of spectating play (as exemplified by esports and streaming) would make for an interesting topic of inquiry purely as a new form of media, this phenomenon also poses questions that are interesting from a theoretical perspective of understanding human communication and motivation.

Firstly, the conceptual identity of esports, *does it constitute sport or does it not*, is one that in recent years has seen active debate, with arguments for (Funk et al., 2018; Jenny et al., 2017; Witkowski, 2012) and against (Hallmann and Giel, 2018), or indeed arguing that it is hard to define within current frameworks (Holden, Kaburakis, et al., 2017). By investigating consumption motivations and providing an updated definition of esports, this dissertation can contribute in a meaningful way in this ongoing debate, as well as providing a deeper understanding of the motivations for consuming esports.

Secondly, streaming as a form of both real-time and interactive media creates a media experience that is unlike many seen before. The media consumption motivations behind more classical forms of media such as television (Rubin, 1983), radio (Albarran et al., 2007) or films (Oliver, 1993) are well

understood, as are more modern forms of media such as internet use (Papacharissi and Rubin, 2000) and specific services such as Twitter (Chen, 2011) and Facebook (Papacharissi and Mendelson, 2011; Quan-Haase and Young, 2010; Smock et al., 2011). However, none of these are characterized by aspects of both interactivity and real-time use. Television features many live broadcasts of events, concerts and sports, but these have limited or no interaction. Services such as Twitter and Facebook may have a high level of interaction, but the use is often asynchronous. Thus, the context of live video game streaming offers us an avenue by which to explore a form of media consumption and communication that combines interaction with the production and consumption of content, happening in real-time. Through the investigations of the gratifications of motivations, not only can this particular context be better understood, but also other contemporary media forms and services such as social media.

Thirdly, and finally, not only are individuals using streaming services as a form of media, but they are also naturally interacting with other individuals around the world. By understanding the general motivations of use, and more specifically different social motivations, one can understand whether these services are truly social, or if the users are motivated by completely different aspects. While this dissertation does not delve too deeply into this particular topic, an understanding of the role of social motivations within both streaming services and esports spectating will help anchor the potential need for further research in this area.

1.1 Research problem & questions

Given the meteoric rise of game video content on the internet and the boom of esports as a form of entertainment, this dissertation aims to answer the question: *Why do people watch others play video games?* Furthermore, it asks how these phenomena can be explained, quantified and related to other forms of media and entertainment. The consumption of various forms of media has been widely researched throughout the field of communication studies, using approaches such as the uses and gratifications (UG) theoretical framework (Katz, Blumler, et al., 1973; Papacharissi and Rubin, 2000; Ruggiero, 2000). While various forms of media have been thoroughly researched, streaming and esports are so new that no real quantitative studies on their consumption have previously been undertaken.

The primary concern of this dissertation is thus to investigate why people choose to consume game video content online, and in particular, why they consume esports & streaming video content. To do this requires a deeper investigation into human behavior beyond the simple usage statistics that are publicly available, so as to provide an understanding of which motivational factors impact individuals that consume game video content. By understanding the reasons why people watch others play video games, a general understanding can be constructed of what may be called ‘the game media ecosystem’.

Esports has become a form of spectating play that is highly visible in mainstream media, with broadcasts on networks such as ESPN and press coverage in newspapers and magazines (Burroughs and Rama, 2015; Byers, 2018; Elder, 2018), and also in the fast-growing form of general entertainment media (Newzoo, 2018). As such, esports serves as a natural avenue to start our investigation into why people watch others play games. As the name implies, esports can to some degree be seen to share many commonalities with traditional sports, particularly when it comes to the spectator experience. Previous sport consumption studies have built a broad base explaining the motivations for consuming sport, and highlighting the importance of factors such as social motivation (Melnick, 1993), drama and suspense (Peterson and Raney, 2008; Raney and Depalma, 2006) and learning (Melnick, 1993; Wenner and Gantz, 1998). However, the study of esports spectating motivations should not only be tied to sports spectating motivations, but also to media consumption motivations more broadly, as has been done using the UG perspective. As the majority of esports spectating throughout its existence has taken place through broadcasts primarily consumed through internet services, Publication 1 focuses specifically on the consumption of broadcasted esports through services such as Twitch, and investigates the following research question:

RQ1: *What gratifications motivate individuals to watch esports online?*

In contemporary esports, live events are once again emerging as a form of engagement with an increasing number of fans, much as LAN events were important in the early 90's, partially due to the technological constraints in network infrastructure that existed at the time (Jansz and Martens, 2005). In 2017, it was estimated that a total of 588 major esports events took place (Newzoo, 2018). Hence, merely investigating the online consumption of esports is not enough to build a full understanding of the spectator experience, as there is a risk of neglecting for example the social motivations (Melnick, 1993) that may be more prevalent at live events. In fact, the analogue (live) consumption of a primarily computer-mediated sport offers a means to investigate a wholly new form of sport spectating, and as such, Publication 5 covers an area of sport consumption that has thus far been overlooked. This further strengthens previous sport consumption studies that have considered various consumer segments within sport (e.g. Armstrong, 2008; Bernthal and Graham, 2003; Snipes and Ingram, 2007), by providing a comparison of online spectators and live spectators of esports.

Thus, Publication 5 offers the following research question:

RQ2: *How do spectating motivations differ between online spectating and live attendance of esports events?*

While esports represents a form of spectating play that is increasingly visible in mainstream media, this is further extended and complimented by many other forms of spectating play that have become popular in contemporary society. Many of the forms of game video that are popular on YouTube and also

on Twitch represent a more casual approach to games, where the end goal may not be to engage in competitive play. A form of media consumption that games have helped popularize (see e.g. Taylor, 2018), and has since become more commonplace in other primary genres of video is *live streaming*. Hence, an investigation into the general spectating habits of games warrants an inspection not only of esports spectating motivations, but also of more general game video content, of which live streaming is a prominent example. Publication 3 thus investigates the primary spectating motivations for watching live streams on the Twitch service:

RQ3: *What motivates individuals to watch others play games through live streams?*

The motivations for watching and engaging with the Twitch service investigated in Publication 2, offer an overview of the phenomenon of live streaming, but it is also important to recognize nuances in the content, and how these might influence motivations. The human nature to categorize things to help understand them has been extended in previous research both to games (Arsenault, 2009; Clearwater, 2011; Wolf, 2001) and more widely in media studies including film (Altman, 1984; Stam and Miller, 1999) and literature (Frye, 2015). In the same way that there may be large motivational differences in the consumption of different television and film content (Ebersole and Woods, 2007; Heeter, 1985; Rubin and Perse, 1987), differences may likewise be seen in the various types of games and streams that exist on Twitch. For example, someone watching competitive esports titles like *League of Legends* might be motivated by different factors than those that primarily watch casual games such as *Minecraft*. Publication 3 delves into the field of gratifications from the viewpoint of different content types, and investigates the differences to be found among the spectators of various types of content on Twitch.

RQ4: *How do spectating motivations vary across different types of game genres and stream types?*

Contemporary social media channels, which video streaming services are also an extension of, allow the formation of smaller communities and viewing audiences (Marwick, 2015; Oestreicher-Singer and Zalmanson, 2013) in a way that traditional media channels such as broadcast television have not been able to provide to the same extent. These smaller scale communities are often tight-knit and may influence social motivations far beyond what is seen in traditional broadcast media. On Twitch, individuals are not merely superficial watchers, but often part of one or several streamer-specific communities (Taylor, 2018; Wohn et al., 2018). As such, it is important to pay particular attention to their social motivations and how they influence engagement within the Twitch platform. This is done in Publication 4, which at the same time investigates differences between communities of various size, as within Twitch there are people broadcasting for only a handful of people, and those who attract tens of thousands of concurrent viewers.

RQ5: *How do social motivations explain engagement with Twitch?*

1.2 Structure of the dissertation

The sections in this dissertation have introduced the two main phenomena investigated in this dissertation: *esports* & live video game *streaming*. Additionally, the central research questions of this dissertation have been introduced. The remainder of this dissertation is structured as follows. Section 2, *background*, introduces relevant prior research related to motivations, media consumption, spectating play and sports consumption. Section 3, *methodology*, covers the participants, data, data collection, analyses and validity calculations for Publications 1-5. Following this, section 4, *results and discussion*, reports the results of each of the five individual Publications and considers how they relate to the five main research questions previously presented. Finally, section 5, *conclusion and implications*, covers the theoretical and practical implications of the Publications presented as part of this dissertation, as well as discussing the limitations of these Publications and avenues for further research.

2. Background

2.1 A brief history of spectating play

The act of watching others play video games has manifested itself in different forms throughout the past 50 years, from people cheering others on at arcades (Newman, 2004), to LAN events that became popular particularly during the 1990's and early 2000's (Jansz and Martens, 2005), and all the way to the contemporary forms of spectating play that are investigated throughout this dissertation (Taylor, 2012, 2018). In this section, previous research within the field of video game streaming and esports will be broadly reviewed, in order to link the contents of this dissertation more closely with extant literature and streams of research.

2.1.1 Live video game streaming & Twitch

Within the realm of research conducted on video game live streaming, three primary forms of research can be identified. These have looked at the platform, the audience and the creator. Twitch is the primary video game streaming service used in Europe and North America. It allows individuals to broadcast their own gameplay to millions of spectators worldwide, as well as enabling these content creators to earn an income for their activities. As a platform, Twitch has many features which are commonly seen on other social media platforms, such as following other users, and liking specific content.

While some platform-specific investigations have focused on highly technical aspects of these services (He et al., 2017; Ren et al., 2018) that are not of direct relevance to this dissertation, many studies have uncovered valuable information about streaming platforms and their users. The platform-specific investigations have been able to show that while certain games are continuously popular (Deng et al., 2016), content preference and popularity changes over time. This is exemplified by new game releases (Kaytoue et al., 2012) and that viewer counts for particular streams can be somewhat accurately predicted (Kaytoue et al., 2012), highlighting the various patterns in internet traffic related to the service (Kaytoue et al., 2012; Pires and Simon, 2015). As Twitch has matured as a platform, and the structure with which streamers construct their broadcasts seems to have stabilized (Bingham, 2017), recent studies have looked into the various affordances and elements that are being utilized on Twitch (Lessel et al., 2018; Sjöblom et al., 2019). These investigations have

identified that most streamers utilize similar methods of communicating with their audience, including microphone and webcam (Sjöblom et al., 2019), and that this interaction with viewers is seen as highly important (Lessel et al., 2018). In conjunction with the audiovisual elements that appear in Twitch streams, work has been done in order to facilitate automatization and the detection of key events within the streams (Chu and Chou, 2017), as well as to develop additional tools to assist streamers (Browne and Batra, 2018; Lessel, Vielhauer, et al., 2017; Robinson et al., 2017). The development of such tools has not only been limited to streamers, but also more widely to help both developers and viewers understand the dynamics between the spectator and the streamer (Pan et al., 2016), and to improve how content is recommended to users (Lin and Chen, 2018). One interesting aspect related to both the specific platform as well as the behavior of its users is how purchasing behavior may be influenced, and while this topic has not yet been widely investigated, there are some promising first forays into the field (Cai et al., 2018) that show differences in motivations when examining different modes of intent.

This dissertation is not alone in wanting to understand the audience that forms the core of Twitch, and the various aspects of the audience and users of Twitch have been researched in previous work. Studies into this subject have highlighted the importance of the social aspects of streams (Gros et al., 2017; Hamilton et al., 2014; Hu et al., 2017; Wulf et al., 2018), both for interpersonal interaction and also as a place for social gathering – seen as a kind of *third place* (McMillan and Chavis, 1986; Steinkuehler and Williams, 2006). Communities within Twitch are mainly focused on one streamer and their respective channel, and even though other structures exist to organize communities around, these are shown to have quite loose connections from a graph theory perspective (Dux, 2018). Interaction takes place in the forms of viewer-to-viewer, viewer-to-streamer, and streamer-to-viewer (Anderson, 2017), and particularly the interaction between the viewer and the streamer has been shown to be influential on the use of the service (Gros et al., 2018). The communities of Twitch are not without their own problems, and studies have highlighted the potential problems that might arise in these mostly anonymous communities, and how proactive approaches such as moderation can help mitigate some of these problems (Seering, Kraut, et al., 2017).

Aside from the social motivations highlighted in many studies, the entertainment aspect and cognitive motivations in the form of learning have also been shown to be important for stream viewers (Hamilton et al., 2014; Vosmeer et al., 2016). Learning through Twitch is indeed a topic that has been further investigated in both specialist contexts such as live programming (Haaranen, 2017) and engaging with citizen science (Gay, 2017), as well as in more general contexts where it has been shown that novice instructors of games on Twitch can offer a strong educational dimension (Payne et al., 2017).

Twitch features interesting forms of monetary transactions between users, as some viewers actively donate money to their favorite streamers. Categorizing this behavior has proven difficult, as viewers expressed a wide range of reasons for donating, some considering it to be more transactional, while others seeing

it as more emotionally connected (Wohn et al., 2018). Other types of behaviors that have raised interest among researchers are the way users interact on the Twitch platform. Notably, the language used by viewers and streamers has evolved, involving words and expressions that seem alien to the uninitiated (Olejniczak, 2015). Indeed, understanding the dialogue between a streamer and multiple simultaneous viewers, combined with perhaps other parallel discussions in the chat, can prove to be a difficult task (Recktenwald, 2017). Particularly among channels with over 10 000 simultaneous viewers, these modes of communication may quickly change from what might be considered as conventional means of communication, to something described as “crowdspeak” (Ford et al., 2017), which can be described as a phenomenon similar to that seen at a concert or large sporting event, where individual voices are replaced by the roar of the crowd (Ford et al., 2017). In the case of Twitch, this commonly involves waves of sentiment from the viewers, often expressed through the use of visual emoticons that are known by their text form such as Kappa, which describes sarcasm, and PogChamp which expresses awe or amazement (Ford et al., 2017).

The producers of Twitch content (or *streamers*) have also been the focus of many studies. Streamers seldom start out specifically wanting to do the activity as a full time job, but rather transition into it from a hobby aspect of gaming, or otherwise being involved in some type of content creation (Johnson and Woodcock, 2017). Indeed, the type of play many streamers start out with is akin to playing alongside others, but as their spectatorship grows, the play itself becomes more performative, and the nature of play changes drastically (Scully-Blaker et al., 2017). While recent years have seen examples of high-profile streamers such as Ninja earning significant sums of money (Fagan, 2018a), many streamers on Twitch still seem to worry about the fleeting nature of the popularity that forms the base of their income (Johnson and Woodcock, 2017). Inquiries into the motivations of streamers have indicated that the amount of content produced and the intent to continue producing content is driven by different sets of motivations (Bründl and Hess, 2016). Continued use has been shown to be motivated by social capital, while the amount of content created is impacted by the capacity to earn an income from the activity (Bründl and Hess, 2016). Continued use has also been investigated through the perspective of performance expectancy, where both intrinsic and extrinsic motivations have been shown to be impactful (Zhao et al., 2018). The personality and technical skills of the streamer have been highlighted as elements impacting perceived popularity (Törhönen et al., 2018). Indeed, as anyone can start playing and streaming a particular game, the content of the stream itself is not an adequate way to differentiate oneself from the mass of other streamers, and the personality of the individual streamer therefore becomes increasingly important (Pellicone and Ahn, 2017).

As the majority of Twitch streams have a video game as the central content, it is natural that the gamefulness of Twitch is another aspect that has been investigated. As a platform that facilitates interaction between the streamer and the viewer, Twitch offers the ability to insert gameful elements into this

interaction, as exemplified by *audience participation games* (Fanzo et al., 2017; Seering, Savage, et al., 2017). One example of a audience participation game that garnered large attention outside of Twitch was *Twitch Plays Pokémon*, a phenomenon in 2014 where the users of Twitch impacted the play-through of the original Pokémon Red/Blue through the chat functionality (Ramirez et al., 2014). In particular, these new types of games muddle the line of interaction even further in this already hazy middleground of streamer-viewer interaction in online media consumption. Issues of how to design these games in order to integrate with current modes of spectatorship pose a great challenge for game designers (Glickman et al., 2018; Seering, Savage, et al., 2017; Stahlke et al., 2018), for example extending modes of interaction outside of only the chat modality used in *Twitch Plays Pokémon* (Lessel, Mauderer, et al., 2017).

As an extension of modern forms of user generated content, streaming allows minorities and marginalized groups to form their own spaces within the broader media ecosystem. This has also been visible on Twitch, and studies have investigated areas such as mental health (Johnson, 2018), social anxiety (Ringland et al., 2016) and race (Gray, 2017). The role of gender in streaming is one that has raised concerns both in popular media (Grayson, 2015) and academic discourse (Ruvalcaba et al., 2018; Taylor, 2018; Uszkoreit, 2018), and findings from the spectating perspective include the fact the gender of the streamer in relation to the gender of the viewer plays a role in influencing perceptions (Todd and Melancon, 2018).

2.1.2 Esports

Much as with research into streaming, various branches of research have also formed over time that investigate esports. The current areas of research prevalent in esports can be roughly categorized as institutionalization and professionalization, consumption studies, gambling, sport and physicality studies, and finally, organizational studies. The type of research conducted within esports is clearly very different from that being conducted within live streaming. Particularly, studies focus on various organizational aspects, be that the teams themselves or the larger organizational actors that are part of sports institutionalization.

The connection between video games and gambling is quite a natural one, as most types of gambling are at their core a type of game. The last five years has seen the emergence of many new forms of gambling related to games, the virtual items used in games, and directly to esports (Macey and Hamari, 2018a). Particularly interesting has been the finding that increased gambling is associated with an increased spectating of esports (Macey and Hamari, 2018a, 2018b), and also how prevalent participation in gambling and gambling-like activities seems to be (Macey and Hamari, 2018a). On the other hand, research also highlights that the actual activity of playing video games is not a large indicator of gambling (Macey and Hamari, 2018b), and while not at the core of this dissertation, it is an interesting observation to keep in mind when considering the activities of watching versus spectating play. A comparison of esports

bettors and traditional sports bettors also reveals the esports betting demographic to be younger (Gainsbury et al., 2017), fitting well with the general notions of who the core esports consumers are. The legislation of sport gambling has been hotly contested in many jurisdictions, and this has recently been extended to esports in the form of several academic publications, including betting on game outcomes (Dobill, 2017) as well as wagers with virtual items (Hardenstein, 2017). The interest in researching gambling within esports is quite natural, and studies have already highlighted problematic behaviors reflective of traditional problem gambling (Macey and Hamari, 2018a; Peter et al., 2018).

The very identity of esports, and especially their connection with traditional sport have been studied extensively. Many scholars argue that esports possess most of the central characteristics of sport (Funk et al., 2018; Jenny et al., 2017; Witkowski, 2012), including factors such as physicality and haptic engagement (Witkowski, 2012). Others see the lack of physicality as posing a hindrance for considering esports as true “sport” (Hallmann and Giel, 2018), or attempt to tackle the identity question from a legislative perspective (Holden, Kaburakis, et al., 2017). Specifically the physicality of esports has been further investigated, showing a significant importance of the role of motor skills (Hilvoorde and Pot, 2016), and also how current esports players/athletes integrate physical exercise as a core part of their training regime (Kari and Karhulahti, 2016).

While that particular discussion is still ongoing, esports clearly has shared DNA with traditional sports, as exemplified by how similar top-level esports broadcasts are to those seen in traditional sports (Turtiainen et al., 2018). This is particularly evident in events featuring national teams, focusing on the nationalist aspects prevalent in such sporting events, but also including more general sports practices such as similarities in the broadcast structure, the commentary itself, how teams and players are presented, the showing of highlights and replays, as well as the capture of audience sentiment (Turtiainen et al., 2018). Other concepts that stem from traditional sports have also been investigated within esports, for example sportsmanship, fair play and doping (Carter and Gibbs, 2013; Holden, Rodenberg, et al., 2017; Irwin and Naweed, 2018; Karhulahti and Kimppa, 2018), collegiate level esports (Keiper et al., 2017; Schaeperkoetter et al., 2017), sport venues (Jenny et al., 2018), ergonomics (Paravizo and de Souza, 2018), and the legal rights and career aspects of players/athletes (Bayliss, 2016; Salo, 2017).

Many of the topics mentioned here have covered areas of esports that are ancillary to the actual game or sports taking place. However, understanding teams (Freeman and Wohn, 2018; Lipovaya et al., 2018), country-level differences in performance (Parshakov and Zavertiaeva, 2018) and the expertise needed to succeed in esports (Fanfarelli, 2018) have also been topics of inquiry. The previous research within esports teams has highlighted interesting findings, such as that individuals take on certain roles (Lipovaya et al., 2018), that while verbal communication is seen as important (Freeman and Wohn, 2018), non-verbal communication is also common (Lipovaya et al., 2018), and

that there is a certain level of competition between players on the same team (Lipovaya et al., 2018). Interestingly, players were found to value face-to-face communication (Freeman and Wohn, 2018), something which is exceedingly difficult while the gameplay is taking place, thus posing interesting questions concerning physical presence and social interaction within esports (Freeman and Wohn, 2017).

Constructing esports as a mediated spectator experience is challenging, as there is a wealth of information that is generated by the games being played. As such, initial efforts have looked at improving the spectator experience through assisted systems such as dashboards (Charleer et al., 2018), and conceptual developments such as the technical segmentation of various parts of the game (Schubert et al., 2016). From the perspective of building a wider understanding, the consumption of esports is not something that has been previously investigated to any great extent. In fact, while the multifaceted nature of esports consumption has been acknowledged (Seo and Jung, 2016), most of the research into esports consumption has focused on playing esports, rather than watching it (Lee and Schoenstedt, 2011; Weiss, 2011). Challenge and competition are particular elements of study highlighted for the active playing of esports. One of these studies compared the motivations of esports consumption (playing) with traditional sports (Lee and Schoenstedt, 2011), raising an interesting line of inquiry considering the conversation around the “sportiness” of esports that has been going on over recent years (Jenny et al., 2017; Witkowski, 2012). As this dissertation also investigates esports consumption in the form of spectating, through a lens of sports consumption, the following section will talk about the ways of consuming sport that has been a topic of sport management studies for an extended period of time.

2.2 Sport consumption

Sports have been an integral cultural aspect of societies around the world for a very long time, both in the form of active participation, as well as more passive spectating. Technological developments during the 20th century such as television (Rader, 2008) and the internet (Hutchins and Rowe, 2009, 2012) have helped grow the consumption of sport into the massive industry and cultural institution it currently is. Being an integral part of many cultures around the world has also meant that there has been a wide variety of scholarly interest towards sports, and also how people participate in their consumption. In this dissertation, the notion of *sports consumption* relates to the activity of spectating sport, rather than active participation in the sport itself as an athlete.

From the perspective of this dissertation, the previous investigations into mediated and broadcast sports are particularly interesting, as is research into attending live sporting events. The understanding of sport spectating provided by research conducted within the discipline of sport management helps complement knowledge generated by more traditional media studies. For esports this is particularly true, as esports blends notions of traditional sport con-

sumption with many theoretical concepts drawn from communication theory, as esports as per definition require a certain level of computer-mediation.

Much of the work done within the field of sports management has focused on the live attendance of sport events, as being the cornerstone of traditional sports spectating culture. These studies have covered a variety of topics, including general motivation (Funk et al., 2009; Hansen and Gauthier, 1989; Hoye and Lillis, 2008; Krohn et al., 1998), demographic differences (Armstrong, 2008; Fink et al., 2002; Snipes and Ingram, 2007), differences in play level (Bernthal and Graham, 2003) and also social aspects (Melnick, 1993). Additionally, the technological and media aspects of sports consumption has been widely investigated through studies into televised sports (Baimbridge et al., 1995; Capranica and Aversa, 2002; Clark et al., 2009; Hu and Tang, 2010; Wenner and Gantz, 1998), and more recently, the online consumption of sports (Hur et al., 2007; Hutchins and Rowe, 2009, 2012).

The process of measuring the overall consumption process for sports is indeed a complex one, encompassing both internal motivations and attitudes as well as external factors such as the environment and social relationships. Trail (2018) argues that to form a full understanding of sports consumption, one can not easily utilize previous general models of consumer behaviour such as the motivation for consumption model (Ratneshwar et al., 2003) or the means-end chain theory (Pieters et al., 1995). Identifying ten factors that distinguish sports from the majority of other products, Trail (2018) argues for the uniqueness of sport as a consumed service, and the need for models that better describe the consumption of sports. While this dissertation does not attempt to build a general understanding of sport consumption, the notion of the uniqueness of sport does impact Publications 1 and 5, which specifically investigate the human motivations for consuming esports, without trying to simultaneously model all other aspects of behavior or external factors. As such, the different methods and instruments available for understanding motivations within sport spectating are also highly relevant for this dissertation, and explained in further detail in section 3.2 Measurements.

2.3 Motivation

The previous sections have presented the phenomenon of spectating play in the form of esports and live streaming, and have discussed sports consumption. Several mentions have been made of the motivations people have for doing a particular thing, which raises questions of what *motivation* actually is, and what do different scientific theories say about human motivation?

Simply put, motivation means to move: a person that is *motivated* is moved to do a particular thing (Ryan and Deci, 2000a). One might also think about it as being the reason behind an action. At times motivation is regarded as a singular construct, and as something that can be measured through a single dimension, even though this is not the case (Ryan and Deci, 2000b). Commonly, motivations are categorized into two main groups: intrinsic and extrinsic. Per the definitions put forward by Ryan and Deci (2000a, p. 56), intrinsic motiva-

tion is defined as “the doing of an activity for its inherent satisfactions rather than for some separable consequence”. Intrinsic motivations are often connected with notions such as *fun*, *challenge* or *curiosity*; factors in a way coming from inside the self, rather than being advocated by an external force (Ryan and Deci, 2000a). On the other hand, extrinsic motivations may be defined as “a construct that pertains whenever an activity is done in order to attain some separable outcome” (Ryan and Deci, 2000a, p. 60). Extrinsic motivations are thus controlled mainly by external factors, such as meeting a deadline set by another person. On a level of definition, the two can be seen as polar opposites.

However, an important part of self-determination theory (SDT) is the notion that external motivations can vary in their degree of autonomy, as opposed to some views on motivation which consider external motivation nonautonomous (Ryan and Deci, 2000a). As such, great differences may exist between individuals when considering similar extrinsic motivations. Indeed, autonomy is noted as a factor in other theories of motivation and personality outside of the perspectives forwarded by Ryan and Deci (Erikson, 1993; Murray, 1938; Rogers, 1963). Many studies have shown that intrinsic motivations are considerably more important when considering the outcomes of the motivations of performance and creativity (Deci and Ryan, 1991; Koestner et al., 1984), self-esteem (Deci and Ryan, 1995) and well-being (Ryan et al., 1995).

In this dissertation, spectating of play is approached from the uses and gratifications (UG) perspective, while simultaneously keeping the tenets of SDT in mind. Previous research has successfully combined the aspects of UG and SDT (Ang et al., 2015), indicating that a link exists between attributes of computer-mediated communication and the psychological need satisfaction that is at the core of SDT (Ang et al., 2015).

2.4 Uses and gratifications

A primary perspective for understanding the use of media in our contemporary society has been that of the uses and gratifications (UG) theoretical framework. UG builds upon foundations laid by previous theories within the communications field, such as the needs and motivations theory (see e.g. Maslow, 1943, 1975) and the theory of mass society. However, while many previous theories have placed the media outlet in the controlling position, the central tenet in UG is the fact that the users are an active audience, and the media has only a limited effect. In the end, it is the user that seeks out media that fulfils certain gratifications (Blumler et al., 1974; Ruggiero, 2000), rather than the media seeking the user (Baran and Davis, 2014; Wang et al., 2008) that is important, hence the name of this theoretical framework. Continuing on this theme, unlike some previous theories that considered the public more in terms of a uniform mass, UG considers users to be highly individualistic, and hence large differences in motivations can be found among them (Blumler et al., 1974). Additionally, according to UG, a media form does not merely compete

for attention and gratification fulfilment with other forms of media, but also with sources outside of media (Katz, Blumler, et al., 1973).

In the case of the investigation into the motivations for consuming game video content, UG is particularly suitable as it considers users to be aware of their own media usage (West and Turner, 2010), and hence users are expected to be able to answer survey questions. Previous survey-based quantitative studies within UG are numerous, covering gratifications for using media & services such as television (Krcmar and Greene, 1999; Schmitt et al., 2003), internet (Ko et al., 2005; LaRose and Eastin, 2004; Papacharissi and Rubin, 2000), social media services (Chen, 2011; Johnson and Yang, 2009; Joinson, 2008; Papacharissi and Mendelson, 2011; Quan-Haase and Young, 2010; Smock et al., 2011; Whiting and Williams, 2013), video games (Hamari et al., 2018; Sherry et al., 2006; Wu et al., 2010) and video services (Cha, 2014; Chiang and Hsiao, 2015).

The core ideas of the UG theoretical framework are namely that audiences are active, and that they seek gratification from a number of sources. Thus, these serve as a backbone for the Publications included in this dissertation. Ruggiero (2000) considers that the central notion of an active audience has three main components. Firstly, the individual initiates the selection of media; secondly, the expectations for using media are a product of personal experiences and environmental factors; and thirdly, individuals exhibit goal-orientation in their use of media (Ruggiero, 2000).

As video game streaming and online consumption of game content in general are topics that have not been thoroughly studied prior to the Publications included in this dissertation, they offer an excellent context for an investigation using the UG approach for two main reasons. Firstly, as shown by the number of different contexts that have previously employed the UG approach, it provides a general enough approach to media consumption that it can be used in an exploratory manner. The research conducted in this field has so-far been limited, and as such, a thorough understanding of the behavioral theories that motivate people to consume this specific type of content has yet to be established. Secondly, this particular context is highly interesting, as watching others play games combines passive media in the form of traditional broadcasts similar to television shows, with an active media in the form of games (Smith et al., 2013). Even though the activity of spectating is mainly passive, the majority of streaming services (including the Twitch service) offer affordances for communication (Sjöblom et al., 2019) that enable the spectator to interact with the streamer or other spectators. As a result, the passive activity of watching others play games can take on the form of active participation (Smith et al., 2013), even though the spectator is not directly controlling the game. This makes the game video context interesting from a communication perspective, by being able to study a medium where the active and passive media consumption is in fact blended.

3. Methodology

The common denominator for the Publications included in this dissertation was an interest in human behavior, and how motivational factors might influence the use of media and related online services. Another mutual aspect was the use of international online surveys as the primary data collection tool. The use of large-scale surveys collecting data on psychometric factors among respondents allowed the research outcomes to focus on explaining behavior on a large scale - something that would not have been possible with the use of alternative research methods such as qualitative research. Additionally, as noted in the background section of this dissertation, prior research within video game streaming and esports have heavily utilized interviews and similar qualitative methods, and thus the work reported in Publications 1-5 offers a much-needed quantitative investigation into consumption motivations.

The following sections will detail the participants, data collection, measurements and analysis approaches utilized within each of these Publications in greater detail.

3.1 Participants and data collection

3.1.1 Publications 1-3

For Publications 1-3, data was collected through an online survey during February to March of 2015. Prior to launching the final survey, a pilot version of the survey (N = 20) was used in order to assess the survey and see if any shortcomings could be identified. The pilot study did not reveal any particular flaws, and only a few small changes were made prior to launching the final survey in February 2015. In order to gather respondents, a number of international channels were used, such as Reddit, Facebook, Twitter, and forums related to games. As a number of links were used to distribute the survey, no definite data is available regarding where exactly the respondents came from. However, an estimate of the data set (based on observations regarding responses at the time of collection) indicates that respondents arrived from the following sources: 70-75 % esports-related subreddits, 10-15 % Twitter, 5-10 % Facebook, and 5-10 % other sites and direct traffic. For Facebook, posts were made using the private account of the researcher, utilizing both the personal feed as well as various groups. For Twitter, the private account of the researcher was again used, and several individual streamers and game companies were approached and asked to spread the link to the survey. For Reddit, a new ac-

count was created for posting the link to the survey in a number of subreddits focused on games and video game streaming. In order to encourage participation, respondents were offered a chance to win one of six gift certificates (each worth €50) for the Steam store.

Following the collection phase, responses that were missing data or that had answered a check question incorrectly were removed, leading to a 3.2% decrease in data. Aside from questions related to demographics and the use of streaming services, the survey consisted of two main parts. The first part asked questions related to streaming, and was answered by everybody within the final sample. The second part was related to esports, and only people who responded that they watched esports were directed to this part of the survey. Hence, the esports sample (N = 888) utilized in Publication 1 was smaller than the general streaming sample (N = 1091) utilized in Publications 2-3. Among the respondents, 93.2% reported that they had a Twitch account and had used the service for an average of 22.1 months (M = 21, SD = 14.6), and 38.7% reported they had streamed at some point in time. Respondents reported watching Twitch for an average of 11.0 hours per week (M = 7, SD = 12.1), and they watched an average of 5.6 different streamers (M = 4, SD = 5.0).

The large majority of the sample were male. This is backed up by data provided by third party analytics services (Quantcast, 2016) and previous studies (Cruea and Park, 2012). The demographic details of the general sample (N = 1091), of which the esports sample (N = 888) was a subsample, is presented below in Table 1. The 20 countries with the largest representation among respondents in the dataset are presented in Table 2.

Table 1. Demographic information for general spectating sample (N = 1091).

Factor (unit)		Value	Factor (unit)		Value
Gender (%)	Male	92.3%	Employment (%)	Student	57.12%
	Female	7.7%		Full-time	22.45%
Age (years)	Average	22.94	Part-time	8.49%	
	Median	22.00	Unemployed	10.31%	
	SD	5.87	Income (\$)	<10 000	56.48%
Education (%)	None	0.18%		10 000 - 29 999	21.81%
	Primary level	8.67%		30 000 - 49 999	11.41%
	Secondary level	52.19%		50 000 - 69 999	5.11%
	Upper level	38.96%	70 000 - 89 000	2.10%	
			90 000 up	3.10%	

Table 2. Countries with the largest representation among respondents for the general spectating sample (N = 1091).

N	Country	N	Country	N	Country	N	Country
484	United States	27	Australia	10	France	6	Romania
160	Finland	25	Netherlands	7	Brazil	5	Czech Republic
100	United Kingdom	24	Sweden	7	Poland	5	Hungary
67	Canada	15	Denmark	7	Portugal	5	Ireland
37	Germany	13	Belgium	6	Croatia	5	Italy

3.1.2 Publication 4

The main dataset used for Publication 4 was collected through an online survey during May 2016. Initially, 3611 responses were collected, however a large number of the responses were removed as they either reported watching Twitch for zero hours per week, had missed out a large percentage of the survey questions, had finished the survey in a very short time (under five minutes), or had provided unrealistic answers (for example watching Twitch for more hours than there are in a week). After this cleanup of the data, a total of 2227 responses remained. The referral sources for this survey were as follows: Reddit (87.5 %), direct referrals (4.1 %), Twitch (3.5 %), Twitter (3.1 %), and Facebook and other sources (1.8 %). The age of participants varied between 16 and 49 years (Mdn = 21, SD = 4.62). The sample was heavily skewed towards males (95.6 %), followed by females (3.9 %), those who reported their gender as other (0.5 %), and one participant who did not report their gender (0.0 %). As a participatory incentive, respondents were offered the chance to win one of two \$50 gift certificates for the Steam store.

3.1.3 Publication 5

Publication 5 utilized two separate datasets. The first considered online esports spectators, and was identical to the dataset used in Publication 1 (N = 888). The second dataset was collected at the Assembly Summer 2016 event in Helsinki, Finland. Approximately 550 people were approached during a two-day period, and 281 responses to a paper survey were collected. After removing respondents that had not filled in the complete survey, surveys that had missing data, and surveys where respondents reported not watching a single esports match at the event, a final dataset was obtained (N = 221). As the questionnaire was not in digital format, some respondents had answered in a way that left room for interpretation when coding the data. When respondents were asked to state a single number but entered a range, the average over that range was used. For example, an answer of “2-6” for the question “How many hours per week do you watch video games (on average)” was coded as “4”.

3.2 Measurement

3.2.1 Publications 1 & 5

For measuring sports consumption motivations, two primary scales have been developed. The first of these is the Motivation Scale for Sport Consumption (MSSC) (Trail and James, 2001), and the second is the Sports Fan Motivation Scale (SFMS) (Wann, 1995; Wann et al., 1999). A third scale, the Motivation Scale for Sport Online Consumption (MSSOC) (Seo and Green, 2008) also exists. Publications 1 and 5 in this dissertation employ the MSSC as the primary measurement instrument, and hence it is presented here in greater detail. The choice to use the MSSC was made with two primary considerations in mind. Firstly, the MSSC allowed for easy comparisons with traditional sport

contexts, where it has been used to study sports such as football (Hoye and Lillis, 2008), golf (Robinson et al., 2004) and basketball (Gencer et al., 2011). Secondly, the aspects studied within the MSSC were generally a good fit with the UG framework (Katz, Blumler, et al., 1973), providing an opportunity to place this study within the broader sphere of communications research. A valid alternative for the MSSC would have been the Sport Fan Motivation Scale (SFMS) (Wann, 1995; Wann et al., 1999) or the Motivation Scale for Sport Online Consumption (MSSOC) (Seo and Green, 2008). However, the MSSC was chosen over these two, as its general fit with media consumption theory was better, and as previously mentioned, the MSSC has been widely validated in a number of sport contexts.

The MSSC focuses on measuring sports consumption motivations from a reductionist approach, where the individual scales and items can be used in a broad range of various sport contexts, rather than just one individual sport or form of consumption. The original MSSC has been slightly modified throughout the years, and this was also the case in this study. The original scale consisted of nine constructs: vicarious achievements, aesthetics, drama, escape, knowledge, skills, social interaction, physical attractiveness, and family. The escape subscale has been reworded (Fink et al., 2002) and the family subscale has been removed by the creators of the scale (Trail, 2012). Additionally, in line with a suggestion from the original creator of the scale, subscales for enjoyment of aggression and novelty were added (Trail, 2012). All items within these subscales were measured on a 7-point Likert scale (1 indicating “strongly disagree” and 7 indicating “strongly agree”). For the items and a brief description of the definition of the construct, see Table 3. An expanded explanation of each construct is supplied after Table 3. Items were reworded to fit the context of esports, mainly by substituting the word “sport” with “esports”

Table 3. Sports consumption motivation constructs (adapted from Trail, 2012; Trail and James, 2001)

Construct	Items	Definition
Vicarious achievement	3	Empathizing and co-living the achievements of teams and players the spectator is emotionally attached to.
Aesthetics	3	The appreciation of the beauty and gracefulness inherent in the sport.
Drama	4	The enjoyment of the drama, uncertainty and dramatic turns of events in the sports.
Escape	3	The degree to which watching the sport enables an escape from day-to-day routines and provides distraction from everyday activities.
Acquisition of knowledge	3	The degree to which watching the sport enables the acquisition of knowledge related to the game, its strategies and other technical aspects.
Skills of the athletes	3	The enjoyment of witnessing the high skill that players exhibit and well-executed performances in the sport.
Social interaction	3	The enjoyment related to interacting and socializing with other people watching the game.
Physical attractiveness	3	The enjoyment related to and the degree to which the spectator finds the players physically attractive.
Novelty	3	The enjoyment and excitement related to seeing new players and teams in the sporting scene.
Enjoyment of aggression	4	The enjoyment derived from witnessing the aggressive behavior, macho attitudes and hostility exhibited by players.

Vicarious achievement represents the notion of feeling that the success or failure of your favorite team or player is reflected upon yourself, and has been shown to be a significant factor for sports consumption (Cialdini and Richardson, 1980; Krohn et al., 1998; Smith, 1988). This behavior is also seen among esports spectators, as spectators at a live event will often wear merchandise showing the names and logos of their favorite teams, or write encouraging messages for their teams in online chats and social media. The activity of co-living with the team or player is also referred to as basking in reflected glory, or BIRGing (Cialdini and et al, 1976; Cialdini and Richardson, 1980).

Aesthetic elements are to some point present in every sport, and indeed football is often referred to as “the beautiful game”. However, for spectator motivations, aesthetic motivations have mainly been shown to be impactful for scored sports, where a panel of judges determines the outcome of the athlete’s performances. Examples of such sports are gymnastics, diving and figure skating (Bryant et al., 1981; Mumford, 2013; Sargent et al., 1998).

Drama within sports consumption refers to the unexpected events that are part of many sports, including most esports. Drama has been shown to be impactful for spectating in traditional sports (Peterson and Raney, 2008; Raney and Depalma, 2006; Su-lin et al., 1997). Compared to traditional sports, esports often include elements of hidden information or generated randomness, that are not equally present in traditional sports.

The escape from everyday life and routines is referred to as *escapism*, and has been shown to impact on sport viewership (Krohn et al., 1998; Wann, 1995; Wenner and Gantz, 1998) as a factor that is not greatly dependent on the outcome of the game, unlike for example vicarious achievement. Outside the realm of sports, escapism is also a motivator commonly connected with media use (Lin, 2002; Papacharissi and Mendelson, 2011; Whiting and Williams, 2013).

The cognitive motivation of *acquisition of knowledge* includes learning about the players and teams (Wenner and Gantz, 1998), as well as collecting information that an individual may then leverage in social interactions with friends and family who are also interested in the sport (Karp and Yoels, 1990; Melnick, 1993).

The *skills of athletes and players* are often something many admire, as they represent the best of the best that the sport has to offer. This appreciation of skill has been shown to positively impact spectating in previous sports research (Milne and McDonald, 1999).

Social interaction is seen by many as important for the consumption of sport (Eastman and Land, 1997; Gantz, 1981; Melnick, 1993). Much of esports spectating takes place online, but as noted, interaction on the platforms through which the consumption takes place is facilitated through chat functionalities (Sjöblom et al., 2019). As esports has grown, live events have also re-emerged, and Publication 5 explicitly addresses the social aspect that may be more prevalent at live events.

Athletes and players are after all, human beings that perform the actions of the sport in question, and the physical attributes of these players may positive-

ly influence the spectating of sport (Duncan and Brummett, 1989; Guttman, 1996) through *physical attraction*.

Novelty refers to the excitement and enjoyment that viewers may experience when new players and teams are present in sports (Trail and James, 2001). In the context of esports, novelty is especially interesting, as the whole ecosystem is in constant change due to the short time esports has existed as an industry.

Many popular sports such as American football, boxing and ice hockey feature aggressive play and manifestations of aggression between the players. Research has indicated that *enjoyment of aggression* can be a factor that impacts the enjoyment of certain sports (Wann et al., 2008).

The dependent variable investigated in Publication 1 was the frequency of online esports spectating, which was measured through a 5-point frequency scale (never, once a year, once a month, once a week, and daily).

Publication 5 used three dependent variables as the target of investigation: intent to watch esports live, intent to watch esports online, and a willingness to recommend esports to others. The first two variables used a 5-point frequency scale (never, once a year, once a month, once a week, and daily), while the third variable used a 7-point Likert scale (1 indicating “strongly disagree” and 7 indicating “strongly agree”).

3.2.2 Publications 2 & 3

Both Publications 2 and 3 utilized psychometric measures based on the uses and gratifications theoretical framework (Ruggiero, 2000). Previous UG research has identified five primary high-level need categories: cognitive, affective, personal integrative, social integrative and tension release (Katz, Blumler, et al., 1973; West and Turner, 2010). All of the psychometric measures used a similar 7-point Likert scale, with 1 indicating “strongly disagree” and 7 indicating “strongly agree”.

Affective motivations were measured using the *perceived enjoyment* scale from Venkatesh (2000) and van der Heijden (2004). The cognitive motivations construct was comprised of two subconstructs: information seeking and learning to play. Information seeking on products utilized the *usefulness* scale proposed by van der Heijden (2004), while the learning to play scale used items from the *information seeking* scale formulated by Papacharissi and Rubin (2000), and an item from the van der Heijden (2004) *usefulness* scale. Personal integrative motivations used the *recognition by peers* scale by Hernandez et al. (2011). For social integrative motivations, the *companionship scale* by Smock, Ellison, Lampe, and Wohn (2011), and the *shared emotional connection* scale by Chavis, Lee, and Acosta (2008) were used. Tension release used the scales of *escapism*, *relaxing entertainment*, and *habitual pass time* introduced by Smock et al. (2011).

Publication 2 specifics

In Publication 2, the dependent variables studied were concerned with building a general understanding of how respondents used the Twitch service. The four dependent variables investigated were: *hours watched*, *streamers*

watched, *streamers followed* and *subscription status*. For all of these four variables, respondents were asked to indicate their consumption in a free-form numeral entry. For the analysis, the first three of these variables were grouped into five groups per variable, of roughly similar size (see Table 4). The fourth variable (subscription status) was grouped into a binary variable, indicating whether the respondent subscribed to any streamers or not. These changes were made based on variable patterns seen within the dataset.

Table 4. Dependant variable grouping (Publication 2)

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%)	

Note: number in parenthesis indicates percentage of total

Publication 3 specifics

In Publication 3, learning to play and information seeking on products were identified as being two important cognitive motivations, and these aspects were studied separately from one another. In Publication 2, these two were part of the same cognitive motivations construct.

In Publication 3, a crucial difference from publication 2 was the dependent variables that were investigated. While Publication 2 investigated variables related to direct service use, Publication 3 chose to focus on the consumption of content for specific game genres and types of video game streams. Both game genres and stream types were investigated using a 1-5 frequency scale of spectating (1 = never, 2 = once a year, 3 = once a month, 4 = once a week and 5 = daily). Game genres and genres in other forms of media have been widely studied, and a twofold approach to identifying relevant genres within Twitch was taken. First, a commonly used genre classification of games was adapted (Lee et al., 2014) for the study. Second, the 50 most watched games on Twitch were cross-referenced with the classification, leading to a list of 11 genres. Survey respondents were given a list of genres, along with appropriate and topical game examples of each genre. The 11 genres used were: action, collectible card games (CCG), fighting, first-person shooter (FPS), massively multiplayer online (MMO), multi-player online battle arena (MOBA), rhythm/music, role-playing game (RPG), real-time strategy (RTS), sandbox and sports.

Stream types were more difficult to approach, as they had not been previously classified in the same way as genres. The stream types identified and utilized in this study were: casual, let's play, competitive, how to play, review, speedrun, and talk show. A systematic review and identification of defining characteristics of various types of content on Twitch was carried out. While this classification is not completely exhaustive, no prior scientific work has

undertaken any classificatory work in this field. One aspect worth noting is that while Twitch currently supports the streaming of non-game content, at the time of data collection, Twitch had a strict policy of only allowing game content, and hence for example the IRL category (people streaming their everyday activities) is not included.

3.2.3 Publication 4

Publication 4 employed a number of measurement instruments in order to measure relevant aspects of the social motivations of viewer engagement on Twitch. The complete survey consisted of 70 closed-ended questions and nine open-ended questions. The psychometric measures used are presented below, in Table 5. Aside from the psychometric measures, four additional Twitch-specific factors were measured: channel size preference, time spent, time subscribed and donations. For channel size, participants were asked about the viewer count for channels they typically watch, and this was then turned into an ordinal variable with three categories. For time spent, time subscribed and donations, respondents were asked in open-ended questions about the time or money they had spent on the respective factors on Twitch.

Table 5. Psychometric measurement scales of Publication 4

Construct name	Number of items	Measurement method	Primary source
Social support	4	5-point Likert	(Kim et al., 2011)
Sense of community	8	5-point Likert	(McMillan and Chavis, 1986; Peterson et al., 2008)
Information seeking	4	5-point Likert	(Chang and Zhu, 2011)
Meeting new people	3	5-point Likert	(Chang and Zhu, 2011)
Social interactions	4	5-point Likert	(Chiu et al., 2006)
Entertainment	3	5-point Likert	(Chang and Zhu, 2011)
Emotional connectedness	5	5-point Likert	(Ellison et al., 2007)
Social anxiety	15	5-point scale, summed totals	(Mattick and Clarke, 1998)
External support	11	Binary (mostly false, mostly true)	(Cohen and Hoberman, 1983)

3.3 Analysis methods

3.3.1 Regression analysis

Publication 4 utilized two methods of regression analysis to reach the desired knowledge regarding the socio-motivational factors that explain live stream engagement. Firstly, multiple linear regression (MLR) was used to see how well emotional connectedness was explained by the socio-motivational factors. For the other three main analyses (time watching Twitch, time subscribed to Twitch and donations to live streams), ordinal linear regression (OLR) was

used. Additionally, the investigation into the difference between channel sizes on these variables was also performed using OLR.

3.3.2 Structural equation modelling & partial least squares

As the goal of Publications 1-3 and 5 was to investigate models consisting of complex relationships between multiple variables, structural equation modelling (SEM) was selected as the analysis method of choice (Hair et al., 2016). SEM is based on the analysis of correlation through a path model consisting of, typically, multiple independent and dependent latent variables (Fornell and Larcker, 1981; Hair et al., 2016). Psychometric theory (Nunnally, 1978) is commonly employed in SEM, as the multi-item measurement offers a reduction of measurement error, which is needed when investigating complex facets of human behavior.

When performing concrete analysis with SEM, two primary choices are presented: partial least squares SEM (PLS-SEM) and covariance-based SEM (CB-SEM). The primary analysis for Publications 1-3 and 5 was conducted using PLS-SEM through SmartPLS 3.2.7 software (Ringle et al., 2015). The use of PLS-SEM over the alternative of CB-SEM was considered especially appropriate as the Publications were not attempting to perform theory testing (Sarstedt et al., 2016), but rather to investigate how key motivational factors predicted a continued use of media. The PLS-SEM method primarily aims to maximize the variance explained for endogenous constructs (Hair et al., 2016), compared to CB-SEM which aims to minimize the discrepancy between the estimated and sample covariance (Hair et al., 2011). As such, PLS-SEM does not offer the same possibilities for evaluating model fit indices as CB-SEM. PLS-SEM supports the use of both formative and reflective constructs, however, Publications 1-3 and 5 used purely reflective constructs, as they are a natural fit when considering psychometric measurements (Diamantopoulos et al., 2012). One additional benefit of PLS-SEM is the need for a relatively small sample size, although all of Publications 1-3 and 5 clearly exceeded these limits, as the sample in each case was considerable (Hair et al., 2016). The relevant validity measures that pertain to PLS-SEM analysis are presented in detail in section 3.4 Validity and reliability.

3.3.3 MANOVA & ANOVA

As Publication 5 was interested in determining whether significant differences existed across motivations for people who watch esports online and those that attend live esports events, a one-way MANOVA was conducted. The central assumption of homogeneity of covariance was not met, but as this was the case of a single factor and involved non-repeated analysis using a large sample size ($N = 1109$), the results were considered reliable (Allen and Bennett, 2008; McCall and Appelbaum, 1973). Considering the factors that have been mentioned, rather than reporting Wilks' Lambda, the Pillai's trace was reported (Pillai, 1955).

To further investigate not only the general question of whether significant differences exist, but also to highlight where said differences might occur in the ten motivational factors, an analysis of univariate ANOVAs was conducted. As multiple ANOVAs were performed, there was a need for alpha correction. Rather than utilizing the more conservative Bonferroni correction (Cabin and Mitchell, 2000; Narum, 2006), the false discovery rate (FDR) process was utilized to control for increased type 1 errors (Benjamini and Hochberg, 1995; Keselman et al., 1999). The threshold level for alpha that was used for the FDR process was $P = .05$.

3.3.4 T-test & Discriminant Function Analysis

As detailed in the previous section, firstly a one-way MANOVA was performed to identify whether significant differences were found between the two groups of spectators investigated in Publication 5, followed by multiple ANOVAs. To further examine in which direction these differences in individual motivations existed, an independent-samples t-test was conducted, followed by a Discriminant Function Analysis (DFA) (Lachenbruch and Goldstein, 1979). The choice to use a t-test to investigate group difference over for example a PLS multigroup analysis (Hair et al., 2017; Sarstedt et al., 2011) was made mainly due to an interest in the reported values of the scales, rather than the relation to a dependent variable. Statistically significant differences were found in eight out of ten MSSC scales, and a similar FDR process as used in the ANOVA calculations was utilized for the t-test calculations. These are discussed in more detail in the results section.

Furthermore, the DFA revealed one variate (spectating context) to be significant. The Standardized Canonical Discriminant Function Coefficients revealed four individual relations that were considered as moderate or large, while the remaining six motivations had weaker relationships. These results are also explained in more detail in the results section.

3.4 Validity and reliability

In all of the Publications included in this dissertation, a randomization of the order of psychometric items in the online survey was performed so as to limit the respondents abilities to detect patterns, and hence reduce the likelihood of common method bias (Cook and Campbell, 1979). This common method bias is a reference to “*variance that is attributable to the measurement method rather than to the constructs the measures represent*” (Podsakoff et al., 2003, p. 879). For the paper survey used in Publication 5, a randomization of items was also performed.

As Publications 1-3 and 5 employed the same PLS-SEM analysis method, similar validity calculations were conducted in each case. First off, as all three Publications used reflective constructs, their internal consistency was assessed through three different measures: Cronbach’s Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE). CR, sometimes also known as McDonald’s ω (Zinbarg et al., 2005) is a measure of internal consistency that

does not assume tau-equivalency in the same way that Cronbach's Alpha does. AVE refers to the amount of variance that is measured by a construct in relation to the amount of variance due to measurement error (Fornell and Larcker, 1981). These three indicators exceeded recommended thresholds in all of the Publications presented in this dissertation (Fornell and Larcker, 1981; Hair et al., 2017; Nunnally, 1978). Commonly, the threshold for Cronbach's Alpha should be above 0.6 but below 0.9 (Tavakol and Dennick, 2011), while CR is expected to be above 0.7 and AVE above 0.5 (Fornell and Larcker, 1981; Nunnally, 1978). Hence, the required level of internal consistency was concluded to be met in each of the Publications. Secondly, discriminant validity was investigated through the Fornell-Larcker criterion, confirming that the square root of the AVE for each of the constructs was higher than the correlation for any other construct (Chin, 1998; Fornell and Larcker, 1981; Jöreskog and Sörbom, 1996). It is noted that the newer recommendation of using HTMT over the Fornell-Larcker criterion was still not an accepted defacto (Franke and Sarstedt, 2018; Henseler et al., 2015), and hence Publications 1-3 and 5 all employed the Fornell-Larcker criterion. In all of the analyses run, a pairwise deletion of missing data was used, so that a high reliability within the data could be ensured.

While Publication 4 employed different analysis methods than Publications 1-3 and 5, similar validity calculations were conducted for the various constructs used in the study, and these also met appropriate threshold levels.

As mentioned in the analysis section, in Publication 5 a number of univariate ANOVAs were performed, along with an independent t-test. In both of these, FDR was used for alpha correction to control for type 1 errors, with a threshold of $p = .05$ (Benjamini and Hochberg, 1995). FDR was seen as being appropriate over the considerably more conservative Bonferroni correction (Cabin and Mitchell, 2000).

Validity calculations in table form are not displayed here separately, as they can be found in each of the corresponding articles in detail.

4. Results and discussion

4.1 Publication 1

On a theoretical level, Publication 1 contributed to the understanding of what constitutes esports and how it may be defined, by defining esports as follows:

“a form of sports where the primary aspects of the sport are facilitated by electronic systems; the input of players and teams as well as the output of the esports system are mediated by human-computer interfaces”

In particular, this definition built upon previous definitions both within esports (Wagner, 2006) and traditional sports (Tiedemann, 2004). A primary reason for redefining esports is the need to clarify the role that information and communication technology plays. As most sports these days use some form of electronic equipment for timing and scorekeeping, to say that merely the inclusion of these technologies into an otherwise sport-like context would constitute esports, is stretching it. To identify that there is a difference between where the activity and the outcome-defining events take place is a crucial step in understanding what differentiates esports from traditional sports, and also how they are similar. This is illustrated below, in Table 6.

Table 6. The conceptual difference of esports and sports (Publication 1)

What space does the athlete occupy?	What sporting equipment do the athletes primarily use?	"Where" do the outcome-defining events happen? (field of play)
Esports The "real world"	Human-computer interface (Human input: e.g. mouse, keyboard, EEG, microphone, motion sensors, weight sensors, acceleration sensors. Computer output: e.g. display devices, haptic feedback, audio devices)	Within electronic systems
Sports The "real world"	Human-physical object interface or no sporting equipment required	In "the real world"

Even though at a cursory glance, the definition separates esports from traditional sports due to a difference in the field of play, in fact this definition ties esports closely to traditional sports, particularly when it comes to the spectator experience. This is one of the primary reasons that Publication 1 argues that the MSSC is a valid measurement instrument not only for traditional sports, but also for esports. Previous studies within the intersection of esports and

traditional sports have also advocated for the recognition of esports as a form of sport (Jenny et al., 2017; Witkowski, 2012).

Prior to the undertaking of quantitatively measuring esports spectating motivations with the use of the MSSC, the instrument had been used as a base for a qualitative study into the spectator motivations of esports (Cheung and Huang, 2011). While that particular study gave valuable insight into esports many years before the phenomena was as big as it is today, the fact that a quantitative measurement instrument was used as a basis for qualitative observations meant that not much could be said about how the measurement instrument itself fitted into the esports context, or how in fact these motivations contributed to or predicted continued spectating. Hence, the data and analysis conducted in Publication 1 was of great importance for understanding the motivations for watching esports online.

The results explained 13.9% of the variance for watching esports, and a total of five statistically significant associations were found: escape ($\beta = .131$, $p < .001$), acquiring knowledge ($\beta = .165$, $p = .001$), novelty ($\beta = .076$, $p = .079$) and the enjoyment of aggression ($\beta = .117$, $p = .001$) were positively associated with frequency of watching esports. The enjoyment of aesthetic aspects ($\beta = -.157$, $p < .001$) showed a negative association with spectating frequency.

Thus, in attempting to answer *RQ1 (What motivates individuals to watch esports?)*, interesting results were found that resonate with previous research within motivations to watch traditional sports, such as acquiring knowledge (Weed, 2006), drama (Peterson and Raney, 2008) and escape (Gantz, 1981; Wenner and Gantz, 1998). An interesting result was the negative association for aesthetics, as in prior studies within performative sports such as gymnastics (Sargent et al., 1998), these motivations have been shown to be positive impactors. One reason might be that while performances in gymnastics are split into distinctively smaller parts, many esports games have continual action taking place for more than thirty minutes. Attempts to categorize and segment the content of esports have also been researched (Schubert et al., 2016), and these might be a way to help facilitate the gratification of aesthetic motivations.

The result relating to the acquisition of knowledge indicates that much as in traditional sports (Weed, 2006), spectators are not engaging with esports purely due to hedonic motivations. Rather, the spectating forms a part of a larger continuum of consumption. These cognitive motivations might relate to gathering information and statistics on teams, players and the game, and then be shared in social circles, much as is the case with traditional sports (Karp and Yoels, 1990; Melnick, 1993). Additionally, the ability to learn about gameplay and turn that into actionable improvements in one's own gameplay is an interesting aspect that sets esports apart from traditional sport. Esports titles are available practically anywhere at any time, whereas it is considerably more difficult to assemble a game of football on a whim at say nine in the evening on a Saturday. While not all spectators play the games they watch, this finding offers some interesting insights regarding the positioning of esports in comparison to traditional sports.

One result which was extremely surprising was the positive association of the appreciation of aggression and the spectating of esports. One might at first glance argue that this aggression is connected to the violent nature of many esports titles, such as Counter-Strike: Global Offensive, which features players shooting each other's avatars in the game in order to secure victory. However, as per the wording of the psychometric items, as well as offering a general understanding of esports viewers, Publication 1 argues that this is not the case. Rather, Publication 1 argues that the aggression present in esports is manifested in the rivalries between teams and players, and the general boisterous nature that many players display. In fact, actual displays of physical aggression between players is heavily condemned (Welsh, 2013), and as such it seems unlikely that the physical interaction of players is a primary contributor here. The broader contribution of this finding is the understanding of "*what is aggressive?*" is in fact highly context dependent and situational.

4.2 Publication 2

Through an online survey study (N = 1091), Publication 2 investigated the spectating motivations of Twitch users from the UG perspective. The study investigated five main types of motivations along with four types of usage of the Twitch service. The five types of motivations were *cognitive*, *affective*, *personal integrative*, *social integrative* and *tension release*, while the types of use investigated were *hours watched*, *streamers watched*, *streamers followed* and *subscription status*. The PLS-analysis explained 25.8% of the variance for *hours watched*, 21.5% for *streamers followed* and 17% for *streamers watched*. Only 3.7% of the variance was explained for *subscription status*. A number of statistically significant results were found between the motivational factors and the forms of use investigated, listed in detail below (*p < .05, **p < .01, ***p < .001).

Affective motivations showed a positive association with hours watched ($\beta = 0.144^{**}$), streamers watched ($\beta = .134^*$) and streamers followed ($\beta = .152^{**}$). Cognitive motivations were positively associated with hours watched ($\beta = .089^*$) and streamers watched ($\beta = .075^*$). For personal integrative, a positive association was found with streamers followed ($\beta = .091^*$), while negative associations were found with hours watched ($\beta = -.177^{***}$) and streamers watched ($\beta = -.105^{**}$). Social integrative motivations showed positive associations with all four dependent variables: hours watched ($\beta = .132^{**}$), streamers watched ($\beta = .120^*$), streamers followed ($\beta = .213^{***}$) and subscription status ($\beta = .150^{**}$). Finally, for tension release motivations, positive associations were shown for hours watched ($\beta = .319^{***}$), streamers watched ($\beta = .217^{***}$) and streamers followed ($\beta = .080^*$).

For answering the primary research question *RQ3 (What motivates individuals to watch others play games through live streams?)* a focus on the *hours watched* is particularly important. Of the five types of motivations investigated, the one that most strongly predicted increased spectating was tension release, followed by affective and social motivations, while personal integrative

motivations were negative. These findings point us in the direction that both the entertainment, escapism and distractionary functions of streams is important, as has been seen with previous research on television (Katz, Haas, et al., 1973; Pool et al., 2003), streaming (Hamilton et al., 2014) and other online services (Courtois et al., 2009; Lin, 2002; Papacharissi and Mendelson, 2011). Additionally present are the social aspects inherent to the type of hybrid active-passive media that live streams are. The role of social motivations is further strengthened by the fact that they are the only form of motivation that shows an association with subscription status, highlighting the social aspects that are present in subscription behavior on Twitch.

The findings of this study offer many implications for both theory and practice in relation not only to streaming, but also computer-mediated communication and media consumption. While games have not always been considered a form of media in the same way that movies and television are (Dovey and Kennedy, 2006), with the emergence of game video content both in the forms of streaming and pre-recorded video through services such as YouTube, it is difficult to argue that games do not fit into this category. Especially, the results of this study show that games are not only relevant through playing them, but also spectating the activity of gameplay.

For the use of many online social media services (Whiting and Williams, 2013) such as Facebook (Papacharissi and Mendelson, 2011) and YouTube (Hanson and Haridakis, 2008), tension release and an escape from everyday life has been shown to be an important motivating factor for use. This seems to also be the case for streaming, as tension release showed the strongest association with the number of hours watched. Twitch is indeed well suited for this type of watching, as there are countless streamers producing content for a vast number of games at any given time. A similar positive association for affective motivations also fits into this, as the quantity of content creators available through Twitch allows viewers to find a type of person they might find entertaining, something that is not always possible through classic media channels such as television, where the amount of content is limited to a certain extent.

But it is not only these types of motivations, which in some sense might be considered as reflections of solitary viewership, that appear to be important. A significant social aspect within the results also indicates that Twitch is indeed a *social media*, and perhaps in some ways more social than services such as Twitter. Other studies within the realm of streaming have also highlighted the social aspects of viewing (Gros et al., 2017; Hamilton et al., 2014; Hu et al., 2017; Wulf et al., 2018). One of the most interesting results regarding these social motivations is the role they play for subscription. In many ways this is a logical outcome, as most of the benefits of subscription are not tangible in the same way that a subscription to say Netflix gives access to content you could not otherwise be able to access. Rather, the types of gratification obtained from subscribing seem to be associated with the socially rewarding aspects this might entail, such as showing support for a streamer, a stronger sense of belonging to a community, or the ability to show identity through the use of streamer-specific emoticons. From a theoretical perspective, understanding

the activity of voluntarily giving money is of great interest (Wohn et al., 2018), considering the transformation of work, and modern manifestations such as playbour (Fuchs, 2014), micro-influencers (Khamis et al., 2017; Marwick, 2015), and the emergence of the gig economy (Lloyd, 2017).

4.3 Publication 3

Publication 3 continued to investigate the theme of live streams by focusing particularly on the motivational differences between game genres and stream types on Twitch. An online survey (N = 1091) was utilized to collect data for analysis. As this study investigated a total of 11 game genres, seven stream types, and their relation to six types of motivations, this led to a total of 108 relationships being investigated. For the sake of brevity, each individual significant relationship will not be mentioned here, but rather they can be found in Publication 3, where all the results are presented in table form. In general, a common theme across the various motivations was that the content types of streams showed a higher predictive power than game genres. This primary finding that the archetypal structure (the stream type) has a stronger impact than the content genre (the game) has implications not only for video game live streaming, but also more broadly for a variety of media services such as YouTube. For the case of spectating play, what can be seen from the results is that it seems that viewers are enticed by a particular type of play, for example by competitive esports or casual hanging out. While the game played surely has some impact, these results would argue that, for example, esports fans may transition between various competitive games fairly flexibly, rather than only viewing one specific title. This finding also fits into previous observations on the nature of fluctuating viewership on the Twitch platform (Kaytoue et al., 2012). The results of this study fit well with the idea that *the medium is the message* (McLuhan, 1964). Publication 3 argues that in the case of video game streaming, the game genres relate closely to *the message*, while the stream types can be seen as more closely related to *the medium* as they adhere to a higher level of structure. Thus, in the case of this study, it can be considered that indeed the medium in some ways helps shape the message, and in turn impacts on the behavior of viewers and users (McLuhan and McLuhan, 1992).

The results of Publication 3 also indicate that particular types of games and game genres may offer very different gratifications when spectated and also when played. Particularly, among the tension release motivations cases, examples can be seen where for example a highly competitive game might create a high stress situation for the player, and hence engaging in spectating rather than playing may be able to fill some of the same needs, through a reduced generation of stress. This creates interesting questions about game design and development, as the affordances created by a game are shown to not purely relate to playing them, but also to other activities that may arise around them, such as spectating.

Relating this to RQ4 (*How do spectating motivations vary across different types of game genres and stream types?*), fairly large differences can be seen

to exist across genres and stream types. Beside the finding related to archetypal structure, the Publication also revealed interesting details about particular genres and types of streams. For example, the results showed that stream types that may be assumed as aiming to disseminate knowledge (e.g. review, let's play and how to play streams), seem to be successful at achieving this goal, as they showed a significant relation to information seeking and learning motivations. In many ways, these new methods of user generated content, represented by YouTube and Twitch, have replaced practices common in the games industry, such as product demos. These days, many consumers turn to game video content to fill their cognitive needs related to new products and specific game strategies. The fact that Twitch streamers are able to impact the learning outcomes of viewers (Payne et al., 2017) is naturally an result with an impact for contexts outside of streaming, such as education.

4.4 Publication 4

Anyone that uses Twitch even for a short while quickly realizes the importance of the social dimensions the platform holds for users, as chat and user interaction are built-in functionalities on Twitch. This creates an affordance of communication (Sjöblom et al., 2019), both in the form of one-to-one communication between a viewer and a streamer, and one-to-many communication between the viewers in the form of the chat functionality. Thus, Publication 4 set out to investigate social motivations and how they influence engagement on Twitch.

The study utilized an online survey (N = 2227) for data collection, and investigated four types of engagement on Twitch: *emotional connectedness*, *time spent watching*, *time subscribed* and *donations*. Additionally, the impact that the size of the channel has on these factors was also investigated. MLR and OLR regression analyses explained a variance of 36.3% for *emotional connectedness*, 9.4% for *time spent watching* Twitch, 13.5% for *time subscribed* and 16.7% for *donations*. Significant positive motivators for emotional connectedness were found in entertainment, information seeking, meeting new people, social interactions and sense of community. For time spent watching Twitch, positive motivators were entertainment and social interactions, while external support was negative. Both subscriptions and donations were positively motivated by the two motivations of social interaction and sense of community. Furthermore, when investigating differences between channel sizes (small, large, and very large), it became clear that the socio-motivational model worked better among participants with a preference for smaller channels, as the variance explained was considerably higher among small than very large channels.

A primary finding of this study that was also supported by the results of Publication 2, was the importance of social motivators for activities involving financial contributions, namely subscribing and donating. These findings are further supported by research outside the context of live streaming, such as online services (Oestreicher-Singer and Zalmanson, 2013), and charitable do-

nations, volunteering and donating blood (Bekkers, 2010; Lee et al., 1999). Compared to Publication 2, the broader range of social motivations used in Publication 4 enabled a higher amount of variance to be explained for subscription behavior. While still not exhaustive, these results help to confirm the understanding of some of the primary drivers for choosing to pay for live streaming content. This study was also one of the first to quantitatively investigate donation behavior on Twitch, something that separates the service significantly from other services such as YouTube, where this type of behavior does not exist to the same extent.

On the other hand, social support and compensation for social anxiety were not shown to impact engagement with Twitch, which while also partially supported by Publication 2, was simultaneously at odds with previous research concerning participation in online communities (Mazalin and Klein, 2008; Valkenburg and Peter, 2009). The fact that many users on Twitch remain hidden behind a pseudonym means that relative anonymity at times can make communities hostile, and may not foster the type of interaction needed for social reinforcement. As noted, this was seen as having negative associations for personal integrative motivations in Publication 2. Considering the view of media consumption provided by UG, one would assume that these users looked for gratifications related to these motivations elsewhere.

Reflecting upon *RQ5 (How do social motivations explain engagement with Twitch?)*, results echoing some of the previous results from Publication 2 were found, related to the impact of social motivations such as sense of community on choosing to whether to spend money on Twitch. Additionally, another important finding relates to channel size, and the considerable difference that could be seen in the model when comparing the preferences of small to large channels. This also ties in with the findings of Publication 3, related to content type, as the size of the channel is not only seen as an arbitrary number of viewers, but also impacts significantly on the communication dynamics available. Very large channels might have chats that receive hundreds of messages per minute, and as such this might complicate conversations and meaningful interaction, and turn dialogue more towards ‘the roar of a crowd’ (Ford et al., 2017), similar to that seen at large sporting events. The findings support the idea that small streams may, as experiences, be closer to spending time with friends and family, while large streams are more like participating in mass events such as concerts, sporting events or more traditional broadcast media. The social intimacy of channels with fewer viewers would fit well with the results of Publication 2, and the idea of a *third place* (McMillan and Chavis, 1986; Steinkuehler and Williams, 2006), as a natural social gathering place outside of work and home. The existence of smaller communities of social support is indeed highly topical, especially considering the emerging literature on the subject on Twitch (Gray, 2017; Johnson, 2018; Ringland et al., 2016), as well as the current discussions around political polarization (Soares et al., 2018), and online toxicity and social media harassment (Blackburn and Kwak, 2014; Fuchs, 2017; Kwak, 2014).

4.5 Publication 5

The principal differences between live attendance and the online spectating of esports were investigated in Publication 5, through the use of two data sets, which were obtained through separate surveys: one online ($N = 888$) and one collected at a live event ($N = 221$). The results of Publication 5 help shed light on RQ2 (*How do spectating motivations differ between online spectating and live at-attendance of esports events?*).

First, to see if any significant differences existed across the two groups (online spectators and live attendees), a one-way MANOVA was conducted. A statistically significant difference was found between the two groups, $F(10, 1098) = 24.573$, $p < .001$, Pillai's Trace = 0.183, partial $\eta^2 = .183$. The partial η^2 exceeded a threshold level of 0.14 and could therefore be considered as large (Cohen, 1988).

As this result had indicated that indeed, general differences were to be found between the two groups of spectators, univariate ANOVAs were conducted to investigate among which motivations these differences could be found. Out of the ten total forms of motivations investigated, seven showed statistically significant differences: *drama* ($F(1, 1107) = 108.670$; $p < .001$; partial $\eta^2 = .089$), *acquisition of knowledge* ($F(1, 1107) = 23.322$; $p < .001$; partial $\eta^2 = .021$); *skills of the players* ($F(1, 107) = 50.487$; $p < .001$; partial $\eta^2 = .044$); *social interaction* ($F(1, 1107) = 43.286$; $p < .001$; partial $\eta^2 = .038$); *physical attractiveness* ($F(1, 1107) = 65.780$; $p < .001$; partial $\eta^2 = .056$); *novelty* ($F(1, 1107) = 5.934$; $p = .015$; partial $\eta^2 = .005$); and *enjoyment of aggression* ($F(1, 1107) = 4.899$; $p = .027$; partial $\eta^2 = .004$).

As the MANOVA indicated general differences to exist and the univariate ANOVAs indicated among which motivational factors these differences existed, two further approaches were employed to understand the directionality of these differences.

First, an independent samples t-test was conducted to investigate the differences between the reported scores for the ten MSSC subscales. From this analysis, eight statistically significant differences were identified. Reported scores were higher for online than live spectators for *drama* ($t(323.42) = 10.04$, $p < .001$), *acquisition of knowledge* ($t(1107) = 4.83$, $p < .001$), *skills of the players* ($t(310.06) = 6.58$, $p < .001$), *novelty* ($t(396.78) = 2.73$, $p = .007$), *enjoyment of aggression* ($t(387.17) = 2.44$, $p = .015$) and *aesthetics* ($t(412.06) = 2.28$, $p = .023$). However, scores were lower for online than live spectators for *social interaction* ($t(419.45) = -7.63$, $p < .001$) and *physical attractiveness* ($t(1107) = -8.11$, $p < .001$).

Additionally, a DFA showed through examination of the Standardized Canonical Discriminant Function Coefficients, that *drama*, *social interaction*, *physical attractiveness* and *enjoyment of aggression* were the types of motivation that had the highest individual relationships with the esports spectating context. Drama and enjoyment of aggression were associated with online spectating (with respective values of $-.697$ and $-.261$), while social interaction and physical attractiveness were associated with live attendance ($.558$ and $.401$ respectively). Weaker relationships were found for the remaining motivations,

whereby *novelty* (-.048), *acquisition of knowledge* (-.045) and *skills of the players* (-.070) were associated with online spectating, while *vicarious achievement* (.125), *aesthetics* (.016) and *escape* (.069) were associated with live attendance. Table 7 presents a summary of the results of these three methods of analysis.

Table 7. Summary of ANOVA, t-test and DFA results (Publication 5).

Method of Analysis	Descriptive Analysis of Overall Means	Univariate ANOVAs	T-Tests	DFA
Description/Purpose	Reported importance of motivations to spectators	Differences between Spectating Context	Significance of differences	Strength of differences
<i>Skills of the players</i>	Strong - both (online greater than live)	Strong difference	Online	Weak Online
	Strong - both (online greater than live)	Strong difference	Online	Strong Online
<i>Acquisition of knowledge</i>	Strong - both (online greater than live)	Strong difference	Online	Weak Online
	Moderate - both (online greater than live)	No difference	Online	Weak Live
<i>Motivations</i>	<i>Vicarious achievement</i>	No difference	No significance	Weak Live
	<i>Escape</i>	Moderate (both)	No difference	Weak Live
<i>Novelty</i>	Moderate - both (online greater than live)	Moderate difference	Online	Weak Online
<i>Enjoyment of aggression</i>	Low - both (online greater than live)	Moderate difference	Online	Moderate Online
<i>Physical attractiveness</i>	Low - both (live greater than online)	Strong difference	Live	Moderate Live
<i>Social interaction</i>	Strong - live; Moderate - online	Strong difference	Live	Moderate Live

A PLS-analysis was conducted for live spectating motives, using the ten forms of motivation (as per the MSSC) and three dependent variables: *future intent to watch live esports events*, *future intent to watch esports online*, and whether the individual would *recommend esports* to others. The analysis explained 16.3% of the variance for *future live spectating*, 19.6% for *future online spectating*, and 30.1% for *recommending esports*. The following statistically significant associations were found (* $p < .05$, ** $p < .001$). For the intent to watch live events in the future, positive associations were found for *vicarious achievement* ($\beta = .104^*$) and *physical attractiveness* ($\beta = .277^{**}$). *Vicarious achievement* ($\beta = .190^{**}$) and *novelty* ($\beta = .215^{**}$) showed positive associations with the intent to watch online esports. Recommending esports to others was predicted by *vicarious achievement* ($\beta = .266^{**}$) and *novelty* ($\beta = .269^{**}$).

The results of these analyses offer a number of insights for both esports spectating, and more broadly for the consumption of sports. The first observation relates to the physicality of attending a live event. Results showed both a significant difference among the comparison of reported means, in the form of for example *physical attractiveness* and *social interaction*, as well as in the PLS-analysis for *physical attractiveness*. These are modes of motivation where the physicality of attendance clearly plays a central role, as when physically present, spectators are offered additional affordances for interaction, as well as

seeing the players in greater detail. As esports players are not the focal point of mediated broadcasts, but as the attention is rather focused on the gameplay, this means that for the appreciation of *physical attractiveness*, in traditional broadcast esports contexts, the opportunities are fewer. Likewise, while *social interaction* is not seen as a large motivator in the online sphere, as also shown in Publication 1, the face-to-face contact offered by live attendance clearly makes a great difference. This is interesting not only from the spectator perspective, but also in a way strengthens previous research indicating face-to-face interpersonal communication as a preferred mode of communication among esports players (Freeman and Wohn, 2017, 2018).

The second finding of Publication 5 worth highlighting is related to conveying information in different modes of spectating (mediated and live). As the results indicate, *acquisition of knowledge* is facilitated more effectively in the mediated context of online spectating. This has a natural explanation when considering the difference in information conveyed between the two modes of spectating. Broadcast sports commonly feature a large amount of information not necessarily available through live attendance, such as highlights, replays, commentary, and modern modes of digital augmentation (Hutchins and Rowe, 2013; Trail, 2018). In the realm of esports research, tools have also been developed to facilitate the spectating experience (Charleer et al., 2018; Schubert et al., 2016). Thus, while the live experience might be important for other reasons, for cognitive motivations such as learning, it might not necessarily be the optimal mode of spectating.

Thirdly, in regard to the importance of *novelty*, the PLS-analysis highlights an interesting aspect of esports when compared to many other traditional sports. Considering the major sports leagues in the US (the NFL, NBA, MLB and NHL) as well as FIFA, the majority of these have existed for a hundred years or more, and even the younger organization in the form of the NBA has been around since 1946. In comparison to these traditional actors, esports has been around for a significantly shorter time, and changes within the esports ecosystem happen constantly. New game titles, teams and players emerge continuously, and in many games, the average career of a professional player is fairly short (Salo, 2017). As per the results regarding *novelty*, while these sometimes tumultuous changes can be challenging for organizations and leagues, they seem to be an important factor for the spectators.

5. Conclusion and implications

This dissertation set out to further the understanding of both the burgeoning entertainment media of esports, as well as the broader cultural phenomena of live video streaming and game video content. As a conclusion, tying together all the five Publications presented so far, the seminal question at hand is now addressed: *Why do people watch others play video games?*

Publications 1 and 5 focused particularly on the spectating motives of esports, identifying key motivational factors using measurement instruments previously used in sport studies. Reflecting upon the findings both through the lens of sport consumption studies and more general media studies, some of the same motivations can be seen to be in place as in traditional sports and the use of other forms of media, such as the acquisition of knowledge (Melnick, 1993; Wenner and Gantz, 1998; Whiting and Williams, 2013), enjoyment of aggression (Wann et al., 1999, 2008), and escape (Krohn et al., 1998; Papacharissi and Mendelson, 2011; Wann et al., 2008). These findings help confirm the conceptual parallels between esports and traditional sports when it comes to how esports is defined (Jenny et al., 2017; Witkowski, 2012). The results also strengthen the understanding that games are not purely hedonic in nature, as the acquisition of knowledge component shows that spectators engage with esports not only to seek affective gratifications, but also to learn new things, which they may then leverage in a number of ways.

Publications 2-4 focused on the broad phenomena of live streaming of game content on the Twitch service. Some of the findings of these Publications mirror the motivations investigated in Publications 1 and 5 on esports, such as the role of knowledge acquisition. Additionally, the studies strengthen previous studies within streaming (Gros et al., 2017; Hamilton et al., 2014; Hu et al., 2017; Wulf et al., 2018), showing that social motivations are indeed of great importance. This social aspect extends to spending money on the platform through subscriptions and donations, as highlighted by Publications 2 and 4, which has also been a topic of interest in other studies (Wohn et al., 2018). The results of Publications 2-4 indicate that the UG approach is suitable for use in the context of streaming, as audiences seem to be gratified by different motivations in varying contexts. An example of this are the results related to channel size that were investigated in Publication 4, indicating that there are significant differences between small and large streams, which has also been highlighted by studies on the communication practices on Twitch (Ford et al., 2017; Recktenwald, 2017).

In the introduction, the argument was made that the phenomenon of spectating play is worth studying for a number of reasons, with a few explicit reasons being an understanding of the *conceptual identity of esports in relation to traditional sport*, the *unique real-time and interactive nature of streaming*, and the social dimensions of both esports and streaming. As an answer to the first of these issues, Publications 1 and 5 argue for considering esports as a form of sport, highlighting the computer-mediated aspects, as well as expanding and discussing esports spectating motivations in relation to those of traditional sports. For the second of these, the results of Publications 2-4 indicate that streaming, through the nature of real-time interaction, facilitates both learning and socializing, among other motivations. Finally, for the third of these, social motivations are found to indeed be an integral part of streaming services, and many users form strong connections both to streamers and other viewers. In this sense, Twitch and similar streaming platforms might be more *social* than many traditional social media platforms, and approach the concept of sociability from a slightly different angle, perhaps fostering new social connections rather than facilitating the upkeep of current ones.

To summarize, this dissertation argues that the current game media ecosystem in which spectating play is situated, and where both esports and live video streaming of games exist, is a crucial form of media entertainment and communications media in the 21st century. As with many technological and cultural phenomena, ideas are seldom formed in a vacuum, but develop independently and in parallel, reflecting the interests and sentiments at play in society at large. The fact that games are not only aimed at a particular demographic, but have become in a sense more everyday, means that the impact games have on our broader society has increased as well, tying into broader discussions of gamification (Deterding et al., 2011; Hamari et al., 2014; McGonigal, 2011). As demonstrated by the Publications that are featured in this dissertation, people watch others play for a wide variety of reasons, and for example not purely for hedonic reasons such as passing time, or cognitive reasons such as getting better at a game. This finding aligns the spectating of games and consumption of game media closely with traditional forms of media such as television, where different types of gratifications (Ebersole and Woods, 2007; Rubin, 1981, 1983) have been found to motivate different individuals to consume media.

5.1 Theoretical contributions

This dissertation and the included Publications have contributed to furthering three main areas of theoretical understanding: the conceptual understanding of esports, the understanding of esports spectating motives, and finally the understanding of streaming as a form of media consumption.

Firstly, the theoretical definition of esports provided by Publication 1 expands on previous definitions and brings the definition further in line with contemporary esports. This definition helps contribute to the ongoing discussion on how esports relate to traditional sports (Funk et al., 2018; Hallmann and Giel, 2018; Holden, Kaburakis, et al., 2017; Jenny et al., 2017; Witkowski,

2012), thinking not only about the angle of physical exertion, but also about the broader meaning of computer-mediated systems in the cultural human interaction called sports. As both sport culture and technology evolve, new sports may appear that utilize human-computer interaction to a larger degree, using such emerging technologies as augmented and virtual reality. Through the understanding formed around the phenomenon of esports, future analysis of new forms of sport that may form in the coming decades, can be more effective.

Secondly, the investigations into spectator motivations covered in Publications 1 and 5 using existing measurement instruments from sports management and audience studies in the form of the MSSC, help to anchor the understanding of esports with the large body of research on traditional sports. During the research process, attempts were made to expand the current version of the MSSC using an additional scale focusing on gambling behavior, as gambling has become closely tied to esports spectating (Macey and Hamari, 2018b, 2018a). However, this gambling scale was ultimately not included in Publication 5, as it was not suitable in the comparative context. That said, the use of the MSSC has allowed the formation of opinions on areas where the measurement instrument could be used in the future to better encompass the various motivational dimensions present in mediated sports, such as esports.

Thirdly, building upon the UG theoretical framework, Publications 2-4 help further the understanding not only of live streaming viewer behavior, but also to give a general communications research understanding of mixed active-passive forms of media. The insights gained from these Publications show that the UG approach is suitable for investigating streaming as a form of media consumption. Additionally, the consumption of games can be seen to exist on a spectrum from pure active engagement in the form of playing, to purely passive consumption through the spectating of play. Between these, many hybrid forms surely exist, but the realization of the existence of this spectrum is a highly important observation when considering the theory of how people interact with games and interactive media at large.

Additionally, the results show that the new type of media that streaming represents, is highly characterized by both the interactive nature, and the social dynamics at play on online platforms used by millions of people. As the results have shown, social motivations are important not only for purely using the service, but also when considering why and how people spend money on these platforms. In a world where digital economies are increasingly disrupting how traditional industries operate, through notions such as playbour (Goggin, 2011; Kücklich, 2005; Taylor et al., 2015) and the gig economy (Lloyd, 2017; De Stefano, 2015), an understanding of the consumption motivations for products and services that are not priced in a conventional manner is increasingly important. While this dissertation is not able to provide any definite answers, considering the fairly low amount of variance explained for subscription behavior, it does however provide some information as to where future research should look, such as the various aspects of social interaction and social reciprocation.

5.2 Practical contributions

The Publications presented in this dissertation offer a number of avenues for practitioners to further enhance their products and services. Most notably, the results of these Publications are naturally useful for companies operating video streaming services, but furthermore, stakeholders benefiting from these results include content creators, game developers, event organizers and media companies, to name but a few. Some examples are given below, and the individual Publications offer a deeper insight into the subject.

From the results of Publication 1 and 5, novelty as a concept within esports is identified as being important. Esport leagues and tournament organizers can aim to facilitate gratification from novelty by making sure that new teams and players are shown from time to time. This can be done for example through “challenger”-mechanics, where new teams are offered a chance to compete against more established teams through various qualification methods. These types of structures are in fact already in place in many esports titles. Likewise, during pre- and post-game shows, it might make sense to focus on new players joining teams, or on teams that are utilizing new or novel strategies within the game.

The findings regarding the acquisition of knowledge within esports spectating also point to the importance of being able to convey relevant information such as statistics and team-specific strategies, during matches. Thus, practitioners should look towards expanding already existing methods of showing information to spectators in meaningful ways, and perhaps look to develop new tools for doing so (Charleer et al., 2018; Schubert et al., 2016). As shown in Publication 5, live attendees do not rate these cognitive motivations as highly, and thus an effort could be made to improve their facilitation during live events.

In general, the results advocate for focusing attention on the human side of esports. While attendees at live events have a greater opportunity of seeing the actual player, as discussed in Publication 5, online broadcasts often focus much more on the game than the people playing it. Many esports leagues and tournaments are doing a good job in building stories through out-of-game footage and interviews, and the fact that the outcome defining events of esports are not just taking place in the physical arena means esports has a bigger hurdle to overcome compared to traditional sports when it comes to showing the emotions, movement and physicality of the players. Increasing the amount of player profiles, interviews, expressions of rivalries and camera footage of the players faces during game are all methods of addressing this.

The findings of Publications 2-4 also provide several implications that are relevant for streaming platforms, game developers and streamers themselves. Firstly, the social motivations shown in all three Publications indicate that both operators of streaming platforms, as well as streamers themselves, should look to increase the social dimensions if they wish to engage their audience in a meaningful way. This is particularly highlighted by the results of Publications 2 and 4 related to subscription and donation behavior. This new type of digital consumption is something quite fascinating and unique to platforms

like Twitch. These initial findings are in no way conclusive, but indicate the strength of this socially motivated consumption. Particularly, it shows that streamers build extremely strong bonds with their community, and are able to then monetize this social bond.

For game developers, the importance of social interactions, as exemplified by the results regarding casual streams and sandbox games in Publication 3, are not something one should ignore. These aforementioned types of games and content are identified by the fact that they do not place a real-time pressure on the player. In the context of streaming, this means that the streamer can dictate the pace of play, and has ample opportunity for interacting with the audience. In a world where the gameplay serves as a framework for the content being produced, and the streamer having the opportunity to express their personality, it is important to understand the importance of pacing. In games where there is no pause or lull the gameplay, it can be exceedingly difficult to focus on both the game at hand and also the audience that is watching. In fact, the whole concept of games being consumed by spectating rather than playing, changes the approach to game development significantly. Studies have already shown that streaming of games can increase sales (Hernandez, 2016), and that new types of audience participation games are emerging that facilitate spectator interaction (Fanzo et al., 2017; Glickman et al., 2018; Seering, Savage, et al., 2017).

The findings of Publication 3 regarding the importance of archetypal content over the apparent game genre has implications for platform operators, and also for those outside the realm of purely game streaming. If the same theoretical understanding holds true for other services, it becomes increasingly important to understand the content being produced, and why exactly people watch it. This can then be utilized for example in exploration features, where the system can more intelligently suggest new content for the viewer.

5.3 Limitations

The Publications presented as part of the dissertation all employed quantitative surveys for data collection, with the majority of the surveys used being online based. Hence, one of the main limitations for this dissertation is one of method. Survey studies, by nature of their design, have some flaws which are worth acknowledging. As the respondents were self-selected and the data was self-reported, this may lead to some limitation and bias for the study. For example, the samples may have respondents that are more active esports spectators and video stream consumers, and occasional users might be less likely to answer such a survey. While measures were implemented to counter common-method bias (Podsakoff et al., 2003), this is one further factor worth considering. The methods employed in these Publications were assumed to be the best for the current task in hand, but complementary methods can also be employed in further expansions of this field of study.

While esports and live streaming have become global phenomena, this dissertation has mainly focused on the western context, as the majority of re-

spondents in all the Publications were from Europe and North America. Hence, for example the Asian perspective is missing, as there are several large streaming services that operate solely within single Asian markets, such as Niconico in Japan and Afreeca in South Korea. An expansion of Publication 2 to include these geographic regions might provide additional insights into the rich world of spectator motivations.

Notable also is that the Publications included in this dissertation have been written at a point in time when esports in particular has seen an unprecedented level of growth. While this is naturally good as it shows this to be a topic worth investigating, at the same time it poses potential problems. Specifically, as there will have been a large influx of new consumers from the point of data collection to the current point in time, one can not be completely certain that the results are reflective of current audiences. It is also possible that new consumers might come from different backgrounds or potentially form new sub-groups of viewership. Additionally, as esports titles themselves are in a larger state of flux than individual traditional sports, the changes in these titles may also contribute some uncertainty. That said, many of the esports titles such as Counter-Strike: Global Offensive and League of Legends have remained the same throughout the past four years, which represents the time span of the Publications described in this dissertation.

The Publication-specific limitations of the studies have further been discussed in each Publication.

5.4 Future research directions

To conclude, a number of future research directions are offered that are worth pursuing, based on the findings of Publications 1-5 and the current understanding of the game media ecosystem that encompasses both streaming and esports.

Firstly, live streaming is constantly evolving, which requires the academic community to stay up to date with any changes that take place. At the time the data was collected, Twitch focused solely on games, but IRL streams and other streaming topics are currently on the rise (Fagan, 2018b). While perhaps extending outside the domain of video game streaming, a general understanding of live streamed video consumption is highly important, particularly as the role of video in various forms has constantly been increasing in the media used in day to day life.

Secondly, this dissertation had a strong focus on live streaming video game content (considered in Publications 2-4), in order to build a deeper understanding of the phenomena. However, the cultural phenomenon of spectating play also extends to pre-recorded video on platforms such as YouTube, as has been mentioned previously in this dissertation. Hence, it would be important to also study these platforms specifically from a game video content perspective, as previous studies have actively sought to investigate motivations for using YouTube (Chiang and Hsiao, 2015; Hanson and Haridakis, 2008; Khan, 2017). By understanding the core motivational drivers on these different plat-

forms, a deeper understanding of the consumers, and their similarities and differences, can be built.

Thirdly, while this dissertation and a few other studies (Wohn et al., 2018) have taken the first steps to investigate forms of live video consumption related to spending money, the results are not conclusive and further investigation into this topic is needed. Publications 2 and 4 touched upon motivations that impact subscription and donation behavior, but the degree of variance explained in these cases was fairly small, and as such, further models can potentially explain this behavior in closer detail. A comprehension of participation incentives in this type of economic exchange is not only valuable for understanding specific services such as Twitch, but also for understanding the changing nature of work. This particularly extends to situations where individuals may increasingly occupy multiple roles, such as microwork (Irani, 2015), and playbour and prosumption (Fuchs, 2014; Ritzer, 2015; Taylor et al., 2015).

Outside the domain of purely consumption motivation research that this dissertation and the included Publications have focused on, there are a number of important avenues for research, some of which are worth highlighting.

Firstly, not only is the consumption of esports as a form of spectator entertainment important, but an understanding of why players participate in the games themselves is also highly interesting. While there have been many studies (see e.g. Hamari and Keronen, 2017; Yee, 2006) into the general motivations for playing games, and specific studies relating to why players are choosing to engage with esports titles (Lee and Schoenstedt, 2011; Weiss, 2011), missing is the understanding of why players potentially aim for a career as a professional players. As esports has grown dramatically and adolescents get new idols in the form of esports stars, understanding the motivations and realities for pursuing such careers is highly important.

Secondly, while this dissertation concentrated on the people who consume streams, equally important are those who produce the streams. This field of study has recently picked up speed (Bründl and Hess, 2016; Johnson and Woodcock, 2017; Sjöblom et al., 2019; Törhönen et al., 2018), and so understanding both the production methods and motivations of the field offers us opportunities to deepen our theoretical understanding of human communication behavior.

It is worth noting that all the Publications in this dissertation have utilized methods that are quantitative at nature, but there is also great potential in using qualitative methods in the research related to esports and video game streaming. By conducting, for example, in-depth interviews with spectators, a deeper understanding could be built of the various aspects of spectating games. Additionally, using observational techniques may allow researchers to build a more nuanced understanding of the live spectating experience.

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Errata

Unfortunately, a few errors were noticed in two of the already published studies. The author apologizes for any inconvenience these errors may have caused. These errors are highlighted below

Publication 2: An incorrect sample size ($N = 1097$) is reported in the abstract (page 1), introduction (page 2) and validity & reliability (page 5). The correct sample size ($N = 1091$), is reported in the *sampling* section (page 4) and used in all analyses.

Publication 3: The same error of incorrect sample size ($N = 1097$) is also present in publication 3, in the abstract (page 161) and background (page 162). The correct sample size, used in all analyses, is ($N = 1091$).



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