Tampere University

ANU SIROLA

Web of Gamble

A social psychological perspective on youth gambling and virtual communities

Tampere University Dissertations 360

Tampere University Dissertations 360

ANU SIROLA

Web of Gamble

A social psychological perspective on youth gambling and virtual communities

ACADEMIC DISSERTATION
To be presented, with the permission of
the Faculty of Social Sciences
of Tampere University,
for public discussion at Tampere University
on 15 January 2021, at 12 o'clock.

ACADEMIC DISSERTATION
Tampere University, Faculty of Social Sciences
Finland

Responsible supervisor and Custos	Professor Atte Oksanen Tampere University Finland	
Pre-examiners	Docent Sari Castrén Finnish Institute for Health and Welfare Finland	Associate professor Sally Gainsbury University of Sydney Australia
Opponent	Professor Tom Postmes University of Groningen The Netherlands	

The originality of this thesis has been checked using the Turnitin OriginalityCheck service.

Cover design: Roihu Inc.

ISBN 978-952-03-1811-6 (print)
ISBN 978-952-03-1812-3 (pdf)
ISSN 2489-9860 (print)
ISSN 2490-0028 (pdf)
http://urn.fi/URN:ISBN:978-952-03-1812-3

PunaMusta Oy – Yliopistopaino
Vantaa 2020

ACKNOWLEDGEMENTS

When I started my social psychology studies at Tampere University in 2011, I had no plan for the future or any idea where the studies would lead me to. All I knew was that I had fallen in love with social psychology ever since I opened the entrance exam book for the first time. During the first years of my Bachelor's studies, I remember how a vague idea of becoming a researcher started to develop in my mind. Of course, back then, I did not know what "being a researcher" means in practice, but during my Master's studies this initial idea grew bigger, and eventually, it became a reality. As usual, reality has turned out to be somewhat different from the expectations, but I couldn't be happier that my interest towards research led me to enter the PhD studies at Tampere University in 2017. Even though the path has not always been an easy one, these years have been perhaps the most rewarding of my life so far.

Of course, none of this would have been possible without all wonderful people I am immensely grateful to. First, I want to express my deepest gratitude to my supervisor, professor Atte Oksanen, for his tremendous support and high-quality supervision. He has been available whenever I have needed guidance, and always encouraged me to aim higher. His dedication to research has been a great influence and inspiration to me ever since I started working with my Master's thesis in Hate Communities -project. He was also the one who encouraged me to take the PhD path, of which I am deeply grateful. I also want to thank the preliminary examiners, Dr., docent Sari Castrén and associate professor Sally Gainsbury, for valuable, insightful and encouraging comments that helped me improve my dissertation. I also wish to thank professor Tom Postmes for agreeing to act as my public opponent. His groundbreaking research on social psychological group processes in online context has been a major influence and inspiration to me also in this dissertation.

I have conducted my dissertation as a part of Problem Gambling and Social Media -project, and I am deeply grateful to my fellow team members, co-authors and all collaborators of this project. Thank you Markus Kaakinen and Iina Savolainen for being the best possible team members. Your contribution to my dissertation has been valuable, and it has been a pleasure to work with you throughout this project.

Thank you also to my other co-authors: Nina Savela, professor Hye-Jin Paek and associate professor Izabela Zych, for providing your time, expertise and insights for my PhD articles. Thank you to the Finnish Foundation for Alcohol Studies for funding this project and my PhD research for three years and making all this possible.

There are also several others who have contributed to my dissertation in one way or another, and it is quite impossible to provide a comprehensive list. I want to thank all the participants of the multidisciplinary Addiction Seminar for providing valuable comments and feedback for my article drafts: Eeva Ekqvist, Noora Hyysalo, Karoliina Karjalainen, Katja Kuusisto, Tomi Lintonen, Johanna Ranta, Arttu Salo, and all others who have participated in the seminar during these years. I also want to thank my fellow PhD researchers and other research colleagues: Heli Hagfors, Hannu Jouhki, Aki Koivula, Rita Latikka, Eerik Mantere, Marko Mikkola, Reetta Oksa, Jenni Raitanen, Tuuli Turja, Ilkka Vuorinen, and all other researchers of the Emerging Technologies Lab, for academic collaboration, friendship and much-needed peer support. A special thank you to Hanna-Leena Ristimäki for friendship and social psychological companionship since 2011! A warm thank you to the personnel and colleagues at the Faculty of Social Sciences, especially our Social Psychology community, for providing an inspiring, friendly and supportive work environment. A special thank you to the members of our groovy faculty band Vari for all those memorable rehearsals and gigs, and perhaps most importantly, for reminding me that everything in academia doesn't have to be too serious.

Finally, I express my heartfelt gratitude to my family and all my dear friends for your valuable support. I owe you apologies for all those numerous occasions when I have been too busy with my dissertation and cancelled plans at the last minute, so thank you for understanding and being there. Most of all, thank you Joonas for your love, support and patience during these years.

Tampere, December 2020

ABSTRACT

The Internet and social media have facilitated gambling opportunities, and gambling content has become highly visible in an online context. Gambling has gained popularity worldwide, and youth problem gambling in particular is an increasing concern. Digital games increasingly include monetary gambling-like features such as microtransactions and loot boxes, blurring the line between gambling and gaming and exposing young players to mechanisms of gambling. The Internet also provides social platforms for gamblers and gamers to interact and connect, both inside and outside a game. As active online users, youth actively engage in different online games and utilize virtual communities to interact around shared interests. Virtual communities may shape gambling attitudes and behavior through social norms and peer influence. In this doctoral dissertation of social psychology, it was examined what is the role of virtual communities and social media behavior in gambling and gambling-like intentions and behaviors. Gambling-like mechanisms in digital games are scrutinized, as well as differences and similarities in the social aspects of gambling and monetary gaming. This dissertation provides a social psychological perspective on youth gambling and gaming by examining the role of virtual communities and the underlying social factors in such behaviors.

This dissertation consists of four separate studies. Cross-national survey data of 15- to 25-year-old respondents from four countries were used: Finland (N = 1,200), the United States (N = 1,212), South Korea (N = 1,192) and Spain (N = 1,212). Survey data were used to examine factors associated with online gambling community participation and interest toward online gambling content among youth. Systematic literature data were used to widen the scope of gambling in the dissertation by exploring and comparing the role of virtual communities in gambling and monetary gaming behaviors.

According to the results, participation in virtual gambling communities such as discussion forums is associated with gambling problems, posing a potential risk for excessive gambling. Some country differences were found in underlying factors, such as sense of loneliness, in active online gambling community participation. Gambling communities differ in their stance on gambling. Some communities are related to gambling strategies and tips, while others focus on problem gambling recovery and

harms caused by gambling. Thus, depending on the community norms, gambling communities may normalize excessive or moderate forms of gambling. In digital games, a community aspect is often inherently embedded inside the game. Further, there is strong evidence that the social aspect of game communities can motivate in-game purchase intentions and gaming continuation, posing a potential risk for excessive money consumption. The results suggest that strong attachment to a virtual community, together with perceived group norms and mechanisms of social influence, are risk factors to excessive gambling behavior, attitudes and purchase intentions. Moreover, gambling content that is approved by peers in social media is likely to make the content appear more interesting and increase the likelihood to act on such content. The results emphasize the risky nature of social media and emerging group processes in online gambling exposure and normalization of gambling. The findings provide topical knowledge and practical implications for players, parents and health care professionals to help reduce excessive gambling and game-related purchase behaviors.

TIIVISTELMÄ

Internet ja sosiaalinen media ovat laajentaneet rahapelaamisen ilmenemismuotoja ja rahapelimahdollisuuksia. Kehityksen myötä rahapelaamisesta on tullut globaalisti yleistä, ja etenkin nuorten rahapeliongelmat ovat kasvussa. Erilaiset netti- ja videopelit sisältävät yhä enemmän maksullisia ja rahapelien kaltaisia ominaisuuksia, mikä hälventää rajaa rahapelaamisen (*gambling*) ja digipelaamisen (*gaming*) välillä ja altistaa nuoria rahapelien toimintamalleille. Varsinaisten pelien lisäksi Internet tarjoaa monenlaisia pelaamisen ympärille keskittyneitä verkkoyhteisöjä, niin pelien sisällä kuin niiden ulkopuolella. Nuoret ovat erityisen aktiivisia pelaajia ja identifioituvat vahvasti erilaisiin verkkoyhteisöihin. Verkkoyhteisöjen havaitut sosiaaliset normit voivat vaikuttaa rahapeliasenteisiin ja -käyttäytymiseen. Tässä sosiaalipsykologian väitöskirjassa tutkittiin rahapeliaiheisten verkkoyhteisöjen ja sosiaalisen median merkitystä rahapelaamisessa. Väitöskirjassa tarkastellaan myös rahankäyttöä sisältävää digipelaamista sekä sosiaaliseen ulottuvuuteen liittyviä eroja ja yhtäläisyyksiä rahapelaamisessa ja rahankäyttöä sisältävässä digipelaamisessa. Väitöskirja tarjoaa sosiaalipsykologisen lähestymistavan nuorten rahapelaamisen tutkimiseen tarkastelemalla verkkoyhteisöjen ja muiden sosiaalisten tekijöiden merkitystä rahapelaamisessa ja rahankäyttöä sisältävässä digipelaamisessa.

Väitöskirja koostuu neljästä osatutkimuksesta. Aineistona on käytetty 15–25-vuotiailta nuorilta ja nuorilta aikuisilta kerättyjä kyselyaineistoja Suomesta (N = 1200), Yhdysvalloista (N = 1212), Etelä Koreasta (N = 1192) ja Espanjasta (N = 1212). Kyselyaineistojen avulla selvitettiin rahapeliyhteisöjen käyttöön ja sosiaalisen median rahapelisisältöihin suhtautumiseen yhteydessä olevia tekijöitä nuorilla. Lisäksi väitöskirjan aineistona on käytetty systemaattista kirjallisuuskatsausaineistoa sen selvittämiseksi, mitä aiemman tutkimuksen valossa tiedetään rahapeliaiheisten verkkoyhteisöjen merkityksestä rahapelaamisessa ja rahankäyttöä sisältävässä digipelaamisessa.

Tulokset osoittavat, että rahapeliyhteisöjen käyttö on yhteydessä rahapeliongelmiin. Myös joitakin maakohtaisia eroja löytyi, esimerkiksi koetun yksinäisyyden merkityksessä yhteisöjen käytössä. Rahapeliaiheiset verkkoyhteisöt palvelevat erilaisia tarkoituksia rahapelaamisessa. Osa yhteisöistä keskittyy suoremmin pelaamiseen liittyviin motiiveihin kuten pelivinkkien jakamiseen, kun

taas osa yhteisöistä on keskittynyt peliongelmiin ja niistä paranemiseen. Yhteisöjen normeista riippuen rahapeliyhteisöt voivat normalisoida joko ylenpalttista tai maltillista rahapelaamista. Digitaalisissa peleissä pelien sisäinen yhteisöllisyys ja vuorovaikutus ovat keskeinen osa pelikokemusta. Tulosten perusteella voimakas identifioituminen peliyhteisöön sekä yhteisön sosiaaliset normit ja sosiaalinen vaikutus voivat lisätä riskiä ylenpalttiseen rahapelaamiseen ja digipelien sisäisiin ostoihin. Lisäksi havaitut positiiviset reaktiot sosiaalisessa mediassa jaettuun rahapelisisältöön lisäävät todennäköisyyttä kiinnostua sisällöstä. Väitöskirjan tulokset korostavat sosiaalisen median ja verkon ryhmäprosessien riskejä rahapelisisältöjen kohtaamisessa ja rahapelaamisen normalisoitumisessa. Tulokset tuottavat ajankohtaista tietoa ja käytännön suosituksia pelaajille, pelaajien vanhemmille sekä terveydenhuollon ammattilaisille rahapeliongelmiin liittyvien interventioiden tueksi.

CONTENTS

List of Tables

ABBREVIATIONS

DSM-5	*Diagnostic and Statistical Manual of Mental Disorders*, 5th edition
IBRM	Identity bubble reinforcement model
ICD-10	International Classification of Diseases, 10th revision
ICD-11	International Classification of Diseases, 11th revision
MMO	Massively multiplayer online game
MMORPG	Massively multiplayer online roleplaying game
SCT	Self-categorization theory
SIA	Social identity approach
SIDE	Social identity model of deindividuation effects
SIT	Social identity theory
SOGS	South Oaks gambling screen

ORIGINAL PUBLICATIONS

Publication I Sirola, A., Savela, N., Savolainen, I., Kaakinen, M. & Oksanen, A. (2020) The role of virtual communities in gambling and gaming behaviors: A systematic review. *Journal of Gambling Studies* (online first). https://doi.org/10.1007/s10899-020-09946-1

Publication II Sirola, A., Kaakinen, M. & Oksanen, A. (2018) Excessive gambling and online gambling communities. *Journal of Gambling Studies, 34*(4), 1313–1325. https://doi.org/10.1007/s10899-018-9772-0

Publication III Sirola, A., Kaakinen, M., Savolainen, I. & Oksanen, A. (2019) Loneliness and online gambling-community participation of young social media users. *Computers in Human Behavior, 95*, 136–145. https://doi.org/10.1016/j.chb.2019.01.023

Publication IV Sirola, A., Kaakinen, M., Savolainen, I., Paek, H-J., Zych, I. & Oksanen, A. (2020) Online identities and social influence in social media gambling exposure: A four-country study on young people. *Telematics and Informatics* (conditionally accepted in December 2020)

1 INTRODUCTION

Digital and technological advancements have had a significant impact on the manifestation and dissemination of gambling. Gambling has become ever more visible, accessible and diverse, and the Internet access provides an abundance of gambling opportunities. Online forms of gambling have increased in volume and popularity (Gainsbury, Russell, Blaszczynski & Hing, 2015; Lopez-Gonzalez & Griffiths, 2018), and gambling advertising is highly visible online (Binde, 2014; Clemens, Hanewinkel & Morgenstern, 2017; Derevensky, Sklar, Gupta & Messerlian, 2010). Expanded gambling opportunities attract online users with 24/7 access, fast-paced games, colorful visuals, and the possibility of winnings and even getting rich. Virtual gambling environments make gambling accessible and attractive even for young and underage people, and may contribute to normalization of gambling as a socially acceptable and harmless activity (Floros, 2018; Delfabbro, King & Derevensky, 2016; King, Delfabbro & Griffiths, 2010).

With Internet access and portable devices such as smart phones, gambling is accessible without limitations of time or place. Worldwide, there are over 4.5 billion Internet users, of which 3.8 billion people are active social media users (Clement, 2020). Young people are particularly active online users, as technology and social media are a natural part of their daily lives and interactional habits (Boyd, 2014). Of American adolescents aged 15 to 17 years, 95% have smartphone access and 45 % report being almost constantly online (Anderson & Jiang, 2018). Thus, adolescents and emerging adults are particularly likely to be exposed to various gambling content in the online environment.

Although gambling can bring excitement and joy, gambling has high addictive potential. When excessive, gambling may cause severe harms such as long-lasting financial problems and psychological distress for gamblers and people close to them (Oksanen, Savolainen, Sirola & Kaakinen, 2018; Orford, 2010). Young people and emerging adults are particularly vulnerable to the harmful effects of gambling (King et al., 2010). Gambling problems most commonly occur at the ages of 18 to 24, and gambling activities typically begin at adolescence (Salonen & Raisamo, 2015). Of

young people worldwide, even up to 12.3 % qualify as problem gamblers (Calado, Alexandre & Griffiths, 2017).

Mechanisms of gambling have expanded to other online activities as well. In the digital gaming industry (including mobile games and video games), gambling-like characteristics such as random reward mechanisms and microtransactions that require real money are increasingly used as revenue models (King & Delfabbro, 2019). There are ongoing debates whether such emerging gambling-like mechanisms in digital games should be considered forms of gambling (Griffiths, 2018; King & Delfabbro, 2020). A prominent example of gambling-like mechanisms in digital games is the system of loot boxes. Loot boxes are virtual containers that contain randomized selections of virtual items with different value and rarity, such as equipment, weapons or cosmetic features, that may enhance the gaming experience and the player's success. To unlock the content of loot boxes, players often have to purchase them with real money. Spending on loot boxes has been associated with problematic gambling behavior (Brooks & Clark, 2019; Li, Mills & Nower, 2019; Kristiansen & Severin, 2020; von Meduna, Steinmetz, Ante, Reynolds & Fiedler, 2020; Zendle & Cairns, 2019). In addition, games that simulate gambling activities such as poker or slot machines have become highly popular on social media platforms and mobile applications. These kinds of social casino games attract users with free access, but encourage players to make in-game purchases with real money (Kim, Hollingshead & Wohl, 2017; Reynolds, 2019). Thus, it can be argued that the line between gambling and digital gaming has become blurred, but the interface and similarities between these two activities need more thorough examination.

Importantly, the Internet also offers social platforms to create, establish and extend networks with other players and form virtual communities around shared interests such as gambling or gaming. Additionally, digital games offer social tools for players to connect and interact with each other. Virtual communities are central identification contexts particularly for young people, and these communities may also serve as important sources of peer support and influence (Boyd, 2014; Lehdonvirta & Räsänen, 2011). Virtual communities are places to share and validate identities around mutual interests and values (Keipi, Näsi, Oksanen & Räsänen, 2017; Kaakinen, Sirola, Savolainen & Oksanen, 2020). Gambling communities also make it possible to replace existing social relationships with gambling-related associates, which is typical for young problem gamblers (Blinn-Pike, Worthy & Jonkman, 2010). Since peers are known to play an influential role in risk-taking behaviors (Steinberg & Morris, 2001), the role of virtual communities in gambling and related behaviors needs further investigation.

The aim of this dissertation is to examine the role of virtual communities and social media behavior in gambling and gambling-like intentions and behaviors. Drawing on social psychological group theories such as the social identity approach, I will examine the role of virtual communities in excessive gambling, as well as what underlying factors exist in gambling community participation. I will also scrutinize the role of social norms and peer influence in exposure to gambling-related content in an online environment. These topics are highly relevant in the 21st century because gambling has become a part of young people's daily lives (Delfabbro et al., 2016; Elton-Marshall, Leatherdale & Turner, 2016; Floros, 2018; Volberg, Gupta, Griffiths, Olason & Delfabbro, 2010), and also social media and other virtual environments are central in young people's lives. The main focus in this dissertation is on gambling behaviors, but I will also investigate monetary digital gaming alongside gambling due to their similarities in terms of gambling-like mechanisms. I will also examine whether there are notable differences or similarities between gambling and gaming communities and their role in gambling and gaming behaviors, and provide theoretical and practical implications.

This dissertation comprises four studies. Article I was a systematic review synthetizing evidence of the role of virtual gambling and gaming communities in gambling and monetary gaming behaviors. Articles II-IV utilized survey data gathered from young social media users from Finland, the United States, Spain and South Korea. Article II analyzed the association between excessive gambling and participation in online gambling communities among Finnish young people. Article III extended this view by investigating the roles of loneliness, compulsive Internet use and characteristics of online behavior in active participation in online gambling communities among Finnish and American young people. Article IV examined how online clique (i.e., online identity bubble) involvement predicted young people's degree of interest toward social media gambling content and following perceived group norms in Finland, the United States, South Korea and Spain. Cross-national comparison of these countries—which are relatively similar in technology and social media use, but share distinct cultural characteristics and values—allows a more comprehensive view of the mechanisms underlying youth gambling, particularly in terms of online group processes.

2 GAMBLING IN THE ONLINE ERA

2.1 Gambling and excessive gambling

Gambling is an activity characterized by wagering and betting mechanisms with uncertain outcomes, involving real money or other currency with monetary value (King, Gainsbury, Delfabbro, Hing & Abarbanel, 2015). The main motivation for gambling is typically monetary—that is, a chance to win money or even a jackpot—but social and emotional motives have also been acknowledged (Flack & Stevens, 2019). Gambling types can be divided to chance-based games such as scratch cards, slot machines, lottery and bingo, where outcomes are purely chance-determined; and skill-based games such as poker and sports betting, where individuals can develop gambling skills and strategies to increase the likelihood of winning (see Stevens & Young, 2010). Many types of gambling such as poker include characteristics of both skill and chance, but the role of skill is often overestimated (Meyer, von Meduna, Brosowski & Hayer, 2013). A study by Myrseth, Brunborg and Eidem (2010) found that illusion of control was more prevalent among gamblers who preferred skill-based games than chance-based games. Overestimating one's gambling skills and having an illusion of control are examples of cognitive distortions concerning gambling, alongside superstition and erroneous beliefs on probabilities and causality (Devos et al., 2020; Langer, 1975; Toneatto, 1999). Common to all types of gambling is that outcomes are always uncertain, and monetary mechanisms involve financial risk to the player (King et al., 2015).

Gambling has become a popular and accepted form of recreational activity in many cultures across the world, while also being highly regulated and even illegal in some countries. At its best, gambling can bring joy and excitement, which is how gambling is typically framed in advertising (Binde, 2014). However, gambling has high addictive potential that undermines its beneficial aspects (Orford, 2010). Gambling can become excessive and compulsive behavior, which may have detrimental consequences for a gambler, people close to the gambler and society (Langham et al., 2015; Raisamo, Halme, Murto & Lintonen, 2013; Salonen et al., 2019). Losing large amounts of money can lead to long-lasting economic difficulties and further distress (Oksanen et al., 2018). Due to the stigma and shame attached to

problematic gambling, gambling problems are typically hidden from close friends and relatives and there is often reluctance to seek professional help (Gainsbury, Hing & Suhonen, 2014; Hing, Holdsworth, Tiyce & Breen, 2014; Suurvali, Cordingley, Hodgins & Cunningham, 2009).

In psychiatric pathology, gambling disorder is acknowledged as a behavioral addiction, distinguished from substance-related addictions such as alcohol or drug abuse; however, these behaviors often overlap (Yau & Potenza, 2015). Behavioral addiction is characterized by repetitive and compulsive engagement in a particular behavior, and a failure to resist the urge despite negative consequences (Grant, Potenza, Weinstein & Gorelick, 2010). Behavioral addictions typically start to develop in childhood or adolescence (Derevensky, Hayman & Gilbeau, 2019). However, the definitions of and diagnostic criteria for these behaviors vary depending on the source and diagnostic system used.

In the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), compulsive and pathological forms of gambling are referred to as "gambling disorder," with classifications of mild, moderate and severe, and it is classified under substance-related and addictive disorders (American Psychiatric Association, 2013). In the 11th revision of the International Classification of Diseases (ICD-11), "pathological gambling" was revised as "gambling disorder" and classified under "disorders due to addictive behaviors" (WHO, 2019a). Problematic gambling has high comorbidity with other addictive behaviors and mental health problems such as depression, anxiety and substance-use disorders (Castrén et al., 2013; Karlsson & Håkansson, 2018). Depression also increases the risk of suicide among individuals suffering from gambling problems (Karlsson & Håkansson, 2018).

In this dissertation, I approach gambling and problem gambling as multidimensional phenomena that have underlying individual, social and environmental factors. Thus, I extend the focus from psychiatric pathology and diagnostics toward a complex interplay between different underlying factors in gambling and problem gambling behaviors. I have adopted the term "excessive gambling" to cover potentially risky, problematic and pathological forms of gambling whereby gambling causes harm. Gambling-related harm includes diverse consequences on the well-being of a gambler, the gambler's close friends and family as well as surrounding communities and society (Langham et al., 2015; Raisamo et al., 2013; Salonen et al., 2019). The term "excessive gambling" is derived from Jim Orford's (2001) book *Excessive Appetites*, in which he treats addictions as an extreme form of appetite that can be formed around any drug, object or activity. According to Orford (2001), addictions are psychological processes that have underlying

contributing factors such as social context and personal inclinations. He argues that any behavior or activity may develop to excess where strong attachment to that activity leads to high individual and social costs, resulting in conflicting motives and behavior (Orford, 2001). I will focus on the social psychological aspects related to excessive gambling and related behaviors among youth.

Men are more actively engaged in different gambling activities, and they also tend to develop more severe problems compared to women (Hing, Russell, Tolchard & Nower, 2016; Salonen & Raisamo, 2015; Weidberg et al., 2018; Welte, Barnes, Tidwell & Hoffman, 2011). Recently, however, there is evidence that female gambling and gambling problems are increasing as well (Castrén, Heiskanen & Salonen, 2018; Holdsworth, Hing & Breen, 2012; Salonen & Raisamo, 2015; Salonen, Alho & Castrén, 2017). However, there may be differences in underlying mechanisms and motives between males and females in the development and maintenance of excessive gambling habits. According to a systematic review by Merkouris et al. (2016), impulsivity, substance use and alcohol use are consistently related to problematic gambling among males, while unemployment, psychological distress and childhood abuse are characteristics generally associated with female problem gambling. Women are also found to engage in gambling to escape difficulties such as loneliness and social isolation, while men gamble for self-enhancement, excitement and action (Holdsworth et al., 2012; Walker, Hinch & Weighill, 2005; Weidberg et al., 2018). Men are known to prefer skill-based games, while women prefer games of chance (Stevens & Young, 2010).

Gambling fallacies (e.g., illusion of control, magical thinking and other erroneous beliefs on probabilities and causality) are a risk factor for excessive gambling (Leonard & Williams, 2016; Myrseth et al., 2010; Orlowski et al., 2020; Williams, Lee & Back, 2013). Among personality traits, impulsivity is consistently associated with excessive gambling (Chóliz, Marcos & Lázaro-Mateo, 2019; Secades-Villa, Martínez-Loredo, Grande-Gosende & Fernández-Hermida, 2016; Vitaro, Arseneault & Tremblay, 1999; Weidberg et al., 2018).

Nowadays, gambling activities exist increasingly online, as online-based forms of gambling such as online casinos, online poker and online sports betting have gained in popularity (Lopez-Gonzalez & Griffiths, 2018; Moreau, Chabrol & Chauchard, 2016; Salonen et al., 2019). Accordingly, problems caused by online gambling are an increasing concern (Edgren, Castrén, Alho & Salonen, 2017; Gainsbury et al., 2015; Hing, Russell & Browne, 2017; Moreau et al., 2016). Compared to slow-paced games such as lotteries, online gambling has features that make it more addictive (Chóliz, 2016), and the online environment also provides more diverse gambling

opportunities (Gainsbury et al., 2015). Online gambling is typically very fast-paced by nature, making it tempting and easy to spend more and more money when chasing the winnings and jackpots and trying to win back monetary losses. Online forms of gambling typically encourage rapid decisions and judgments without deliberate consideration of one's actions and consequences. Following the typology of Kahneman (2011), fast-paced characteristics of online gambling are prone to activate intuitive and fast System 1 thinking that is characterized by rapid decision making and susceptibility to biased reasoning, compared to slower and more analytical System 2 thinking (see also d'Astous & Di Gaspero, 2015). Also, portable electronic devices such as mobile phones make online gambling activities constantly accessible, without the limitations of time or space.

In addition to gambling sites, gambling advertising is highly visible in the Internet and on social media, making it likely for average social media users to be exposed to gambling content. Gambling ads are often flashy and colorful pop-up ads and email spam messages. Ads typically portray gambling as a glamorous and exciting lifestyle, underlining the chance of winning big amounts of money and getting rich easily. Advertising may normalize gambling and make it appear as a harmless activity, exposing people to one-sided and misleading information. Young people in particular are a vulnerable group for online gambling advertising, and there is evidence that exposure to gambling advertising is a risk factor for developing gambling habits at young age (Clemens et al., 2017). In addition, online gambling messages and gambling ads may be particularly alluring for young individuals who are already involved in excessive gambling and have established gambling habits (Binde, 2014; Derevensky et al., 2010).

2.2 Gambling among youth: Risks and concerns

Although gambling and gambling problems occur in different age groups from childhood to old age (Welte et al., 2011), this dissertation focuses on youth gambling and related behaviors. Definitions of youth and its age range vary in different sources. Here, I define youth as 13- to 29-year-old adolescents and emerging adults. This is a meaningful demarcation given that gambling activities often start at adolescence, and gambling problems most commonly occur in emerging and young adulthood (Derevensky et al., 2019; Hing et al., 2016; Salonen & Raisamo, 2015). Youth are a group vulnerable to developing gambling problems, and, as active online

users, likely to be exposed to online gambling content. Thus, more knowledge is needed on the role of emerging gambling opportunities and their social underpinnings in youth gambling and problem gambling development.

Even though gambling is a prohibited activity for underage individuals in most countries (minimum ages vary from 18 to 21), extended gambling opportunities and poor supervision have made gambling activities a part of young people's life today all around the world (Delfabbro et al., 2016; Elton-Marshall et al., 2016; Floros, 2018; Volberg et al., 2010). Typically, gambling activities start at the age of 16 (Salonen & Raisamo, 2015). According to a study by Molinaro et al. (2018) covering 33 European countries, past-year gambling prevalence among European adolescents aged 16 was 22.6%. Popular gambling types among youth include lotteries, scratch cards, card games and slot machines (Calado et al., 2017). Even children as young as 8 years old have engaged in gambling activities and display gambling-related intentions (Pitt, Thomas, Bestman, Daube & Derevensky, 2017). Moreover, online forms of gambling have increased in popularity among adolescents and young adults (Floros, 2018), and mobile gambling poses an increased risk for adolescents (Zhao, Marchica, Derevensky & Ivoska, 2018). Age requirements to access online gambling sites are often easily bypassed, making online gambling accessible to underage individuals (Griffiths & Parke, 2010). In social media, there are also games that simulate gambling but do not necessarily require the use of real money (Kim et al., 2017; King, Delfabbro, Kaptsis & Zwaans, 2014; Reynolds, 2019). These kinds of gambling-like games may teach mechanisms of gambling to children and underage individuals, as well as promote positive gambling attitudes and intentions (King et al., 2014).

In tandem with the increase in youth gambling, youth problem gambling is a growing concern worldwide. Approximately up to 12.3% of young people worldwide meet the criteria for problem gambling (Calado et al., 2017). Gambling problems are most common among 18- to 24-year-old individuals (Hing et al., 2016; Salonen & Raisamo, 2015). Underage gambling is associated with substance use, such as alcohol and tobacco consumption (Molinaro et al., 2018). Research has shown that young problem gamblers may not be able to detect their gambling as problematic (Splevins, Mireskandari, Clayton & Blaszczynski, 2010) or be aware of various help services (Gainsbury et al., 2014). Additionally, parents and teachers are often unaware of adolescents' gambling behavior and its potentially harmful consequences, perceiving it also less harmful compared to other risky behaviors such as alcohol and tobacco consumption (Campbell, Derevensky, Meerkamper & Cutajar, 2011; Castrén et al., 2017; Derevensky, St-Pierre, Temcheff & Gupta, 2014).

Adolescence and emerging adulthood are developmental phases that make youth a group that is especially at risk of developing gambling problems. Due to age-specific brain developmental phases, adolescence is characterized by increased risk-taking and novelty-seeking behaviors (Spear, 2000). These neurodevelopmental processes are known to increase impulsive behavior in adolescence, which makes adolescents a vulnerable group to addictive behaviors such as excessive gambling (Chambers & Potenza, 2003). Indeed, impulsivity is known to be a significant risk factor for gambling problems, particularly in adolescence (Chóliz et al., 2019; Secades-Villa et al., 2016; Vitaro et al., 1999). Thus, trying out gambling and other risk-taking activities can be particularly tempting for young people. In addition, economic skills are not developed at young age. This, together with impulsivity and always-available gambling opportunities, may lead to poor financial decisions and cumulative risks. At a young age, excessive gambling can be funded by expensive short-term loans and consumer credit that are easily available to young people; further, this may lead to severe financial problems and psychological distress with long-lasting harmful consequences (Oksanen et al., 2018). Young problem gamblers may also steal money or use family members' IDs and bank account details to finance their gambling (Lind & Kääriäinen, 2018).

In addition to biological and neurological developmental phases, another important aspect of young people's gambling behavior is a social one: the role of peer influence and belonging to peer groups. In adolescence, peers start to play an important role in everyday interactions and represent a source of support and models of behavior, while the time spent with parents typically decreases (Steinberg & Morris, 2001). Meaningful peer groups are central for well-being and beneficial development, and peers are also known to significantly influence initiation of risky behaviors in adolescence (Gardner & Steinberg, 2005; Maxwell, 2002). Young problem gamblers often replace their existing relationships with gambling-related associates, as well (Blinn-Pike et al., 2010). Although peer relationships are preferred by youths in adolescence and emerging adulthood, parental support and proper monitoring in parental practices are crucial to prevent youth gambling problems (Vachon, Vitaro, Wanner & Tremblay, 2004). However, children whose parents are engaged in problematic gambling have an increased risk of developing gambling habits and related problems in later life (Buth, Wurst, Thon, Lahusen & Kalke, 2017; Vachon et al., 2004).

Adolescence and young adulthood are also important developmental phases in terms of self-exploration and identity construction, which may manifest in trying out different activities and engaging in risky behaviors (Steinberg & Morris, 2001). At

this developmental phase, many harmful behavioral patterns can be adopted (Derevensky et al., 2019). Nowadays, identity work and self-presentation essentially take place in online contexts such as social media through virtual communication (Boyd, 2014). Thus, peer relations and their role in youth risk behavior must be considered in new kinds of contexts.

2.3 The convergence of gambling and digital gaming

Gambling and gaming have traditionally been perceived as distinct activities. Whereas gambling refers to betting and wagering mechanisms with real money involvement and uncertain outcomes, gaming in its traditional forms does not inherently involve real money use or financial risks (King et al., 2015; King & Delfabbro, 2020). In this dissertation, I use the term "digital gaming" to cover games played on electronic devices such as computers, mobile phones or game consoles. Recently, the line between gambling and gaming has blurred, mostly due to modern revenue models and gambling-like characteristics adopted by digital games (King & Delfabbro, 2020; Macey & Hamari, 2019). These emerging forms of gambling in digital games have also become visible and accessible to young people and even children who are actively engaged in different gaming activities (Elton-Marshall et al., 2016). There is an ongoing debate in jurisprudence whether some monetized gaming features should be considered forms of gambling, and more research is needed to gain understanding of these behaviors and their overlapping characteristics (Griffiths, 2018; King & Delfabbro, 2020).

Digital games increasingly include monetary features such as microtransactions. Microtransactions (i.e., purchasing virtual in-game items with micropayments) have become a popular monetization mechanism in online games, particularly in free-to-play games. Free-to-play is a business model that does not require monetary charges to download and play a particular game; instead, the free-to-play business model makes money with in-game advertisements, and nowadays also increasingly by encouraging and providing opportunities to buy different virtual items and upgrades during gameplay (see e.g., Alha, Koskinen, Paavilainen, Hamari & Kinnunen, 2014). These monetary opportunities are often made very visible. They make it attractive for a player to obtain a more pleasing and enhanced gaming experience. Without the player investing money, the gaming experience often remains limited or slow. Monetary features are typically designed to bring instant gratification to a player, which may lead to poor judgment and hasty decisions in money consumption. These

alluring monetary opportunities and their instant rewards may reinforce intuitive and fast thinking that is characterized by rapid decisions and a lack of deliberate consideration (see Kahneman, 2011).

Virtual items that are paid for with real money pose risks particularly for young gamers, who are active in purchasing virtual items (Cai, Wohn & Freeman, 2019). Purchasing virtual items such as cosmetic features (i.e. "skins") can be a self-presentational act to enhance a desired impression of self to others (Cai et al., 2019; Hamari & Keronen, 2017). In addition, virtual items in games can also be gambled with and externally traded, which is most typically done with cosmetic items (i.e. skin gambling, see e.g. Macey & Hamari, 2019). Young players are involved in skin gambling activities, and skin gambling is a concern particularly in terms of underage individuals (Greer, Rockloff, Browne, Hing & King, 2019).

A noteworthy gambling-like mechanism in digital games that has aroused much discussion and criticism among scholars is "loot boxes." Loot boxes are virtual containers, kinds of mystery boxes, that contain randomized virtual items of different value, such as cosmetic skins or useful equipment (Rockloff et al., 2020). Loot boxes are an example of the random reward mechanisms utilized in digital games (Nielsen & Grabarczyk, 2019). The trick in loot boxes is that the player does not know what is inside the box or how valuable the items are prior to purchase. Also, highly valuable items are rarer than items with less value. Gaining items of greater rarity and value is more rewarding and motivating to a player, similar to the rewarding mechanism of high monetary winnings in gambling (Larche, Chini, Lee, Dixon & Fernandez, 2019). Loot boxes can sometimes be earned during a game as a reward, and thus, purchasing them does not always require using real money (Rockloff et al., 2020). However, loot box purchasing is often made visible and attractive to players, as players will gain instant rewards and faster game progress from them.

Due to their many similarities, loot boxes are often considered a form of gambling, even among gamers (Brooks & Clark, 2019). Some countries, such as Belgium and the Netherlands, have recently banned paid loot boxes as illegal forms of gambling (see King & Delfabbro, 2020). However, since gambling laws and definitions of gambling differ between countries, there are ongoing jurisprudential debates in various countries whether loot boxes constitute a form of gambling (Griffiths, 2018; King & Delfabbro, 2020). Generally, loot boxes share features with gambling when real money is needed to buy a loot box and the player does not know what is inside the loot box prior to paying. However, some definitions of gambling state that items collected from the loot box should have real monetary value in order

to qualify as gambling (Griffiths, 2018). For example, the UK Gambling Commission (2017) has stated that loot boxes do not represent gambling since the items have no monetary value outside the game (see also Griffiths, 2018). However, as many researchers have pointed out, many websites allow players to trade their in-game items and virtual currency to receive real money and vice versa, even if this is not made possible inside the game itself (Griffiths, 2018; Macey & Hamari, 2019).

Even if the definition of gambling is not always properly met in the characteristics of loot boxes, adolescents and young adults may be particularly vulnerable to the risks of loot box behavior (Rockloff et al., 2020). Young players, particularly males, are actively engaged in loot box spending (Kristiansen & Severin, 2020), and spending on loot boxes is associated with excessive gambling (Brooks & Clark, 2019; Li et al., 2019; Kristiansen & Severin, 2020; Rockloff et al., 2020; von Meduna et al., 2020; Zendle & Cairns, 2019). This might indicate that loot boxes are a gateway to problem gambling behaviors (Kim et al., 2015; Zendle & Cairns, 2019), but it is also possible that those who are already engaged in excessive gambling find loot boxes attractive due to their gambling-like characteristics (Zendle & Cairns, 2019). According to a recent review by Delfabbro and King (2020), the research evidence supporting a "gateway hypothesis" remains relatively weak; rather, it seems that loot boxes and other gambling-like mechanisms of digital games attract gamblers due to their mechanisms' similarity to gambling. Thus, loot boxes may be particularly attractive for young gamblers and pose an increased risk of maintenance and reinforcement of excessive gambling habits.

Social media platforms and mobile applications also increasingly include social casino games that simulate traditional gambling, such as roulette, slot machines or poker (Elton-Marshall et al., 2016; King & Delfabbro, 2020). These games are typically free to play, but often encourage players to engage in microtransactions, such as buying virtual items (Kim et al., 2017; Reynolds, 2019). These games can be played together with online friends, and they provide opportunities to connect and interact with other players from all over the world (Reynolds, 2019). Due to their high popularity and visibility, social casino games expose social media users to gambling content and attract new players to engage in gambling-like activities. There are also concerns that social casino games may be a gateway to gambling. A study by Kim et al. (2015) found that among social casino gamers, those who engaged in microtransactions were eight times more likely to migrate to online gambling compared to gamers who did not utilize microtransactions. Social casino games and their gambling-like features may be particularly risky for youth, given that social casino games are also accessible to underage individuals who are not legally able to

gamble (Reynolds, 2019). Due to their gambling-like features, they may teach gambling mechanisms to children and increase the likelihood of transitioning into gambling at an older age.

Yet another emerging form of gambling is electronic sports (e-Sports), that is, competitive video gaming broadcasted via the Internet (Hamari & Sjöblom, 2017; Macey & Hamari, 2019). E-Sports started to gain noteworthy visibility and popularity in the 2010s, and e-Sports betting has increased in popularity (Greer et al., 2019). E-Sports consumption has also been found to be associated with increased gambling involvement (Greer et al., 2019; Macey & Hamari, 2018).

Recently, there has been an ongoing discussion on whether problematic gaming should qualify as a clinical diagnosis. In the ICD-11, "gaming disorder" is included and classified under addictive behaviors, characterized as gaming behavior (including digital gaming and video gaming) with impaired control over gaming, prioritizing gaming over other interests and activities, and continuation of gaming behavior despite negative consequences (WHO, 2019b). In the DSM-5, "gaming disorder" is recognized as a condition that needs further research. The topic is controversial and has aroused a lot of criticism among scholars, mainly due to problems in operationalization and the small research base (Aarseth et al., 2017). In addition, problematic gaming often co-occurs with other problems such as anxiety and depression (Griffiths, Király, Pontes & Demetrovics, 2015). Thus, excessive involvement in gaming can be a form of escapism and a symptom of underlying problems. Furthermore, even though gaming may take lot of time and effort, it does not automatically cause problems to an individual. Indeed, the line between a hobby and an addiction can be difficult to define.

Even though "gaming disorder" as defined in psychiatric pathology is a controversial concept, excessive involvement in gaming can still cause significant harm, particularly to an individual. Following Orford's (2001) typology of excessive appetites, I use the term excessive gaming when referring to problematic and potentially addictive forms of gaming that involve strong attachment, high costs and conflicting motives and behavior concerning gaming. Because the focus of this dissertation is on gambling and gambling-like behaviors, I am mostly interested in monetization mechanisms of gaming as a factor in excessive gaming. Of course, excessive money consumption in terms of virtual in-game purchases such as loot boxes does not necessarily mean that it is the gaming activity that is problematic per se, but rather, it might indicate the existence of a gambling problem. It can be argued that modern gambling-like characteristics in digital games attract gamblers and problem gamblers due their similarities with gambling and could thus pose risks for

reinforcing excessive gambling habits (Delfabbro & King, 2020). Next, I will focus on underlying social mechanisms that might influence gambling and related forms of expenditure.

2.4 Social element of gambling and gaming: virtual communities of consumption

Humans have a universal need to belong and to form meaningful social contacts and connections with others (Baumeister & Leary, 1995; Cacioppo, Grippo, London, Goossens & Cacioppo, 2015; Deci & Ryan, 2000). Vital social relationships are among the factors most important to well-being, while sense of loneliness and lack of meaningful contacts have been associated with difficulties such as mental and physical health problems (Cacioppo et al., 2015) and even premature death (Holt-Lunstad, Smith, Baker, Harris & Stephenson, 2015). Loneliness occurs throughout the life span, but its prevalence and effects are particularly central in late adolescence and early adulthood (Qualter et al., 2015). In adolescence, the role of friends and other peer groups increases in everyday life and interactions (Steinberg & Morris, 2001). Because loneliness is an adverse emotional state, individuals suffering from loneliness are typically motivated to reconnect with people to overcome it (Qualter et al., 2015).

Loneliness is an ambiguous concept and has various dimensions. Generally, loneliness can be characterized as a perceived deficiency in social relationships (Perlman & Peplau, 1981) and a subjective emotional experience of being isolated or disconnected from others (Holt-Lunstad et al., 2015). Weiss (1973) distinguished loneliness into social loneliness and emotional loneliness: Social loneliness refers to a lack of social integration and connections, while emotional loneliness describes a lack of attachment in close relationships. Thus, an individual can experience loneliness despite having a number of social connections. This can be particularly true among individuals suffering from mental illnesses, as sense of loneliness can derive from a sense of being misunderstood or disapproved of among close friends or family. Additionally, people often try to hide addictive behaviors such as excessive gambling from people close to them (Orford, 2010), which can also contribute to feelings of loneliness and being alone with one's problems. These kinds of negative experiences can make it tempting to seek social contacts and belonging from an online environment.

Internet and social media have facilitated opportunities to find social contacts and to network with other people, free of offline-world restrictions such as geographical location. Indeed, the ease of interacting and finding others who share similar interests is one of the reasons social media has become so popular in people's everyday lives. Interactional possibilities provided by Internet access might be particularly central for individuals who have difficulties in everyday social interaction, such as those who suffer from social anxiety, extreme shyness or loneliness (Snyder & Newman, 2019).

In this dissertation, I focus on *virtual communities* (i.e., online communities) as a context in which gamblers and gamers can interact and form meaningful networks with others around their mutual gambling or gaming interests and contribute to a shared social identity. There is no universal definition of virtual communities; rather, the term has been used with many kinds of definitions to refer to interactions and content sharing between individuals taking place online, from wider online groups to more meaningful communities (for a review, see Malinen, 2015). Virtual communities can be approached more generally as platforms that provide interactional opportunities, but my stance on virtual communities is more social psychological. I argue that while virtual communities might exist on various different online platforms, virtual communities provide means to develop social and emotional meaning and sense of belonging to a community via a shared social identity (Haythornthwaite, 2007; Wellman, Boase & Chen, 2002). Thus, I approach virtual communities as social groups where members share a common collective perception of their belongingness (Turner, 1982). As such, virtual communities can become psychologically real and meaningful to their members, and actively engaging in online interactions reinforces a sense of community and shared social identity (Haase, Wellman, Witte & Hampton, 2002; Postmes et al., 2000). I follow Preece's (2000) definition of virtual communities, which emphasizes interacting around shared purpose, interests and goals, as well as social norms and policies that guide the interaction. By these definitions, notable examples of virtual gambling and gaming communities are discussion forums and in-game communities (e.g., team playing in video games) that provide a meaningful context and tools to create communities around shared interests and contribute to a sense of shared group identity of "us" (e.g., Guegan, Moliner & Buisine, 2015; Zhong, 2011).

Virtual community research originates from the 1990s and early 2000s (Baym, 2000; Rheingold, 1993; Wellman, 1997; Wellman et al., 2002) when the Internet transitioned toward a user-oriented direction, beginning to provide tools for user-generated content, collaboration and interaction between users. This technological

leap, also referred to as "Web 2.0," fundamentally changed the online experience and created a natural pathway for the evolution of social media (Kaplan & Haenlein, 2010). Over the past few decades, virtual communities have become more diverse due to rapid development of technology and social media services, but the general characteristics and social underpinnings of virtual communities have remained quite similar. In particular, information exchange and social needs are acknowledged as some of the key reasons to participate in virtual communities (Bradford, Grier & Henderson, 2017; Dholakia, Bagozzi & Pearo, 2004; Ridings & Gefen, 2004; Rodgers & Chen, 2005). However, underlying reasons to participate in virtual communities can also depend on the type and focus of the community (Malinen, 2015).

Virtual communities have different goals and functions depending on their topic. Communities can unite people around very specific and narrow topics and make it possible to find others who share marginal interests or rare conditions that do not get a positive response in offline relationships. To mention just a few, there are virtual communities dedicated to fandom (Baym, 2000), brands and products (Snyder & Newman, 2019) and diseases (Rodgers & Chen, 2005). Some communities are more harmful by their nature, such as communities with a deep interest in school shootings (Oksanen, Hawdon & Räsänen, 2014; Raitanen & Oksanen, 2018), eating disorders (Csipke & Horne, 2007; Oksanen, Garcia & Räsänen, 2016), self-harm or suicidal ideation (Dyson et al., 2016). Mutual to all these communities is that they unite similarly minded individuals and are grounded on norms that guide the interactions. For a new member, becoming an accepted and eligible member of the community requires adherence to its norms and rules, such as interactional characteristics and unique community language (Haythornthwaite, 2007). Virtual communities also provide an important context for self-presentation, and individuals tend to modify their online behavior and appearance in accordance with community requirements and norms (Schwämmlein & Wodzicki, 2012).

In terms of gambling and monetary gaming, virtual communities are essentially communities of consumption (see Kozinets, 1999). Kozinets (1999, p. 254) defines virtual communities of consumption as "*affiliative groups whose online interactions are based upon shared enthusiasm for, and knowledge of, a specific consumption activity or related group of activities.*" This definition can be applied to both gambling and monetary gaming communities. In gambling, consumption activity is inherently present in monetary betting and wagering, and gambling communities can be utilized to discuss benefits or harms related to gambling expenditure. In gaming communities, consumption can be related to recommending and buying suitable games, but also buying in-game

virtual add-ons and items such as equipment and loot boxes to enhance the gaming experience and success. Indeed, it can be argued that the modern revenue model of microtransactions has made gaming communities increasingly consumption-related.

Online gambling is typically isolated activity by nature, as an online gambler plays against the machine or against some other online player, physically alone. Only some forms of online gambling, such as online poker, might provide opportunities to interact with other players during the game (Smith, Rousu & Dion, 2012). However, the Internet and social media provide endless opportunities to form virtual gambling communities and social networks with other gamblers. Gambling-related online networks and communities take place on social media platforms such as Facebook, Reddit and various discussion forums, where gamblers can interact with other gamblers around shared interests. These communities can be important for gamblers who wish to share their gambling experiences and discuss gambling with other people interested in the topic.

The role of virtual networks and communities can become particularly central when gambling takes excessive forms and causes problems to a gambler. Problem gamblers often experience loneliness (Edgren, Castrén, Jokela & Salonen, 2016; Gill & McQuade, 2012), which might make it tempting to find social contacts online. Excessive gambling, alongside other addictive behaviors, is also a publicly stigmatized behavior, and stigma plays an important role in reluctance to seek professional help and treatment (Baxter, Salmon, Dufresne, Carasco-Lee & Matheson, 2016; Gainsbury et al., 2014; Hing et al., 2014; Suurvali et al., 2009). The anonymous nature of online platforms makes it easier to talk about one's problems and emotions without the fear of stigma and rejection (Joinson, 2001). Through the Internet, it is easy to find others who suffer or have suffered from similar problems and who can provide meaningful support and understanding. Thus, virtual communities can offer a seemingly safe environment to discuss gambling-related issues. Furthermore, online contacts can be used to compensate for a perceived deficiency in social relationships in the offline context.

Whereas gambling is typically a lonely activity, in many forms of digital gaming, the social aspect is a central part of the gaming experience and even one of the main motivations to play (Seay, Jerome, Lee & Kraut, 2004). This is true particularly in massively multiplayer online role-playing games (MMORPGs), which essentially include socializing, teamwork and collaboration with other players (Duman & Ozkara, 2019; Zhong, 2011). MMORPGs are an example of massively multiplayer online games (MMOs) that are characterized by a large number of players playing simultaneously. In MMORPGs, gamers typically form and join "guilds" that are

long-lasting game communities where players cooperate and their contributions are interdependent (Guegan et al., 2015; Zhong, 2011). Interaction between guild members is typically in-game communication, but external platforms can also be utilized to, for example, coordinate and schedule gaming activities and exchange support and advice between guild members (Seay et al., 2004).

Former research on the role of virtual communities has shown that some virtual communities are able to provide psychosocial benefits for well-being, as social support from online peers helps in coping with difficulties such as severe illnesses and diseases (Naslund, Aschbrenner, Marsch & Bartels, 2016; Rodgers & Chen, 2005; Setoyama, Yamazaki & Namayama, 2011). Virtual communities can also be helpful in overcoming problematic behaviors (McNamara & Parsons, 2016) and resisting stigma associated with such behaviors (Crabtree, Haslam, Postmes & Haslam, 2010). In virtual environments, anonymity facilitates self-disclosure and talking about difficult emotions (Joinson, 2001), which can be particularly beneficial for well-being and coping with various difficulties. For excessive gamblers and gamers, virtual communities can bring important psychosocial benefits and social capital, and they might be attractive particularly for lonely individuals (Matook, Cummings & Bala, 2015; Pittman, 2015). In video games, playing and connecting with other online players can bring many benefits in terms of players' social capital and well-being. For example, in MMORPGs, identifying with a group of other players and sharing a game-related identity provides social capital and can also have positive implications for social competence and self-esteem (Kaye, Kowert & Quinn, 2017).

Participation in virtual communities also involves risks, particularly if community discussions are grounded on promoting harmful ideologies and behaviors (e.g., Csipke & Horne, 2007; Oksanen et al., 2016; Raitanen & Oksanen, 2018). One of the main challenges, particularly in health-related communities, is the risk of misleading information (Naslund et al., 2016; Syed-Abdul et al., 2013). Because anyone can contribute to dissemination of the content on social media, shared information could be incorrect or even harmful. In addition, social media and virtual communities are places to share personal experiences, and this experienced-based information could even be preferred over fact-based information (Syed-Abdul et al., 2013). In terms of gambling, strongly identifying with and attaching to virtual gambling communities can serve as an important factor in developing and reinforcing gambling-related attitudes and behavior.

Even though support derived from virtual communities can benefit well-being by providing means to fulfill the basic human need to belong (Baumeister & Leary,

1995; Deci & Ryan, 2000), there is research evidence that online interaction is not necessarily enough to fulfill these fundamental social needs and to overcome loneliness. Instead, feelings of loneliness might even increase due to high levels of Internet use and online interactions (Nowland, Necka & Cacioppo, 2018; Yao & Zhong, 2014). Meaningful offline relationships provide a buffer from many problems and harms faced on the Internet (Kaakinen, Keipi, Räsänen & Oksanen, 2018; Minkkinen et al., 2015). Social support derived from offline peer groups seems to protect from developing problematic gambling habits, whereas identifying with online networks can have the opposite effect (Savolainen et al., 2019). However, because virtual communities and social media provide central identification contexts nowadays and can contribute to risky behaviors, it is important to examine the social processes taking place online in more depth.

3 SOCIAL PROCESSES ONLINE

3.1 A social identity perspective on virtual communities

One traditional social psychological approach to group processes is the social identity approach, which is an umbrella term for social identity theory (SIT) and self-categorization theory (SCT). Henri Tajfel and John Turner developed these theories in the 1970s and 1980s (e.g., Tajfel, 1970; Tajfel, Billig, Bundy & Flament, 1971; Tajfel & Turner, 1979; Turner, 1982; Turner, 1985). The social identity approach is an influential theory scrutinizing group behavior in and between groups, and it has expanded understanding of various group phenomena and their underpinnings, including social influence, social norms and prejudice (Hornsey, 2008; Turner & Reynolds, 2010). According to the social identity approach, the self comprises various social identities based on meaningful and desired group memberships. The underlying assumption is that individuals strive to achieve and maintain positive self-image, which is manifested in social categorization and favorable social comparison, where the in-group is perceived as positively differentiated from out-groups (Tajfel & Turner, 1979). Thus, an individual identity is extended by social identities provided by meaningful group memberships. From this point of view, groups (both offline and online) are not merely a collection of individuals, but rather, they can be meaningful in defining people's identities (Spears, Postmes, Lea & Wolbert, 2002).

A starting point for the development of SIT was provided by minimal group experiments conducted in the early 1970s (Tajfel, 1970; Tajfel et al., 1971). These experiments were designed to study under what conditions individuals start to favor their in-groups and discriminate against other groups. In the experiments, the given criteria as a basis for group division to in-groups and out-groups were minimal and even arbitrary. The findings of these minimal group experiments revealed that individuals tended to prefer their in-group even in situations where participants did not know each other beforehand or interact with other participants during the experiment. Instead, only a minimal and even arbitrary clue of group membership was sufficient to make individuals prefer their own in-group members over others. For example, in-group members were consistently rewarded more money than out-group members in these minimal group settings. Accordingly, SIT suggests that

people have a tendency to identify with meaningful in-groups and value these in-groups over perceived out-groups, even in minimal settings, in order to maintain a positive self-image (Tajfel et al., 1971). The minimal group paradigm has flourished ever since, and these kinds of minimal group experiments have been conducted to understand group processes in various contexts and phenomena.

Turner and colleagues developed SCT in the 1980s to elaborate and extend SIT (Turner, 1985; Turner, Oakes, Haslam & McGarty, 1994). Whereas SIT emphasizes cognitive processes in intergroup relations, SCT focuses more on intragroup processes, such as an individual's perception of self and other people as members of different groups. The concept of depersonalization is central in SCT, referring to a situation in which individuals start to perceive themselves and other people as interchangeable group members in terms of contextually relevant group memberships and group prototypes, rather than as unique individuals (Turner, 1985; Turner et al., 1994).

In online interaction, social cues are not typically visible due to relatively high anonymity and lack of social co-presence, which has an impact on emerging group processes. The effects of reduced cues and social anonymity in computer-mediated communication were already acknowledged and studied in the 1980s (Kiesler, Siegel & McGuire, 1984; Sproull & Kiesler, 1986). A theoretical model derived from the social identity approach to examine effects such as anonymity and reduced cues in group behavior is the social identity model of deindividuation effects (SIDE). This social psychological model was developed by Reicher and colleagues in the 1990s to emphasize social underpinnings in crowd situations and anonymous group behavior, such as interactions taking place on the Internet (Postmes, Spears & Lea, 1998; Reicher, Spears & Postmes, 1995). The SIDE model criticized earlier deindividuation theories (e.g., Zimbardo, 1969) that perceived anonymity and immersion in group situations as leading to a loss of individual self and decreased control over one's actions, namely antisocial behavior (Reicher et al., 1995). The SIDE model suggests that visual anonymity in online interaction reinforces group processes by making contextually relevant group identities salient, that is, by shifting from personal identities to social identities (Lea, Spears & de Groot, 2001; Reicher et al., 1995). In other words, individuals start to perceive themselves and others in terms of their situationally relevant group memberships and not as unique individuals. Accordingly, this process does not automatically lead to deindividuation in the sense of a loss of self-awareness and self-control as was suggested in earlier deindividuation theories. Rather, this process can be seen to represent *depersonalization*, that is, the perceptual redefinition of self from individual to social identities, where individuals become

more sensitive and susceptible to contextually relevant group norms (Lea et al., 2001; Postmes et al., 1998).

The SIDE model has been widely applied to computer-mediated communication, which is inherently characterized by relatively high anonymity and reduced cues (Chung, 2018; Postmes et al., 1998; Postmes, Spears & Lea, 2002). Even though SIDE was originally developed at a time when online communication was limited to simple text-based platforms, its theoretical principles provide a useful framework to examine social processes also within emerged technological platforms, such as social networking sites and virtual communities (Spears & Postmes, 2015). Nowadays, the level of anonymity varies in online platforms from full anonymity and pseudonyms to more identifying clues and even face-to-face interaction via video connection (Keipi & Oksanen, 2014; Keipi, 2018). In general, online interaction in virtual communities such as discussion forums is typically characterized by reduced visual cues and individuating information such as physical characteristics of others. In game communities such as those taking place in MMORPGs, gamers often interact with other players via text or voice communication using pseudonyms such as usernames or avatars. Thus, aspects of pseudonymity and visual anonymity are centrally present in online communication. From the SIDE perspective, anonymity is a meaningful concept when looking at *online representation* of individuals and groups, that is, how group members are visually presented and how available social cues can reinforce or decrease a sense of shared social identity (Spears & Postmes, 2015).

Virtual groups can be psychologically real and meaningful to their members and contribute to a sense of shared identity despite members not being physically co-present (Lea et al., 2001; Postmes, Spears & Lea, 2000; Spears et al., 2002). This is in line with the minimal group paradigm, stating that in-groups are valued even without strong group membership indicators such as physical co-location or face-to-face interaction (Tajfel et al., 1971). In fact, as the SIDE model indicates, virtual communication can even reinforce social processes. Visual anonymity and depersonalization reinforce the sense of "us" and emphasize the similarities within a group, as is also suggested in SCT (Postmes et al., 1998; Turner, 1985). As Turner (1982) argues, intragroup cohesion is more salient when group members are able to maintain stereotypic perception of intragroup similarities, while face-to-face interaction could even reduce group cohesion if members are exposed to information that challenges the perception of similarities between members. Accordingly, relatively anonymous virtual groups can be even more meaningful and influential to their members than face-to-face groups (Postmes et al., 1998; Postmes, Spears, Sakhel & de Groot, 2001).

In collective team playing in MMORPGs, anonymous settings and identifying with other gamers can further reinforce community commitment and a sense of shared identity, particularly in guild playing (Zhong, 2011). Indeed, players tend to identify strongly with their guilds, which also manifests in-group favoritism (Guegan et al., 2015). In relatively anonymous situations when there is a shared social identity and attachment to a group, group norms become more salient to group members, enhancing the effect of social influence (Postmes et al., 2001; see Chapter 3.2).

As active online users, young people tend to identify strongly with virtual communities and networks, and value them even over offline contacts (Lehdonvirta & Räsänen, 2011). Given that peers are an important source of support and influence for young people, the Internet provides a central context to interact with peers and form new social ties. Shared social identity in virtual communities also shapes and motivates user behavior. In MMORPGs, socialization with other players reinforces mutual social identities and motivates players' commitment and loyalty to a particular game (Liao, Pham, Cheng & Teng, 2020; Moon, Hossain, Sanders, Garrity & Jo, 2013). As discussed in the earlier chapter, virtual communities are grounded on mutual norms, interests and goals (Preece, 2000). Furthermore, adherence to contextually relevant community norms together with the relatively anonymous context contribute to a shared group identity (Lea et al., 2001; Postmes et al., 1998; Reicher et al., 1995). From a social identity perspective, it is the internalized group membership (i.e., shared social identity) that contributes to emerging group processes.

Shared social identity has been found to be beneficial in many fields of human behavior, such as overcoming an addiction, in both offline and online contexts. Meaningful social identity can provide protection for well-being (Jetten, Haslam, Haslam, Dingle & Jones, 2014). For example, online support groups aiming to get rid of problematic behaviors play an important role in successful recovery by promoting transition from an illness identity to a shared recovery-oriented identity (Best, Bliuc, Iqbal, Upton & Hodgkins, 2018; McNamara & Parsons, 2016). Visual anonymity also facilitates self-disclosure (Joinson, 2001). Thus, online communities and their shared identities hold great benefits for those suffering from addictions such as excessive gambling, as long as community norms and shared identity are oriented toward achieving healthier habits.

Despite the benefits of shared social identity in virtual communities, there are also risks involved. Shared identity could have detrimental consequences if the community and its norms are grounded on promoting harmful or excessive behavior (e.g., Oksanen et al., 2016; Raitanen & Oksanen, 2018). In situations when social

identification is strong, exposure to other's online comments could also shape behavior and attitudes in a harmful direction (Chung, 2018). Because shared social identity motivates and shapes user behavior, it is important to acknowledge virtual communities that can promote potentially risky behaviors.

A perceptional shift from individuals to group memberships and prototypes can also contribute to group polarization (Spears, Lea & Lee, 1990). Group polarization refers to a situation in which individual group members shift their opinions in a more extreme direction based on the in-group's shared opinion, resulting in more extreme conclusions and decisions in group discussion (Isenberg, 1986; Myers & Lamm, 1976). In terms of gambling, virtual gambling communities and networks dedicated to gambling can thus shift an individual's already existing positive attitudes in an even more positive direction and reinforce excessive gambling intentions, but of course, similarly, negative gambling attitudes can be reinforced in a favorable social environment and shift in a more negative direction. These kinds of processes emphasize the salience of shared social identity and contextually relevant group norms that can facilitate mechanisms of social influence.

3.2 Social norms and social influence online

As humans are inherently social animals, others' opinions matter. Individuals are prone to follow and trust others' evaluations and attitudes, particularly in situations where information comes from trusted in-group members (Abrams & Hogg, 1990). As was elaborated in the earlier chapter, the social identity approach suggests that in-groups are preferred even in minimal group settings (Tajfel et al., 1971). Furthermore, a process of depersonalization reinforces the role of social norms and group influence, particularly in a visually anonymous online environment (Postmes et al., 2001). Changes in individuals' opinions, behaviors or attitudes due to the influence of others is called social influence.

Social influence is a theoretical concept that is often divided into normative and informational influence, as originally proposed by Deutsch and Gerard (1955). Normative influence occurs when an individual conforms to others' perceived opinions, behaviors or values in order to fit in a group (Deutsch & Gerard, 1955; Kaplan & Miller, 1987). However, this shift does not demand an actual change in personal opinions but can be a result of compliance. Compliance refers to a type of conformity where an individual recognizes an urge to behave in a desired way to become accepted by a group (Cialdini & Trost, 1998). Typically, normative influence

is majority influence, where an individual conforms to the majority's stance under perceived social pressure. Normative influence is likely to occur in group situations where individuals value their in-group and contextually relevant group norms are salient (Hogg & Reid, 2006; Postmes, Spears & Lea, 1999).

Informational influence refers to circumstances in which an individual changes opinions based on their perception of others' actions. It occurs particularly in ambiguous situations where an individual relies on others' evaluations as evidence of reality (Deutsch & Gerard, 1955; Kaplan & Miller, 1987). Information coming from others can also modify or reinforce one's existing opinions or attitudes. Informational influence is closely related to Cialdini's (1984) concept of *social proof*. Social proof refers to situations in which an individual is unsure of the correct way to behave and perceives the behavior of others as a clue of correct or normative behavior. Normative and informational influence are not mutually exclusive; they often intertwine (Kaplan & Miller, 1987; Turner, 1982).

Aspects of social influence and conformity have been studied in classical social psychological experiments. In 1935, Muzafer Sherif conducted autokinetic experiments that demonstrated how individuals tend to trust their group members' evaluations in situations lacking a correct frame of reference, contributing to mutual and established group norms (Sherif, 1936). Sherif's experiments are an example of informational influence, where individuals trust and follow their group members' opinions in ambiguous situations.

In 1951, Solomon Asch conducted a famous experiment to see how social pressure affects individual judgment and conformity in a seemingly easy task, opposite to Sherif's (1936) autokinetic experiments that lacked correct answers. Asch's experiment revealed that individuals were prone to conform to the majority's opinion even when they personally disagreed with the majority's stance, illustrating normative social influence (Asch, 1951). Compliance with others' opinions through normative social influence occurs particularly in social situations in which an individual considers group membership important and wishes to be seen in a desirable light by group members (Hogg & Reid, 2006; Postmes et al., 1999). Thus, strong attachment to a group makes individuals susceptible to normative influence and conformity.

From a social identity viewpoint, distinction to separate concepts of normative and informational influence is not fully meaningful. According to Turner (1982), the central underlying mechanism of social influence is *social identification* that enhances the role of group norms as criterial attributes of a particular group membership. Thus, normative and informative influence are prone to intertwine in group-based

social influence (see also Spears, 2020). In addition, Postmes et al. (2001) criticize the assumption of many group theories that face-to-face interaction and identifiability of group members would strengthen the interpersonal bonds and the impact of social influence. Rather, there is strong evidence that anonymity enhances the effect of social influence, as long as a shared group identity is salient (Postmes et al., 1998; Postmes et al., 2001).

Mechanisms of social influence are not limited to offline interaction; virtual environments also provide a fruitful context for group processes such as social influence to emerge. Social media offers virtually endless tools and platforms to share user-generated content with other users. Users interact on social media by sharing content such as news, photos and updates of their daily lives. Because social media is characterized by an abundance of content and information available, social media users often tend to trust other users' opinions and view provided information as reliable, particularly when this information comes from similar people and meaningful in-group members (Flanagin, Hocevar & Samahito, 2014; Flanagin, 2017). In addition, social comparison takes place on social media, and exposed content can also affect one's self-evaluation and further actions (Vogel, Rose, Okdie, Eckles & Franz, 2015).

One of the central aspects of average social media platforms is the possibility to react to and comment on online content, as well as the visibility of other users' previous reactions and comments. Depending on the platform and its technological affordances, available reactions vary from "likes" and "dislikes" (e.g., "thumbs up" or "thumbs down" symbols) that signal users' approval and validation of the content, to more nuanced emotional expressions, such as symbols signaling anger, love, sadness or surprise. These features simplify interaction with and evaluation of the content, as users can quickly and efficiently state their instant reaction to the content. In addition to these general emotional reactions, commenting on online content is a central feature of social media platforms. Together, reactions and comments can be indicators of collective norms and further make users prone to follow these norms, particularly in desirable group situations.

Social media research has examined the effects of social influence and conformity on different social media platforms. For example, online content that has gathered lots of "likes" is more likely to gather even more likes compared to content that has gathered only a few likes (Sherman, Payton, Hernandez, Greenfield & Dapretto, 2016). Thus, similar reactions are likely to cumulate in an online environment. In addition to quantifiable reactions, textual comments have influential value. Winter, Brückner and Krämer (2015) found that argumentative comments were more

influential than quantifiable information such as amount of likes, particularly when the topic had personal relevance to an individual. Perception of others' comments also influences users' attitudes and intention to comment and share particular contents such as disinformation and fake news on social media (Colliander, 2019).

There is also strong evidence of the role of social influence in consumption-related virtual communities and in online word-of mouth communication related to the intention to purchase particular brands and products (Prendergast, Ko & Siu Yin, 2010; Shang, Wu & Sie, 2017; Wang, Yu & Wei, 2012). For example, other users' positive experiences in online shopping shared in virtual communities positively influence the online purchase decisions of other users (Lee, Shi, Cheung, Lim & Sia, 2011).

Because peers have a significant influence on young people's attitudes, youth might be particularly prone to peer influence in an online environment. Peer influence can also be harmful and contribute to risky behaviors, particularly when social identification is strong (Chung, 2018). According to a study of first-year college students by Boyle, LaBrie, Froidevaux and Witkovic (2016), exposure to alcohol-related content shared by peers on social media predicted students' later alcohol consumption.

In addition to peers, highly popular and influential persons such as social media influencers (e.g., popular video bloggers, or vloggers) are nowadays important models of behavior, particularly for young people. Research has shown that these influencers have an impact on, for example, luxury product consumption (Lee & Watkins, 2016) and children's unhealthy diet choices (Coates, Hardman, Halford, Christiansen & Boyland, 2019). In a recent study, Ladhari, Massa and Skandrani (2020) found that perceived homophily (i.e., similarity between the viewer and vlogger) and emotional attachment played a key role in vloggers' popularity and influence on viewers. These kinds of highly popular people can serve as role models for young people and, together with peer influence, make young people susceptible to imitate these behaviors. Thus, social media provides a fruitful context for mechanisms of social learning to take place by observing important others and collective norms.

Nowadays, social media is also a central place for self-presentation and identity work, particularly for youth (Boyd, 2014). Young people are active social media users and use various online platforms to express desired parts of their life and identity. Individuals tend to modify their social media behavior to be seen in a desirable light, thus controlling the impression that their imagined audience receives (Marwick & Boyd, 2011). Presentation of self on social media involves choices such as what kinds

of photos and updates to share with others and what kinds of content it is "cool" to publicly like and interact with. Peer comparison can create social pressure toward group conformity for individuals to be accepted by peers and seen in a desirable light (Chua & Chang, 2016). Thus, the self-presentational aspect also plays a role in mechanisms of social influence, deriving from perceived norms, peer behavior and peer comparison.

Following the distinction to normative and informational social influence, it can be argued that both of these processes take place in social media (Perfumi, Bagnoli, Caudek & Guazzini, 2019). Normative influence occurs when users conform to peers' perceived behavior and imagined expectations by sharing certain kinds of content and reacting to content in a similar manner. In particular, young people often have social pressure to be accepted by their peers, which leads toward conformity in youth behavior. However, informational influence may also take place particularly in a situation where the individual trusts the informants or does not have much information concerning the topic. In social media, perceived collective reactions such as the number of likes and other reactions that a certain content has gathered may act as "social proof" that pressures individuals to conform to this behavior, particularly in ambiguous situations where the user is dependent on others' actions (see Cialdini, 1984).

From a social identity viewpoint, social influence is more directly linked to social identification and shared social identity. Accordingly, normative and informative influence are prone to intertwine when individuals are strongly identified with their group (Turner, 1982; Spears, 2020). Thus, it can be argued that the role of social influence is particularly strong in virtual groups and communities where members share social identity. Moreover, people tend to perceive information shared by their in-group members as more credible and trustworthy (Flanagin et al., 2014), which further blurs the line between normative and informative influence.

User comments and experiences in virtual communities may be particularly central in modifying attitudes and behavior, such as consumption and purchase intentions (Lee et al., 2011; Prendergast et al., 2010; Shang et al., 2017; Wang et al., 2012). There is also evidence that in health behavior young social media users prefer experience-based information by peers over fact-based information by official health authorities (Syed-Abdul et al., 2013), which emphasizes the crucial role of peers in youth behavior and attitudes. This can be particularly risky if available information is one-sided, harmful or misleading.

It is clear that the online environment provides a fruitful place for different group processes to occur, and relative anonymity may even strengthen these group

processes. As the SIDE model suggests, conformity to contextually relevant group norms is reinforced in anonymous online platforms where social identities are salient, and therefore mechanisms of social influence are also reinforced (Postmes et al., 1998; Postmes et al., 2001). This can be risky particularly if networks are very homogenous and based on one-sided or misleading information. Next, I will take a closer look at homogenous online groups from a social psychological viewpoint.

3.3 Formation of online identity bubbles

Humans have a basic tendency to seek for and interact with like-minded people who share similar characteristics, such as interests, values and beliefs. This preference to interact with similar individuals is called homophily (McPherson, Smith-Lovin & Cook, 2001), and it is strikingly present in social media where people unite around shared interests and experiences (Bisgin, Agarwal & Xu, 2012; Choudhury, Sundaram, John, Seligmann & Kelliher, 2010). Indeed, social media has facilitated fulfilling the need for homophily by offering various tools to seek for and interact with like-minded individuals, networks and contents, based on individual preferences. Users have a freedom to choose which persons and accounts to follow in their social media stream and who to add as online friends. These choices naturally impact the selection of the content the user is exposed to in their social media stream. Also, users can choose which kinds of networks and online communities to participate in, and find others who share similar interests. As the Internet and social media contain an abundance of diverse content, personal preferences and content selectivity facilitate navigating in an online environment and make it more meaningful.

However, personal preferences are not the only factor that determine the content and contacts a user is exposed to. Instead, personal preferences and earlier online activity intertwine with online platforms' algorithmic filtering systems. Algorithms are a mathematical set of rules that filter online users' exposure to online content and determines what content becomes visible to users and in which order. Because of algorithms, online platforms are able to suggest certain content and contacts based on a user's earlier online activity and preferences, therefore personalizing the social media experience. Social media platforms such as Facebook, Instagram and Twitter, are increasingly based on algorithms. This means that a user does not encounter the disseminated content in chronological order, but rather, algorithms personalize the

experience by viewing most relevant content first. This naturally diminishes the diversity of the content the user is exposed to.

The phenomenon of social cliques and selective content exposure in the Internet, both of which are derived from personal preferences and algorithms, is referred to as online bubbles. In the earlier literature, online bubble phenomena and concerns of content selectivity have been referred to with terms such as *echo chambers* and *filter bubbles* (Geschke, Lorenz & Holtz, 2019; Pariser, 2011; Zollo et al., 2017). These conceptions and perspectives emphasize the structural side of the phenomena. However, little is known about how users themselves perceive online bubbles and involvement in them.

From a social psychological perspective, it is crucial to understand how social media users perceive and are related to their online networks. Nowadays, social media is a central platform to express and promote one's identity, particularly for young users. Like-minded groups may further reinforce these identities by sharing and validating them. A recent social psychological approach to investigate online bubble phenomena from a social psychological perspective is the Identity Bubble Reinforcement Model, or IBRM (Kaakinen et al., 2020; Keipi et al., 2017).

IBRM emphasizes users' own experience of online bubble involvement. Its starting point is identity-driven social media use, that is, people tend to seek for others who share and validate their identities in an online environment. IBRM is not limited to any specific online platform but more general perception of social media networks; this is meaningful since social media includes a diverse collection of different platforms. The model consists of three components: social identification, homophily and information bias. According to the IBRM, these three components reinforce each other and together contribute to the identity bubble reinforcement process (Kaakinen et al., 2020; Keipi et al., 2018).

The first component, social identification, is theoretically grounded in the social identity approach, emphasizing in-group attachment and the role of group identity. Individuals are prone to identify with meaningful groups and value their in-group over perceived out-groups, even in minimal settings (Tajfel, 1970; Tajfel et al., 1971). The point is that members of the social group (e.g., the virtual community) share a mutual perception of belongingness and social identification, that is, a shared social identity (Turner, 1982). In an online context, identifying with a group does not require physical co-presence of group members, but rather, the shared identity is typically developed under visually anonymous circumstances. Virtual groups can be very real for their members psychologically and reinforce group processes (e.g. Postmes et al., 2000; Spears et al., 2002).

Homophily, the second component of IBRM, refers to a basic human preference to seek for and interact with like-minded people (McPherson et al., 2001). In social media, this need is easy to fulfill, since users have a freedom to seek for desirable content and contacts, and join communities that are meaningful to one's interests and identities. Accordingly, user preferences and algorithms manifest homophily, as online platforms suggest content and contacts based on users' online networks and earlier activities.

Finally, information bias refers to relying on and trusting information provided by the in-group. In general, social media is increasingly used as an information source. This is not surprising given the amount of information available on the Internet, together with an easy 24/7 access to obtain this information. For example, in terms of health-related conditions, different information sources and types of information exist online, such as official information provided by health companies, research knowledge, self-help sites and users' own experiences. However, basically any online user can contribute to shared information. Thus, information sources can be questionable, and assessing the information's validity can be difficult. This is particularly concerning given that social media users tend to trust information coming from similar persons and meaningful in-group members (Flanagin et al., 2014; Flanagin, 2017; Ladhari et al., 2020). Sudau et al. (2014) found that the preferred information that can be gathered in online health communities included social media sources consisting of users' subjective opinions and experiences rather than scientific sources. When looking at health-related behavior such as mental disorders, misleading information and subjective experiences can be particularly harmful and even normalize dangerous behavior (Naslund et al., 2016; Syed-Abdul et al., 2013). Since a diversity of information is available, individuals must rapidly choose what kind of information is considered relevant in this information overload. In the IBRM, this selectivity that causes information bias is derived from meaningful in-groups, as group members trust the information provided by similar people (Keipi et al., 2017).

When considering the role of online identity bubbles in risky behaviors such as gambling, clearly there are further risks involved. When members of a virtual community strongly identify with that community and share a social identity, contextually relevant group norms become more salient and facilitate mechanisms of social influence (Postmes et al., 1998; Postmes et al., 2001). This is particularly worrying if community norms are grounded in harmful behaviors and misleading or one-sided information. Thus, involvement in online bubbles may reinforce harmful and destructive behaviors such as excessive gambling as they normalize such

behaviors. Naturally, of course, not all online bubbles are formed around harmful behavior. For example, bubbles that are grounded in hobbies or fan cultures are not necessarily harmful for individuals, even if disseminated information is one-sided. However, at the very least, involvement in online identity bubbles diminishes the variety of information available and may promote one-sided and misleading views of the phenomenon at hand. In addition, conforming to peers' activity may also lead to compulsive Internet use which can lead to further harms to wellbeing (Turel & Osatuyi, 2017).

From a social psychological viewpoint, community norms and values are central when looking at the impact of virtual communities and social influence to user behavior and attitudes. Preference to interact with similar people, together with algorithmic filtering systems, may lead to formation of online identity bubbles that further reinforce the impact of in-group identification and disseminated information. Given that young people are active online users, identify with online networks and value peer information, they may be particularly susceptible to mechanisms of peer influence in online environments. In gambling, this means that virtual gambling communities may play a key role in youth gambling attitudes and behavior. Identifying with other gamblers and sharing a mutual identity may normalize certain kinds of viewpoints and values concerning gambling such as excessive gambling behavior. Since peer feedback in virtual communities may reinforce already existing positive attitudes (Lee et al., 2011), peer influence in normalizing excessive gambling may be particularly risky for youth who are already interested in gambling.

Typically, young social media users engage with multiple online platforms and therefore may also belong to many online networks and virtual communities, which are important identification contexts. Together, these communities and networks might contribute to online identity bubbles. On the other hand, even active social media use does not necessarily indicate involvement in online identity bubbles, although compulsive Internet use is associated with the phenomenon (Kaakinen et al., 2020). IBRM is essentially based on cognitive evaluation of how an online user generally perceives their relation to online social networks and involvement in online cliques, in terms of level of identification, similarity with others and reliance on disseminated information (Kaakinen et al., 2020; Keipi et al., 2017). It is important to understand and acknowledge the online identity bubble phenomena when examining social norms in online spaces, particularly in risky behaviors such as excessive gambling. Additionally, the role of algorithmic systems in online platforms is important to understand, since engaging in online gambling activities is likely to lead to increased visibility of gambling content and related suggestions. Thus, in

these kinds of risky behaviors, identity-driven social media use, along with exposure to one-sided information and strong community attachment, certainly pose risks particularly for young individuals, who are prone to the effects of peer influence.

4 STUDY AIMS AND METHODS

The aim of this dissertation is to examine the role of virtual communities and social media behavior in gambling and gambling-like intentions and behaviors. The main focus is on gambling, but monetary gaming is also scrutinized due its resemblance to gambling. I have utilized social identity approach and related theories to understand social processes in virtual communities and social media that may contribute to gambling-related intentions and behaviors. The focus is on young people, that is, adolescents and emerging adults who are active online users and vulnerable to gambling problems.

Data of the included articles in this dissertation comprise systematic literature data and survey data. Systematic literature data was used to explore the role of virtual gambling and gaming communities in gambling and monetary gaming behaviors. Survey data was used to cross-sectionally and experimentally examine virtual gambling community participation and social media behavior, as well as associated factors. Data, methods and research questions of each article are summarized in Table 1.

Since three of the studies included in this dissertation utilize survey data from Finland, the United States, South Korea and Spain, I will briefly rationalize the choice of these countries. Young people in these countries use social media extensively and have constant Internet access (OECD, 2018). According to former research, these countries share similar features in terms of social media use (Gómez, Harris, Barreiro, Isorna, & Rial, 2017; Kaakinen et al., 2018; Keipi et al., 2017; Kim, Sohn, & Choi, 2011; Nielsen & Schrøder, 2014; Näsi et al., 2014). Thus, these countries provide a fruitful context to examine and compare habits and underlying mechanisms of social media use.

Despite similarities concerning technology use, these countries also have culturally distinct features and values. According to Hofstede's cultural dimensions, Finland and the United States are generally perceived as highly individualistic cultures, while South Korea is characterized as a collective culture (Hofstede, 1984; Hofstede & Bond, 1984). Spain is culturally located between individualism and collectivism, as Spanish culture is perceived to share both individualistic and collectivistic features (Gouveia, Clemente, & Espinosa, 2003; Hofstede, 1984). These

differences may manifest in different perceptions and evaluations of situations including on social media. For example, Song and colleagues (2016) found that Korean individuals considered experience-based information as more reliable compared to expertise-based information, while the same effect was true in reverse among American individuals. Eastern cultures are typically characterized by a holistic worldview that emphasizes intuitive reasoning and being group-oriented, compared to Western cultures that are characterized more by analytical reasoning and formal logic (Kim, Lim, Dindia, & Burrell, 2010; Nisbett, Peng, Choi & Norenzayan, 2001). Thus, Easterners may be more susceptible to group influence.

Different cultures can also share relatively similar values despite their geographical dispersion, and it is not always meaningful to separate Western countries from Eastern ones in terms of cultural difference or similarity. Based on the results of the World Value Surveys, Inglehart and Welzel (2012) suggest there are two dominating dimensions in worldwide values: traditional or secular–rational values, and values related to survival or self-expression. According to these dimensions, Finland is characterized by both self-expressional and secular–rational values. The U.S. is very high on self-expressional values, but is closer to traditional values than secular–rational. Spain falls between in both dimensions. South Korea is characterized by survival values and is closer to secular–rational than traditional values. According to this cultural map, these countries are located in different positions in terms of their values, thus providing an interesting context for comparison.

Youth gambling and problem gambling are worldwide problems, and concern these four countries. In Finland, gambling is regulated by the state-owned monopoly Veikkaus. Problem gambling rates are relatively high in Finland. About 13.6% of the men and 4.6% of the women aged 15 to 28 years old qualify as problem gamblers (Edgren et al., 2016). There is evidence that adolescent gambling decreased in Finland during the years of 2011–2017, which can be at least partly explained by the raise in legal age requirement from 15 years old to 18 years old in 2010 and 2011 (Raisamo, Kinnunen, Pere, Lindfors & Rimpelä, 2019). There is also some evidence that during the past years, gambling attitudes have changed in a more positive direction in Finland (Salonen, Alho & Castrén, 2017). Recently, online gambling and mobile gambling opportunities have increased in popularity among Finnish gamblers (Salonen et al., 2019).

In the U.S., several states have expanded and legalized gambling opportunities during the past decades (Horváth & Paap, 2012). However, the prevalence of problem gambling rates remained relatively stable during the 2000's, with problems

being the most common in the 18- to 30-year-old age group (Welte, Barnes, Tidwell, Hoffman & Wieczorek, 2015). It is estimated that up to 5% of young adults over 18 years meet the criteria for problem gambling (Welte et al., 2015).

In Spain, gambling is a relatively common activity. Online gambling was legalized in Spain in 2012, which has increased both the legal gambling opportunities and the risks associated with gambling (Chóliz, 2016). In a recent population study, Chóliz et al. (2019) found that pathological gambling prevalence among young adults aged 15 to 25 is about 1%, and that lifetime gambling prevalence among this age group was about 51%. Accordingly, adults aged 26 to 35 were most commonly involved in gambling activities. The study also found that gambling problems were 10 times more likely among those who gambled online. A recent study on Spanish adolescents aged 12 to 17 found that this age group has also adopted these new online gambling opportunities (Gómez et al., 2019).

In South Korea, gambling is highly regulated, and only select forms of gambling are legal, including lotteries and some sports betting (see Jang, Hong, Kim & Sohn, 2019). In addition, there is only one legal casino for local Koreans (Back & Lee, 2005). However, there has been a gradual increase in both legal and illegal gambling industries in South Korea (Jang et al., 2019). According to a population study conducted in 2013, past year gambling prevalence among South Koreans was 41.8% and problem gambling prevalence 0.5% (Williams et al., 2013). A more recent research suggested that gambling problems would be more prevalent among South Koreans, particularly among young males (Jang, 2013; Jang et al., 2019). Since South Korea is characterized by the high use of technologies, expanded online forms of gambling may cause a particular risk to younger individuals.

Table 1. Summary of data, methods and research questions of each study.

	Article I	Article II	Article III	Article IV
Data	Systematic literature data (N=55)	YouGamble Finland (N=1,200)	YouGamble Finland (N=1,200) YouGamble Social Media, Finland (N=230) YouGamble the United States (N=1,212)	YouGamble Finland (N=1,200) YouGamble the United States (N=1,212) YouGamble South Korea (N=1,192) YouGamble Spain (N=1,192)
Methods	Descriptive analysis Content analysis	Descriptive analysis Multinomial logistic regression analysis	Descriptive analysis Cross-sectional and experimental analysis	Descriptive analysis Multilevel linear regression analysis
Research questions	What is the role of virtual gambling communities in gambling behavior? What is the role of virtual gaming communities in monetary gaming behavior? Are there notable qualitative differences between virtual gambling and gaming communities?	Is there an association between the use of virtual gambling communities and excessive gambling?	How do loneliness, excessive gambling and Internet use predict daily virtual gambling community participation? How do the characteristics of online behavior predict daily virtual gambling community participation?	How does involvement in online cliques predict interest toward online gambling messages? Are there any country-based differences?

4.1 Systematic literature data

Article I comprised systematic literature data searched from five databases: Scopus, Web of Science, PsycINFO, Social Science Premium Collection and EBSCOhost. Data were initially gathered in July 2018, and an updated data collection was conducted in February 2020. The search was limited to empirical articles that examined gambling or monetary gaming, and online interaction between gamblers or gamers.

The search phrase for each database was as follows: (gambl* OR gaming OR gamer) AND (internet OR online OR virtual OR digital) AND ("online communit*" OR "virtual communit* OR "online group*" OR "virtual group*" OR "online discuss*" OR "chat room*" OR "online social network*" OR "forum*"). The search engines were set to search hits from abstracts, titles and keywords. In the first data collection phase, we did not use other limits in the search engines, such as a publication year. After removing duplicates, the database search of the first data collection phase in 2018 resulted in 885 articles.

We conducted an additional literature search in February 2020, using the same search phrase and criteria as in 2018. In the second data collection phase, the search engines were limited to search hits only from years 2018-2020. After removing duplicates, the additional database search resulted in 171 articles.

Articles were included based on pre-determined inclusion criteria: 1) The article empirically examined participation or social interaction in online communities or networks related to gambling or gaming involving money. Participation or interaction could include aspects such as participation frequency, motivation, level of identification or shared content between users. 2) The article empirically examined behavioral factors associated with participation or social interaction in online community or networks related to gambling or gaming involving money. Behavioral factors could include aspects such as virtual purchasing behavior, frequency of gambling or gaming behaviors or other kinds of gambling and gaming behaviors involving money.

Both data collection phases were followed by a careful selection process, where two coders carefully checked the included articles based on the aforementioned inclusion criteria. In 2018, two coders independently checked the 885 articles with pre-determined inclusion criteria. Disagreements and borderline cases were

discussed by a research team until agreement was achieved. The final selection check of the first data collection phase resulted in 44 articles.

In 2020, two coders independently checked the 171 articles with same pre-determined inclusion criteria as in 2018. Again, disagreements and borderline cases were discussed by a research team. The final selection check of the second data collection phase resulted in 11 articles. Accordingly, the final dataset including selected articles from both data collection phases consisted of 55 articles.

4.1.1 Method of analysis

The aim of the systematic review was to summarize evidence of the role of virtual gambling and gaming communities in gambling and monetary gaming behaviors. We provided descriptive information about the included studies, such as methods used (quantitative, qualitative or mixed method), study context and topic (gambling, gaming or both). Content analysis was utilized to summarize the main findings of the studies. Since the included studies were heterogeneous in terms of study design, participants, measures and methods, we did not conduct a meta-analysis of the results.

4.2 YouGamble survey data

Articles II-IV of this dissertation used YouGamble survey data, that was gathered from four countries. Finnish data was used in Articles II-IV, American data in Articles III-IV, and Spanish and South Korean data in Article IV. Additionally, Finnish data gathered from social media was used in Article III. Characteristics of YouGamble survey datasets are summarized in Table 2.

Table 2. YouGamble survey datasets.

Data	Sample size	Age	Gender
YouGamble, Finland (2017)	N = 1,200	15–25	50.0% Female
YouGamble Social Media, Finland (2017)	N = 230	15–30	53.48% female
YouGamble, the United States (2018)	N = 1,212	15–25	50.17% female
YouGamble, South Korea (2018)	N = 1,192	15–25	50.42% female
YouGamble, Spain (2019)	N = 1,212	15–25	48.76% female

YouGamble survey data were gathered from 15- to 25-year-old respondents from four countries: Finland (N = 1,200, M^{age} = 21.29, SD = 2.85, 50.0% female), the United States (N = 1,212, M^{age} = 20.05, SD = 3.19, 50.17% female), South Korea (N = 1,192, M^{age} = 20.61, SD = 3.24, 50.42% female) and Spain (N = 1,212, M^{age} = 20.07, SD = 3.16, 48.76% female). All the participants were recruited from a pool of volunteer respondents in collaboration with Dynata (formerly known as Survey Sampling International). All the samples were demographically balanced and they mirrored the current population estimates of each country.

In addition, the YouGamble social media sample was gathered from popular Finnish social media sites and discussion forums from April to June 2017. The sample consisted of Finnish social media users aged 15 to 30 (M = 24.32, SD = 3.58, 53.48% female). Participants were given a short introduction to the study together with a survey link on a site's message board. Participants were also informed that they had a possibility to participate in a movie ticket drawing as a compensation for their participation in the study.

The survey was originally designed in Finnish. Afterwards, it was translated to English, Korean and Spanish with help of native speakers of each language. All translations went through a back-translation process to ensure linguistic validity of the survey. YouGamble surveys were conducted using LimeSurvey software, with optimization for both computers and mobile devices. The research plan of YouGamble surveys was reviewed and accepted by The Academic Ethics Committee

of Tampere region in December 2016, with a decision that no major ethical concerns are involved.

YouGamble surveys involved both self-reported measures and an experimental vignette design. The self-reported section of the survey included a variety of measures including gambling habits, problem gambling, social media use, addictive behaviors, social relationships, loneliness and personality traits. Most of these were widely used and validated measures, but also some self-developed questions and measures were utilized.

An experimental part of the survey, the vignette experiment, was designed to study young people's reactions to social media gambling messages and the role of perceived social norms. The experiment utilized 2 x between-person and 2x2x2 within-person experimental design. For the experiment, respondents were randomly divided into two groups (between-person design). Members in a group condition were told they had been assigned to "Group C" consisting of other respondents who had responded similarly in earlier survey section concerning habits of social media use. Members in a control group condition were not given any group information.

All respondents were shown four different gambling-related social media messages. We manipulated the stance taken on gambling: half of the messages discussed gambling in a positive light (e.g., joy and entertainment), while half of the messages discussed gambling in a negative light (e.g., problems and harms caused by gambling). In addition, half of the messages were narrated in first-person (experience-based subjective view) and half were narrated in third-person (research-based objective view). Exact manipulations of the messages are presented in Appendix A.

All gambling messages were framed with manipulated reactions of other respondents, indicating a social norm. For the respondents in a group condition (Group C), reactions were depicted as reactions from other in-group members of Group C. For the respondents in a control condition, these reactions were depicted as reactions of other survey respondents. Half of the messages were presented as liked (i.e., thumbs up) by the majority (about 85%), indicating a positive group norm. Accordingly, half of them were presented as disliked (i.e., thumbs down) by the majority (about 85%), indicating a negative group norm.

We designed the factorial structure of the vignette experiment to estimate all the main effects of our manipulated factors. Also, none of the scenarios were "favored" in perceived group reactions (see Atzmüller & Steiner, 2010).

4.2.1 Dependent variables

In **Article II**, the dependent variable assessed with South Oaks gambling screen (SOGS) was excessive gambling. SOGS is a widely used measure to assess problematic gambling, and is based on DSM-3 and DSM-4 criteria of pathological gambling (Lesieur & Blume, 1987). The SOGS score range was from 0 to 20, and Cronbach's alpha coefficient was 0.89. We used standard cut-offs: 0–2 for no problem gambling, 3–4 for at-risk gambling and ≥5 for probable pathological gambling (e.g. Castrén et al., 2013). Due to potentially false positives of these cut-offs, we also ran additional analyses with a cutoff of ≥8, that was based on DSM-5 criteria for disordered gambling (Goodie et al., 2013).

In **Article III**, the dependent variable was daily online gambling community participation. This was measured with a question: "How often do you use gambling-related discussion forums or communities?" The answer options were *never*, *seldom*, *daily* and *many times a day*. This was categorized as a dummy variable with values 0 (*never* or *seldom*) or 1 (*daily* or *many times a day*).

In **Article IV**, the dependent variable was reported interest toward online gambling content in a vignette experiment. This was measured with six questions that were presented after each vignette message. The questions were: "How likely, based on the given description, 1) would you find the message interesting? 2) would you open the link attached? 3) would you share the link in social media? 4) would you seek similar content online in the future? 5) would you recommend the linked website to your friends? 6) would your friends in social media be interested in the linked website?" The scale for the answers ranged from 1 (*not at all likely*) to 10 (*very likely*). These six questions were transformed into a composite variable. The Cronbach's alpha coefficient ranged from .95 to .96 between the vignette measurements.

4.2.2 Statistical techniques

Article II examined the association between the use of virtual gambling communities and excessive gambling. The statistical analyses included descriptive analysis on not-at-risk gamblers, at-risk gamblers and probable pathological gamblers, as well as multinomial regression analysis to investigate whether online gambling community participation predicts at-risk and probable pathological gambling. Relative risk ratios (RRR), standard errors (SE) and the statistical significance of the results (*p*-value) were provided. We also provided additional

model fit statistics, including pseudo-coefficients, of determination and likelihood ratio $\chi 2$ test statistics. To confirm our main results, we also ran additional analyses with linear ordinary least square (OLS) regression. The analyses were carried out with Stata 12 software.

Article III was divided into two sub-studies. Sub-study 1 included descriptive analyses and multivariate logistic regression analysis on daily online gambling community participation. In the descriptive analysis, we reported the mean values and standard deviations for the continuous variables. For the categorical variables, we reported frequencies and percentages. Logistic regression analysis was conducted in two steps. Model 1 included control variables, loneliness, excessive gambling and compulsive Internet use. In Model 2, we included an interaction term between loneliness and excessive gambling.

In sub-study 2, the logistic regression analysis included only one model. In the model, daily online gambling community participation was used as a dependent variable, while pro-gambling preference, group influence and experience preference were used as independent variables. In both sub-studies, standard errors were estimated using robust (sandwich) estimator. For all models, we reported odds ratios (with 95% confidence intervals), standard errors and values of the z statistic and p. In addition, we used the 95% confidence interval from Sample 1 (a demographically balanced Finnish sample) to test whether the associations found could be replicated with a smaller Finnish sample (Sample 2). The analyses were carried out with Stata software (version 15.1).

Article IV examined how tendency to online clique (i.e., online bubble) behavior predict interest toward gambling content and following group norms in social media. We reported mean values and standard deviations for our self-reported measures, that is, interest toward the social media vignettes and involvement in online cliques. In order to assess the success of the randomization of respondents to group and control conditions, we tested whether there were statistically significant differences in gender or age distribution, or in online clique involvement between the conditions. We used cross-tabulation and a corresponding two-tailed Chi-squared test for the gender distribution, and two-tailed t-tests for the age and online clique involvement.

We conducted a multilevel linear regression analysis with random coefficient modelling. Thus, we were able to analyze within-subject-level and between-subject-level effects, as well as cross-level interactions between them. In the multilevel models, the experimental manipulations (positive/negative group norm, first-person/third-person narration, and pro-/anti- stance on gambling) were added as

within-person level predictors. Accordingly, the involvement in online cliques and experimental condition were added as between-person predictors.

The analyses were performed in two steps. First, we estimated a model with our within-subject and between-subject level predictors and a random intercept and random slope for positive majority. This first model was used to estimate the association between involvement in online cliques and reported interest toward the gambling vignette content. To determine whether gender or cross-country differences emerge in that association, we conducted an additional analysis by including a two-way interaction term between online clique involvement and gender and respondents' country information in the model.

In the second model, we added a cross-level interaction between positive group norm and online clique involvement. This second model was used to determine whether the online clique involvement moderated the association between positive group norm and reported interest toward vignette content. To determine whether this interaction differed between genders, experimental conditions and our country samples, we conducted additional analyses by adding three-way interactions between positive group norm, online clique involvement, gender, country information and experimental condition in the model.

For our models, we reported unstandardized regression coefficients (b) along with their standard error and statistical significance (*p*-value) estimates. The hypothesized interaction effect between positive group norm and online clique involvement was elaborated with a simple slope graph.

4.3 Ethical consideration

I have striven to respect high ethical standards throughout the process of this dissertation. Particularly when studying topics that might be sensitive for some participants or cause distress, ethical guidelines must be carefully considered (Decker, Naugke, Carter-Visscher, Bell & Seifert, 2011). I will shortly define the central ethical guidelines relevant to the research topic of this dissertation, as well as ethical issues in survey research (Studies 2–4) and conducting systematic reviews (Study 1).

The YouGamble surveys' research plan (utilized in Studies 2–4) was reviewed and accepted by The Academic Ethics Committee of Tampere region in December 2016, with a decision that no major ethical concerns were involved. However, there were several ethical issues that we took into consideration when planning and conducting

the research. Since the topic of the YouGamble surveys was mainly about gambling, it is possible that answering to a survey would cause distress to some respondents. However, respondents were aware that answering to a survey is fully voluntary and that they could withdraw from the study at any time without further explanation or consequences. Respondents were also informed about the topic and aims of the survey beforehand. The experimental design with social media gambling scenarios did not involve emotionally arousing or distracting content. At the end of the survey, we provided links to helpful resources for problematic gambling.

Since all the respondents were 15 years or older, there was no need to get parental consent. Some parts of the survey handled behaviors that are illegal for underage people such as gambling, alcohol use and drug use. However, these were validated measures that have been widely utilized in former research concerning young people. It is also important to achieve research knowledge of these kinds of behaviors, given that youth are engaged in these activities despite them being illegal.

Even though the ethical requirement for informed consent was attained prior to entering to the survey, to ensure the validity of the results we could not inform participants about the nature of our experimental design beforehand. Thus, participants were not aware of the different manipulations used in the vignette sections when answering the survey. However, information and explanations concerning the experimental design and group manipulation were provided at the end of the survey. In addition, the researchers' contact information was provided at the end of the survey in case of any aroused questions or comments.

The survey respondents were anonymous, and no identifying clues were obtained in collecting the data. Additionally, all the analyses have been reported in such a manner that no individuals can be detected. In YouGamble Social Media survey, the respondents were given an opportunity to participate in a movie ticket draw by leaving their e-mail address as contact information. The respondents were informed that leaving an email address was fully voluntary and that the information was used only for the purpose of the draw and deleted immediately afterwards. All YouGamble survey data were fully anonymized and carefully stored.

In terms of conducting systematic reviews, research ethics are not typically very centrally discussed. Systematic reviews are conducted for published and peer-review articles, and thus, the process lacks major ethical concerns characterized in collecting individual or personal data from participants. However, since systematic reviews are often frequently cited and even used in practical policy making (Suri, 2020), it is important that the research design is appropriate and that included studies are of high quality and conducted in respect to research ethics (Vergnes, Marchal-Sixou,

Nabet, Maret & Hamel, 2010). In addition, it is important that the interpretation of the results is made appropriately. When conducting the systematic literature review for Article I, the inclusion criteria for the articles were carefully designed by a research team. Multiple coders were used in data inclusion, and only peer-reviewed articles were included to ensure their high quality. Also, all the choices made in the data-gathering process, inclusion criteria and analyses were made visible.

5 OVERVIEW OF THE MAIN FINDINGS

5.1 Article I: The role of virtual communities in gambling and gaming behaviors: A systematic review

In Article I, we conducted a systematic literature review to examine the role of virtual communities in gambling and gaming behaviors. Gaming was included to cover monetary and gambling-like forms of gaming.

According to the results, online gambling and gaming communities are important places to interact with like-minded people and they contribute to shared identity. However, major differences were also found between gambling and gaming communities. In gambling, virtual communities mainly exist outside the game. Virtual gambling communities are typically forums dedicated to gambling-related discussions such as poker strategies and general gambling tips (i.e., pro-gambling communities), or problem gambling recovery and harms and problems caused by gambling (i.e., anti-gambling communities). Only some tools for in-game interaction exist in online gambling. In gaming, virtual communities and interactional opportunities are often embedded inside the game, particularly in games that are based on team playing. Social motives are also more inherently embedded in gaming than gambling. However, also external gaming communities do exist, such as game-related discussion forums.

Virtual communities have an influential role in gambling and gaming behaviors. However, these communities also have different functions and outcomes. Evidence showed that those virtual gambling communities that are grounded in a positive stance on gambling can normalize excessive gambling and pose risks to develop and maintain excessive gambling habits; however, virtual gambling communities that are grounded in harms caused by excessive gambling were found to provide social support and help to overcome gambling problems or to cope with them in better ways. Additionally, peer feedback from virtual gambling communities (e.g., poker communities) may help detect erroneous or excessive gambling habits. There was also some evidence that utilizing in-game interaction tools in online gambling was associated with less severe forms of problem gambling compared to those who preferred gambling alone.

In gaming, there was strong evidence that virtual communities and their social underpinnings promote both gaming continuation and purchase intentions inside a game. There was no evidence that gaming communities would be helpful in decreasing excessive gaming behavior or virtual purchase intentions. Additionally, in the included gaming studies, there was no evidence of forums or other communities dedicated to discussing the harms caused by gaming. Thus, based on this evidence, virtual gaming communities and their social underpinnings solely motivate gaming behaviors and game-related monetary spending.

5.2 Article II: Excessive gambling and online gambling communities

In Article II, we examined the use of virtual gambling communities and its relation to excessive gambling among Finnish young people aged 15–25 (N = 1200). Respondents were also asked about the types of gambling communities they participated in, for example, if the communities were related to gambling strategies and tips or problem gambling and recovery. Sociodemographic and behavioral factors were adjusted.

According to the results, over half (54.33%) of the respondents who reported visiting online gambling communities were either at-risk gamblers or probable pathological gamblers. When looking at the types of gambling communities, only a minority (9.25%) of the respondents reported participating in communities that discussed problem gambling and recovery, while the majority reported visiting communities sharing experiences, tips and strategies. Men visited online gambling communities more often than women. At-risk gambling and probable pathological gambling were also more common among males and in the 18- to 21-year-old age range.

According to multinomial logistic regression models, visiting gambling-related online communities was a significant predictor for excessive gambling (with 95% confidence level), after adjusting confounding factors. Moreover, this association was stronger among probable pathological gamblers than at-risk gamblers.

In addition, instant loans, compulsive Internet use and visiting online casino sites was associated with at-risk gambling and probable pathological gambling. Probable pathological gamblers also reported weaker belonging to offline groups than at-risk gamblers.

We also ran additional analyses with an alternative cut-off point for SOGS (≥8) that was based on DSM-5 criteria for pathological gambling. These additional analyses did not change the main results.

The results indicate that online gambling communities pose a risk for excessive gambling. In addition, young Finnish problem gamblers are not likely to visit communities related to problem gambling recovery.

5.3 Article III: Loneliness and online gambling community participation of young social media users

The third article examined the role of loneliness in the daily participation in virtual gambling communities among Finnish and American people aged 15 to 25/30. The article was divided to two sub-studies and comprised three samples: Sample 1 consisted of Finnish young people aged 15 to 25 (N = 1200, YouGamble Finland), Sample 2 of Finnish social media users aged 15 to 30 (N = 230, YouGamble Social Media Finland) and Sample 3 of American young people aged 15-25 (N = 1,212; YouGamble U.S.).

In sub-study 1, we utilized self-reported measures to examine associated factors in daily participation in online gambling communities. These factors included the sense of loneliness, excessive gambling and compulsive Internet use. In sub-study 2, we utilized a vignette experiment to examine whether characteristics of online behavior predict daily participation in online gambling communities. Our hypotheses were as follows:

H1: Excessive gambling is associated with daily online gambling community participation.

H2: Loneliness is associated with daily online gambling community participation.

H3: Loneliness moderates the association between excessive gambling and daily online gambling community participation.

H4: Compulsive Internet use is associated with daily online gambling community participation.

H5: Daily online gambling community participation is associated with a preference for experience-driven and pro-gambling content and with a propensity for group influence in online behavior. Hypotheses 1 to 4 were tested in sub-study 1 and hypothesis 5 in sub-study 2.

Excessive gambling was associated with daily online gambling community participation in all three samples, thus supporting H1. H2 was not supported, since

loneliness was not associated with daily online gambling community participation in any of the three samples. However, H3 was supported in the Finnish samples: Loneliness moderated the association between excessive gambling and daily online gambling community participation with statistical significance in Sample 1. In Sample 2, the moderating effect was not statistically significant but the positive interaction term was within Sample 1's 95% confidence interval. In the American sample, loneliness did not have a moderating effect. H4 was mostly supported, as compulsive Internet use was associated with daily online gambling community participation in Samples 1 and 3. Of the covariates in sub-study 1, male gender was positively associated with daily online gambling community participation in all three samples.

H5 was only partly supported. The respondents preferred anti-gambling content to pro-gambling content in all three samples. Furthermore, the group influence occurred in all three samples, as the respondents reacted positively toward the content that was liked by the majority. In all samples, the respondents preferred fact-driven gambling content to experience-driven gambling content. According to logistic regression analysis, preference for pro-gambling content was associated with increased likelihood of daily online gambling community participation in all three samples. The group influence or preference for experience-based content was not associated with daily online gambling community participation in any of the samples.

The findings show that virtual gambling communities attract young individuals who are excessively engaged in and generally interested in gambling. In Finland, problem gamblers who reported loneliness were likely users of virtual gambling communities.

5.4 Article IV: Online identities and social influence in social media gambling exposure: A four-country study on young people

In the fourth article, we examined how tendency to online clique (i.e., online bubble) behavior predict interest toward gambling content and following group norms in social media. The article comprised YouGamble survey data from Finland (N = 1,200), the United States (N = 1,212), South Korea (N = 1,192) and Spain (N = 1,212). Our hypotheses were as follows:

H1: Young people involved in online cliques express more interest toward various types of online gambling content (i.e. pro-gambling and anti-gambling) than those who are not involved in online cliques.

H2: Young people involved in online cliques are more likely to follow the observed group norms in their evaluations of online content than those who are not involved in online cliques.

Accordingly, we examined whether potential differences related to these hypotheses emerge between countries.

The results supported H1, as online clique involvement was positively associated with reported interest toward gambling content. When looking at the country- and gender-specific results, this association was weakest in the Finnish sample and stronger among males than females.

Positive group norm was associated with respondents' reported interest toward the gambling content, that is, respondents reported higher interest toward content that was liked by the majority. Thus, respondents tended to follow contextually relevant group norms. In a moderation analysis, self-reported online clique involvement reinforced the effect of positive group norm, supporting H2. In other words, those who reported online clique behavior were more likely to conform to the perceived positive group norm in their responses. This moderation effect was found in all studied four countries but it was strongest in South Korea.

The results emphasize the risky potential of social media and online group processes in online gambling content exposure. Tendency to social media clique behavior can further fuel the risks of such exposure by accentuating the effect of observed group norms and making users more likely to act on shared information.

6 DISCUSSION

In this dissertation, I have studied the role of virtual communities and social media in youth gambling and problem gambling behaviors. In addition, I have extended the view on gambling by scrutinizing monetary gaming from the perspective of virtual communities and social underpinnings. Article I was a systematic review that examined the role of virtual communities in gambling and monetary gaming behaviors, thus providing a broader perspective on gambling-related behaviors. Articles II and III used cross-sectional and experimental survey data to examine virtual gambling community participation and factors associated with excessive gambling among adolescents and emerging adults in Finland and the United States. Article IV used cross-sectional and experimental four-country survey data to examine the role of online identity bubbles in reported interest toward gambling messages and following observed group norms in social media. As a theoretical background, I have utilized social psychological perspectives, such as the social identity approach and related theories, to understand how social processes in virtual communities and social media can accentuate the effect of observed social norms and influence gambling-related intentions and behaviors.

The results of the systematic review (Article I) found that in gambling and monetary gaming behaviors, virtual communities play an important yet different role. Virtual communities can normalize excessive gambling but can also help cope with and overcome gambling problems, depending on the community's norms and goals. Peer feedback from virtual communities can help detect one's potentially detrimental gambling habits. In terms of monetary gaming communities, I found strong evidence for how the social aspect motivates game-related purchasing intentions, while I found no evidence for the potentially protecting role of these communities in excessive gaming or monetary spending. Even though the line between gambling and gaming has become blurred mainly due to emerging gambling-like mechanisms in digital games, these results indicate some fundamental differences in gambling and gaming characteristics, particularly in relation to their social features. Gambling is mainly an individual activity, and thus, the outcomes of gambling, namely winnings and losses, are more individual compared to social gaming. In team-based digital gaming, virtual purchases and team success benefit the whole team, which may also

facilitate social pressure to contribute to a team's success by purchasing virtual items. In addition, since gaming platforms are often social because other players are virtually present, the motives to purchase virtual items such as cosmetic skins or equipment for game characters include social pressure and self-presentational aspects (Hamari & Keronen, 2017) such as unique appearance (Cai et al., 2019). Thus, the social aspect seems to be a greater risk in gaming than gambling in terms of influencing spending behavior.

The social aspect in gaming is often an essential part of the gaming experience, and even one of the main motives to play games (Seay et al., 2004; Zhong, 2011). There is also evidence that social ties in virtual gaming can have benefits for social capital and well-being (Kaye et al., 2017). However, because I have limited my focus in this dissertation on gaming to cover only monetary and gambling-like aspects, I underline the risks involved in the social dimension of gaming. Based on the results of Article I, it is plausible that the social aspect in gaming is a risk factor for excessive game-related money spending. This is also a concern given that these monetary features often resemble gambling activities, which may impact gambling intentions and behaviors and thus lead to further risks.

The results of this dissertation give evidence that virtual gambling communities pose a risk for excessive gambling. Indeed, the results show that virtual gambling communities attract young problem gamblers. In Finland, loneliness plays a role in gambling community participation, as those problem gamblers who reported loneliness were likely to participate daily in virtual gambling communities. This is in line with research showing that problem gambling is associated with loneliness (Edgren et al., 2016; Gill & McQuade, 2012). However, some cultural differences were indicated, since loneliness did not have a statistically significant effect in the U.S. Nevertheless, virtual gambling communities attract young problem gamblers and may pose further risks.

The cross-sectional design in Articles II and III, made it impossible to detect the causal direction of the relationship between excessive gambling and virtual communities, that is, whether virtual communities attract gamblers who are already excessively involved in gambling, or whether participation in virtual gambling communities lead to excessive gambling. However, from the theoretical perspective, it is plausible that the relationship goes in both directions. Identity-driven social media use may attract excessive gamblers to join communities that validate this kind of behavior (see Kaakinen et al., 2020; Keipi et al., 2017), but also, the relatively anonymous nature of virtual communities is known to contribute in greater conformity to contextually relevant social norms, which may reinforce already

existing attitudes toward a more extreme direction (Lee et al., 2011; Postmes et al., 2001; Spears et al., 1990). Thus, I argue that virtual communities may both help develop gambling intentions in a more excessive direction, but also reinforce already existing excessive gambling habits. Longitudinal studies are needed to examine these relationships and causal mechanisms more carefully.

In gambling, virtual communities dedicated to problem gambling recovery also need further exploration. As evidenced in Article I, these kinds of virtual platforms are often considered important among those who wish to overcome or better cope with their gambling problems. Benefits of similar kinds of recovery-oriented virtual communities is well documented in earlier research (McNamara & Parsons, 2016; Naslund et al., 2016; Rodgers & Chen, 2005; Setoyama et al., 2011). Following the SIDE model, visually anonymous interaction, together with salient group norms and social identity, can also be beneficial in reinforcing mechanisms of social influence and group polarization, as long as the community is grounded in enhancing well-being and overcoming detrimental behaviors. Identifying with such groups can also help resist stigma and provide other benefits for well-being (Crabtree et al., 2010). However, discovered in Article II, young problem gamblers seem to prefer pro-gambling communities and do not utilize these kinds of recovery communities. It is possible that young problem gamblers are not aware of these kinds of resources (Gainsbury et al., 2014), but it is also reasonable that young people may not detect their gambling as problematic (Splevins et al., 2010). At a young age, problems caused by gambling are perhaps not yet cumulated (e.g., in terms of having lost a job or a house). In addition, parents and teachers may not be fully aware of youth's problematic gambling behavior and its potentially harmful consequences (Campbell et al., 2011; Castrén et al., 2017; Derevensky et al., 2014). Given that excessive gambling at young age often leads to long-lasting financial difficulties and psychological distress, and that problems tend to cumulate, it would be crucial to better utilize helpful resources for young problem gamblers and raise awareness of risks and harms caused by gambling among parents and educators to prevent further harms.

As found in Article I, there was no evidence of virtual communities oriented to discussions on the harms caused by monetary gaming, nor that virtual game communities would be helpful in detecting excessive gaming behavior or in-game money spending. This is an important finding and needs further exploration in future studies.

In gaming, monetary features and gambling-like mechanisms pose an increasing concern particularly for young players. Even though loot boxes and other gambling-

like features do not always meet the criteria for gambling (Griffiths, 2018; Nielsen & Grabarczyk, 2019), these features may teach gambling mechanisms and promote gambling ideals. Furthermore, young players are actively engaged in virtual purchases such as loot box spending, and former research has found evidence on the link between loot box spending and excessive gambling (Brooks & Clark, 2019; Li et al., 2019; Kristiansen & Severin, 2020; Rockloff et al., 2020; von Meduna et al., 2020; Zendle & Cairns, 2019). Even though research evidence supporting the "gateway hypothesis" from loot boxes to gambling remains weak, loot boxes and other gambling-like features may be alluring as additional forms of expenditure particularly for young individuals who are already involved in gambling activities (Delfabbro & King, 2020). Also, rewarding mechanisms of opening the loot boxes, particularly when gaining items with greater value and rarity, are similar to winning money in gambling (Larche et al., 2019). Thus, it can be argued that loot boxes and other gambling-like features in digital games increase the risk for maintenance and reinforcement of excessive gambling habits. Additionally, social attachment to a virtual gaming community is an important underlying mechanism influencing monetary behavior such as loot box spending.

Even though the social dimension can play a key role in adopting harmful gambling and monetary gaming habits, it is also important to understand the addictive and attractive psychological characteristics underlying these behaviors. Online forms of gambling and monetary features in online games are designed to bring instant benefits and satisfaction to a player. Following Kahneman's (2011) distinction to System 1 and System 2 thinking, many characteristics of online gambling and monetary gaming opportunities reinforce rapid and automatic System 1 thinking that is susceptible to biased reasoning and cognitive errors. This is opposed to the slow and more conscious System 2 characterized by more deliberate and analytical thinking. Supporting System 1 thinking can be particularly worrisome among problem gamblers who are known to have various gambling fallacies, that is, cognitive biases concerning the probabilities of events as well as magical thinking (Leonard & Williams, 2016; Myrseth et al., 2010; Orlowski et al., 2020; Williams et al., 2013). Kahneman (2011) argues that automatic processes and heuristic thinking (System 1) are essential in daily decision-making, serving as cognitive shortcuts. In online environment and gambling-related behaviors, characteristics reinforcing this kind of fast thinking and rapid decision-making makes users vulnerable to impulsive money consumption and excessive gambling behaviors when chasing instant rewards and winnings.

In addition to gambling behaviors, interaction in an online environment is often characterized by fast and intuitive behavior and decisions (see also Kaakinen et al., 2020). For example, social media platforms often encourage fast and intuitive reactions, as user can state an opinion by only one click, for example, by "liking" particular content or providing instant comments. These kinds of collective reactions may serve as social norms, providing social proof on how to react and behave in ambiguous situations (see Cialdini, 1984). In a relatively anonymous online context where shared social identity and related norms are salient, the role of these group processes is even more central (Lea et al., 2001; Postmes et al. 1998; Postmes et al., 2002; Spears et al., 1998). Thus, alluring characteristics of gambling-like behaviors, together with perceived social norms, poses an even greater risk for hasty decisions.

Because social media is characterized by an abundance of content and available information, users must find shortcuts to filter relevant content and information from irrelevant material. A tendency to homophily, that is, the preference to interact with people who share mutual interests (McPherson et al., 2001), is an essential way to shape one's online experience. However, since user preferences and algorithms filter and diminish the diversity of online content, one of the main challenges in social media use, particularly in terms of risky behaviors such as excessive gambling, is the risk of exposing users to one-sided information, which can be misleading and harmful. This is particularly worrisome given that contextually relevant social norms become more salient in relatively anonymous online environment (Postmes et al., 1998; Postmes et al., 2001). For example, virtual gambling communities may contribute to dissemination of misleading information such as erroneous beliefs on probabilities of winnings, which may reinforce cognitive distortions concerning gambling (Parke & Griffiths, 2011). In addition, interacting with online gambling content (e.g., liking or sharing content or visiting gambling sites), increases the visibility of such content in user's social media stream due to algorithmic filters. Increased gambling exposure can lead to further risks and contribute to normalization of gambling (Clemens et al., 2017; Floros, 2018; Delfabbro et al., 2016; King et al., 2010).

As found in Article IV, tendency to online clique behavior increased the likelihood to follow perceived social norms concerning online gambling messages. Thus, individuals whose social media use is characterized by identity-driven online clique behavior can be more susceptible to social norms and likely to conform to others' evaluations when encountering gambling content in social media. This effect was strongest in the South Korean sample, which potentially reflects the highly collectivistic and group-oriented nature of Korean culture (Hofstede, 1984; Hofstede

& Bond, 1984). Despite of various gambling regulations and legal age limits for gambling, social media and emerging group processes provide a risky context in terms of gambling exposure.

From a theoretical perspective, virtual gambling and gaming communities provide a space for social and emotional attachment, a sense of belonging and shared social identity (Haythornthwaite, 2007; Wellman et al., 2002). I have approached virtual communities as social groups where members share a collective perception of their belongingness and mutual social identity (Turner, 1982). In gambling and gaming, virtual communities are based on shared interests, goals and norms that guide interaction (Preece, 2000), but these features vary between different gambling and gaming communities. Psychologically, virtual communities can be very real and meaningful to their members, contributing to strong attachment and shared social identity, which further reinforces social influence and group attraction (Guegan et al., 2015; Lea et al., 2001; Postmes et al., 2000; Spears et al., 2002). Depersonalization in online communities reinforces the salience of group memberships and makes contextually relevant group norms more salient, which may contribute to greater group polarization (Postmes et al., 2002; Spears et al., 1990). Theoretical principles of social identity approach and the SIDE model have provided a useful framework to examine social and technological features of virtual communities and helped understand the attractivity and "stickiness" of virtual communities (see Spears & Postmes, 2015) in terms of gambling and gaming behaviors. It is important to acknowledge the constant interplay between technological features, individual preferences and social mechanisms in virtual platforms in relation to social psychological outcomes such as social influence.

Since communities related to gambling and monetary gaming are inherently consumption-oriented (see Kozinets, 1999), the aforementioned theoretical underpinnings of visually anonymous group behavior pose increased risks in terms of communities that promote and normalize related risky behaviors. However, underlying group processes may also benefit communities based on recovery and healthier lifestyle choices, not to mention the psychosocial benefits of peer support. Identity-driven social media use may further increase the impact of these group processes and make online users susceptible to diminished and one-sided content exposure and related social norms (Kaakinen et al., 2020, Keipi et al., 2017).

Practical implications can also be made. First, raising awareness of social mechanisms and their influential role in gambling and monetary gaming behaviors would be important for health care professionals as well as young players and their parents and educators to reduce excessive gambling and game-related money

spending. In addition, it would be important to raise awareness of helpful resources for excessive gambling and gaming. Since young people are active online users and prefer online support and information, online-based services and virtual communities would be ideal. Additionally, the anonymous environment would lower the barrier for those seeking help. The challenge is how to make these kinds of communities attractive, given that Article II found that recovery-oriented communities were not preferred among young problem gamblers.

In terms of gaming, there needs to be more focus on risks of game-related purchase intentions and money spending, as well as underlying social mechanisms. Even though the social aspect is often a central part of the gaming experience, it is important to acknowledge its influential role and potential risks in spending behavior. Parents of young players should also be aware of these monetary mechanisms and supervise their children's in-game monetary behavior. However, excessive in-game spending does not necessarily indicate the gaming activity is problematic, but rather, that there are underlying gambling interests and problems. Additionally, since loot boxes are particularly attractive for young gambling individuals (Delfabbro & King, 2020), it would be important to assess possible gambling problems in relation to monetary gaming habits.

Even though virtual communities provide the means to fulfill the basic human need of social belonging (Baumeister & Leary, 1995; Deci & Ryan, 2000), communities focused on gambling and monetary gaming pose risks to development and maintenance of excessive gambling behaviors. Additionally, high engagement in technology-mediated interaction may contribute to compulsive Internet use and even increase feelings of loneliness (Nowland et al., 2018; Yao & Zhong, 2014). Improving and reinforcing meaningful offline relationships would be crucial in preventing gambling-related harms among young people. Indeed, there is strong evidence that meaningful offline relationships and support play a key role in a youth's well-being and protect them from various harms and risks encountered in life (Kaakinen et al., 2018; Minkkinen et al., 2015; Savolainen et al., 2019).

6.1 Limitations

Some limitations need to be acknowledged. First, the systematic literature data in Article I was not limited to young people, since the point was to examine the role of virtual communities in gambling and monetary gaming from a wider perspective. However, a high proportion of the included articles focused on adolescents and

young adults. Also, given that young people are active gamblers and gamers who also engage in virtual purchasing behaviors (Cai et al., 2019; Rockloff et al., 2020), the results of the systematic review provide important knowledge in relation to young people. Additionally, since this dissertation was focused on gambling and gambling-like behaviors, I have concentrated on the community role only in monetary mechanisms of gaming and underlined the risks involved. This is reasonable since there was strong evidence that the social aspect and community attachment in gaming has a high influential role in monetary intentions and purchases. However, I also acknowledge that the social dimension in gaming may have several beneficial aspects for well-being, which I have briefly addressed, but this is outside of the scope of this dissertation and should be examined in more depth in future studies.

Second, cross-sectional parts of the YouGamble survey data do not allow proper investigation of causal mechanisms. Thus, whether communities reinforce gambling behavior and worsen the problems, or whether communities attract those who already have gambling problems cannot be detected. Longitudinal research would provide a more in-depth understanding of the impact of virtual communities and their social influence on gambling intentions and behavior.

Third, although the focus in Articles II and III was on gambling community participation, studies only measured the quantity of participation but not quality, that is, whether participation was passive or active, or how strongly participants identified with the community. Some evidence suggests that actively engaging in community discussions may have more positive impacts on well-being compared to passive participation (i.e., "lurking)" where the participant does not contribute to the discussions (e.g. Csipke & Horne, 2007; Setoyama et al., 2011). Future studies should focus more on the qualitative characteristics of gambling community participation activity and their relation to excessive gambling. In addition, it would be useful to examine participants' explicit motives for participating in different types of virtual gambling communities. This would be important particularly given that only a significant minority of young problem gamblers in Article II reported utilizing recovery-oriented communities. Understanding the underlying motives would also help to design proper online-based interventions for young problem gamblers.

Finally, when researching sensitive topics such as excessive gambling, there is a concern of social desirability bias, that is, a tendency to answer in a socially desired way and conceal the severity of one's problems. This is also a concern given that problematic gambling is a stigmatized phenomenon (Hing et al., 2014). However, since YouGamble survey data was gathered via an anonymous online survey, this bias is not as likely to occur compared to face-to-face situations (Joinson, 1999).

6.2 Conclusion

Technological advancements have expanded the manifestation of gambling and related behaviors, and have also brought emerging interactional opportunities for gamblers and gamers. Virtual communities provide a social context for gamblers to discuss mutual interests and validate their gambling-related identities. These communities may contribute to develop, maintain and reinforce excessive gambling behavior via shared social identity and related social norms. Characteristics relevant to virtual environments, such as relatively high anonymity, may facilitate group processes in the forms of social influence and the salience of perceived norms. Strong attachment to a virtual community, together with perceived group norms and the mechanism of social influence, has potential to shape gambling-related behavior, attitudes and purchasing intentions.

In social media, technological aspects such as algorithmic filtering systems are in a constant interplay with user's online preferences and behavior. Interacting with gambling content is likely to increase the visibility of gambling content and accentuate risks of such exposure. Increased exposure to gambling content may contribute to normalization of gambling as acceptable and harmless activity and lead to gambling-related online bubbles. These concerns should be taken into consideration particularly in terms of young people who are active online users, vulnerable to developing risky habits and susceptible to peer influence. Since virtual communities are also beneficial in terms of anonymous peer support, these benefits of online interaction should be better utilized in healthcare, particularly among young problem gamblers for whom the Internet is a natural pathway to seek information and help.

In monetary gaming, social attachment and shared identity with other players is prone to increase gambling-like intentions and purchasing behavior during the game. Even if monetary mechanisms in games do not always meet the criteria for gambling, they pose risks for excessive money spending and may reinforce gambling-related intentions and problems, particularly among young people. When screening, evaluating and preventing excessive gambling and gaming habits, more focus should be placed on purchasing intentions and gambling-like behaviors in digital games, as well as social underpinnings that may motivate such behaviors.

REFERENCES

Aarseth, E., Bean, A. M., Boonen, H., Colder Carras, M., Coulson, M., Das, D., ... & Haagsma, M. C. (2017). Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal. *Journal of Behavioral Addictions, 6*(3), 267–270.

Abrams, D., & Hogg, M. A. (1990). Social identification, self-categorization and social influence. *European Review of Social Psychology, 1*(1), 195–228.

Alha, K., Koskinen, E., Paavilainen, J., Hamari, J., & Kinnunen, J. (2014). Free-to-play games: Professionals' perspectives. *Proceedings of Nordic DiGRA*, 2014.

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing

Anderson, M. & Jiang, J. (2018). Teens, social media & technology 2018. (Research Report). Pew Research Center. Available in https://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018/. Accessed June 4, 2020.

Asch, S. E. (1951). Effects of group pressure upon the modification and distortion of judgments. In H. Guetzkow (Ed.), *Groups, leadership and men* (pp. 177–190). Pittsburgh, PA: Carnegie Press.

Atzmüller, C., & Steiner, P. M. (2010). Experimental vignette studies in survey research. *Methodology, 6*(3), 128–138

Back, K. J., & Lee, C. K. (2005). Residents' perceptions of casino development in Korea: The Kangwon Land Casino case. *UNLV Gaming Research & Review Journal, 9*(2), 45–53.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497–529.

Baxter, A., Salmon, C., Dufresne, K., Carasco-Lee, A., & Matheson, F. I. (2016). Gender differences in felt stigma and barriers to help-seeking for problem gambling. *Addictive Behaviors Reports, 3*, 1–8.

Baym, N. K. (2000). Tune in, log on: Soaps, fandom, and online community (Vol. 3). Sage.

Best, D., Bliuc, A. M., Iqbal, M., Upton, K., & Hodgkins, S. (2018). Mapping social identity change in online networks of addiction recovery. *Addiction Research & Theory, 26*(3), 163–173.

Binde, P. (2014). *Gambling advertising: A critical research review*. London: The Responsible Gambling Trust.

Bisgin, H., Agarwal, N., & Xu, X. (2012). A study of homophily on social media. *World Wide Web, 15*(2), 213–232.

Blinn-Pike, L., Worthy, S. L., & Jonkman, J. N. (2010). Adolescent gambling: A review of an emerging field of research. *Journal of Adolescent Health, 47*(3), 223–236.

Boyd, D. (2014). *It's complicated: The social lives of networked teens*. New Haven & London: Yale University Press.

Boyle, S. C., LaBrie, J. W., Froidevaux, N. M., & Witkovic, Y. D. (2016). Different digital paths to the keg? How exposure to peers' alcohol-related social media content influences drinking among male and female first-year college students. *Addictive Behaviors, 57*, 21–29.

Bradford, T. W., Grier, S. A., & Henderson, G. R. (2017). Weight loss through virtual support communities: A role for identity-based motivation in public commitment. *Journal of Interactive Marketing, 40*, 9–23.

Brooks, G. A., & Clark, L. (2019). Associations between loot box use, problematic gaming and gambling, and gambling-related cognitions. *Addictive Behaviors, 96*, 26–34.

Buth, S., Wurst, F. M., Thon, N., Lahusen, H., & Kalke, J. (2017). Comparative analysis of potential risk factors for at-risk gambling, problem gambling and gambling disorder among current gamblers – Results of the Austrian representative survey 2015. *Frontiers in Psychology, 8*:2188.

Cacioppo, S., Grippo, A. J., London, S., Goossens, L., & Cacioppo, J. T. (2015). Loneliness: Clinical import and interventions. *Perspectives on Psychological Science, 10*(2), 238–249.

Cai, J., Wohn, D. Y., & Freeman, G. (2019, October). Who Purchases and Why? Explaining Motivations for In-game Purchasing in the Online Survival Game Fortnite. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (pp. 391–396).

Calado, F., Alexandre, J., & Griffiths, M. D. (2017). Prevalence of adolescent problem gambling: A systematic review of recent research. *Journal of Gambling Studies, 33*(2), 397–424.

Campbell, C., Derevensky, J., Meerkamper, E., & Cutajar, J. (2011). Parents' perceptions of adolescent gambling: A Canadian national study. *Journal of Gambling Issues, (25*), 36–53.

Castrén, S., Basnet, S., Salonen, A. H., Pankakoski, M., Ronkainen, J. E., Alho, H., & Lahti, T. (2013). Factors associated with disordered gambling in Finland. *Substance abuse Treatment, Prevention, and Policy, 8*:24, https://doi-org.libproxy.tuni.fi/10.1186/1747-597X-8-24

Castrén, S., Temcheff, C. E., Derevensky, J., Josefsson, K., Alho, H., & Salonen, A. H. (2017). Teacher awareness and attitudes regarding adolescent risk behaviours: a sample of Finnish middle and high school teachers. *International Journal of Mental Health and Addiction, 15*(2), 295–311.

Castrén, S., Heiskanen, M., & Salonen, A. H. (2018). Trends in gambling participation and gambling severity among Finnish men and women: cross-sectional population surveys in 2007, 2010 and 2015. *BMJ Open, 8*(8), e022129

Chambers, R. A., & Potenza, M. N. (2003). Neurodevelopment, impulsivity, and adolescent gambling. *Journal of Gambling Studies, 19*(1), 53–84.

Chóliz, M. (2016). The challenge of online gambling: the effect of legalization on the increase in online gambling addiction. *Journal of Gambling Studies, 32*(2), 749–756.

Chóliz, M., Marcos, M., & Lázaro-Mateo, J. (2019). The Risk of Online Gambling: a Study of Gambling Disorder Prevalence Rates in Spain. *International Journal of Mental Health and Addiction*, https://doi-org.libproxy.tuni.fi/10.1007/s11469-019-00067-4

Choudhury, M., Sundaram, H., John, A., Seligmann, D. D., & Kelliher, A. (2010). "Birds of a Feather": Does User Homophily Impact Information Diffusion in Social Media? Available in: https://arxiv.org/abs/1006.1702

Chua, T. H. H., & Chang, L. (2016). Follow me and like my beautiful selfies: Singapore teenage girls' engagement in self-presentation and peer comparison on social media. *Computers in Human Behavior, 55*, 190–197.

Chung, J. E. (2018). Peer influence of online comments in newspapers: Applying social norms and the social identification model of deindividuation effects (SIDE). *Social Science Computer Review*. Advance online publication, https://doi.org/10.1177/0894439318779000

Cialdini, R. B. (1984) *Influence: The Psychology of Persuasion*. New York, NY: Morrow.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The Handbook of Social Psychology* (pp. 151–192). McGraw-Hill.

Clemens, F., Hanewinkel, R., & Morgenstern, M. (2017). Exposure to gambling advertisements and gambling behavior in young people. *Journal of Gambling Studies, 33*(1), 1–13.

Clement, J. (2020) Global digital population as of April 2020. Statista – The Statistics Portal. https://www.statista.com/statistics/617136/digital-population-worldwide/. Accessed June 4, 2020.

Coates, A. E., Hardman, C. A., Halford, J. C., Christiansen, P., & Boyland, E. J. (2019). Social media influencer marketing and children's food intake: a randomized trial. P*ediatrics, 143*(4), e20182554.

Colliander, J. (2019). "This is fake news": Investigating the role of conformity to other users' views when commenting on and spreading disinformation in social media. *Computers in Human Behavior, 97*, 202–215.

Crabtree, J. W., Haslam, S. A., Postmes, T., & Haslam, C. (2010). Mental health support groups, stigma, and self-esteem: Positive and negative implications of group identification. *Journal of Social Issues, 66*(3), 553–569.

Csipke, E., & Horne, O. (2007). Pro-eating disorder websites: users' opinions. *European Eating Disorders Review, 15*(3), 196–206.

d'Astous, A., & Di Gaspero, M. (2015). Heuristic and analytic processing in online sports betting. *Journal of Gambling Studies, 31*(2), 455–470.

Deci, E. L., & Ryan's, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268.

Decker, S. E., Naugle, A. E., Carter-Visscher, R., Bell, K., & Seifert, A. (2011). Ethical issues in research on sensitive topics: Participants' experiences of distress and benefit. *Journal of Empirical Research on Human Research Ethics, 6*(3), 55–64.

Delfabbro, P., & King, D. L. (2020). Gaming-gambling convergence: evaluating evidence for the 'gateway' hypothesis. *International Gambling Studies*, https://doi-org.libproxy.tuni.fi/10.1080/14459795.2020.1768430

Delfabbro, P., King, D. L., & Derevensky, J. L. (2016). Adolescent gambling and problem gambling: prevalence, current issues, and concerns. *Current Addiction Reports, 3*(3), 268–274.

Derevensky, J. L., Hayman, V., & Gilbeau, L. (2019). Behavioral Addictions: Excessive Gambling, Gaming, Internet, and Smartphone Use Among Children and Adolescents. *Pediatric Clinics, 66*(6), 1163–1182.

Derevensky, J. L., St-Pierre, R. A., Temcheff, C. E., & Gupta, R. (2014). Teacher awareness and attitudes regarding adolescent risky behaviours: is adolescent gambling perceived to be a problem? *Journal of Gambling Studies, 30*(2), 435–451.

Derevensky, J., Sklar, A., Gupta, R., & Messerlian, C. (2010). An empirical study examining the impact of gambling advertisements on adolescent gambling attitudes and behaviors. *International Journal of Mental Health and Addiction, 8*(1), 21–34.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *The Journal of Abnormal and Social Psychology, 51*(3), 629–636.

Devos, M. G., Clark, L., Bowden-Jones, H., Grall-Bronnec, M., Challet-Bouju, G., Khazaal, Y., ... & Billieux, J. (2020). The joint role of impulsivity and distorted cognitions in recreational and problem gambling: A cluster analytic approach. *Journal of Affective Disorders, 260*, 473–482.

Dholakia, U. M., Bagozzi, R. P., & Pearo, L. K. (2004). A social influence model of consumer participation in network-and small-group-based virtual communities. International *Journal of Research in Marketing, 21*(3), 241–263.

Duman, H., & Ozkara, B. Y. (2019). The impact of social identity on online game addiction: the mediating role of the fear of missing out (FoMO) and the moderating role of the need to belong. *Current Psychology*, https://doi-org.libproxy.tuni.fi/10.1007/s12144-019-00392-w

Dyson, M. P., Hartling, L., Shulhan, J., Chisholm, A., Milne, A., Sundar, P., ... & Newton, A. S. (2016). A systematic review of social media use to discuss and view deliberate self-harm acts. *PloS One, 11*(5): e0155813

Edgren, R., Castrén, S., Jokela, M., & Salonen, A. H. (2016). At-risk and problem gambling among Finnish youth: The examination of risky alcohol consumption, tobacco smoking, mental health and loneliness as gender-specific correlates. *Nordic Studies on Alcohol and Drugs, 33*(1), 61–80.

Edgren, R., Castrén, S., Alho, H., & Salonen, A. H. (2017). Gender comparison of online and land-based gamblers from a nationally representative sample: Does gambling online pose elevated risk? *Computers in Human Behavior, 72,* 46–56.

Elton-Marshall, T., Leatherdale, S. T., & Turner, N. E. (2016). An examination of internet and land-based gambling among adolescents in three Canadian provinces: results from the youth gambling survey (YGS). *BMC Public Health, 16*: 277, https://doi-org.libproxy.tuni.fi/10.1186/s12889-016-2933-0

Flack, M., & Stevens, M. (2019). Gambling motivation: comparisons across gender and preferred activity. *International Gambling Studies, 19*(1), 69–84.

Flanagin, A. J. (2017). Online social influence and the convergence of mass and interpersonal communication. *Human Communication Research, 43*, 450–463.

Flanagin, A. J., Hocevar, K. P., & Samahito, S. N. (2014). Connecting with the user-generated Web: How group identification impacts online information sharing and evaluation. *Information, Communication and Society, 17*(6), 683–694.

Floros, G. D. (2018). Gambling disorder in adolescents: prevalence, new developments, and treatment challenges. *Adolescent Health, Medicine and Therapeutics, 9*, 43–51.

Gainsbury, S., Hing, N., & Suhonen, N. (2014). Professional help-seeking for gambling problems: Awareness, barriers and motivators for treatment. *Journal of Gambling Studies, 30*(2), 503–519.

Gainsbury, S. M., Russell, A., Blaszczynski, A., & Hing, N. (2015). Greater involvement and diversity of Internet gambling as a risk factor for problem gambling. *The European Journal of Public Health, 25*(4), 723–728.

Gambling Commission (2017). Virtual currencies, eSports and social casino gaming – Position paper. Birmingham, UK: Gambling Commission. Available in: https://www.gamblingcommission.gov.uk/PDF/Virtual-currencies-eSports-and-social-casino-gaming.pdf. Accessed 5 June, 2020.

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: an experimental study. *Developmental Psychology, 41*(4), 625–635.

Geschke, D., Lorenz, J., & Holtz, P. (2019). The triple-filter bubble: Using agent-based modelling to test a meta-theoretical framework for the emergence of filter bubbles and echo chambers. *British Journal of Social Psychology, 58*(1), 129–149.

Gill, P., & McQuade, A. (2012). The role of loneliness and self-control in predicting problem gambling behaviour. *Gambling Research: Journal of the National Association for Gambling Studies (Australia), 24(*1), 18–30.

Gómez, P., Feijóo, S., Braña, T., Varela, J., & Rial, A. (2019). Minors and Online Gambling: Prevalence and Related Variables. *Journal of Gambling Studies*, https://doi-org.libproxy.tuni.fi/10.1007/s10899-019-09923-3

Gómez, P., Harris, S. K., Barreiro, C., Isorna, M., & Rial, A. (2017). Profiles of Internet use and parental involvement, and rates of online risks and problematic Internet use among Spanish adolescents. *Computers in Human Behavior, 75*, 826–833.

Goodie, A. S., MacKillop, J., Miller, J. D., Fortune, E. E., Maples, J., Lance, C. E., et al. (2013). Evaluating the South Oaks Gambling Screen with DSM-IV and DSM-V criteria: Results from a diverse community sample of gamblers. *Assessment, 20*(5), 523–531.

Gouveia, V. V., Clemente, M., & Espinosa, P. (2003). The horizontal and vertical attributes of individualism and collectivism in a Spanish population. *The Journal of Social Psychology, 143*(1), 43–63

Grant, J. E., Potenza, M. N., Weinstein, A., & Gorelick, D. A. (2010). Introduction to behavioral addictions. *The American Journal of Drug and Alcohol Abuse, 36*(5), 233–241.

Greer, N., Rockloff, M., Browne, M., Hing, N., & King, D. L. (2019). Esports Betting and Skin Gambling: A Brief History. *Journal of Gambling Issues, 43*, http://dx.doi.org/10.4309/jgi.2019.43.8

Griffiths, M. D. (2018). Is the buying of loot boxes in video games a form of gambling or gaming? *Gaming Law Review, 22*(1), 52–54.

Griffiths, M. D., & Parke, J. (2010). Adolescent gambling on the Internet: A review. *International Journal of Adolescent Medicine and Health, 22*(1), 59–75.

Griffiths, M. D., Király, O., Pontes, H. M., & Demetrovics, Z. (2015). An overview of problematic gaming. In E. Aboujaoude & V. Starcevic (Eds.), *Mental Health in the Digital Age: Grave dangers, great promise* (pp. 27–45). Oxford: University Press.

Guegan, J., Moliner, P., & Buisine, S. (2015). Why are online games so self-involving: A social identity analysis of massively multiplayer online role-playing games. *European Journal of Social Psychology, 45*(3), 349–355

Haase, A. Q., Wellman, B., Witte, J., & Hampton, K. (2002). Capitalizing on the Internet: Social contact, Civic Engagement and sense of Community. In B. Wellman and C. Haythornthwaite (Eds.), *The Internet and Everyday Life* (pp. 291–394). Oxford: Blackwell.

Hamari, J., & Keronen, L. (2017). Why do people buy virtual goods: A meta-analysis. *Computers in Human Behavior, 71*, 59–69.

Hamari, J., & Sjöblom, M. (2017). What is eSports and why do people watch it? *Internet Research, 27*(2), 211–232.

Haythornthwaite, C. (2007). Social networks and online community. In A. Joinson, K. McKenna, T. Postmes and U. Reips (Eds.), *The Oxford Handbook of Internet Psychology* (pp. 121–137). Oxford: Oxford University Press.

Hing, N., Holdsworth, L., Tiyce, M., & Breen, H. (2014). Stigma and problem gambling: Current knowledge and future research directions. I*nternational Gambling Studies, 14*(1), 64–81.

Hing, N., Russell, A., Tolchard, B., & Nower, L. (2016). Risk factors for gambling problems: An analysis by gender. *Journal of Gambling Studies, 32*(2), 511–534.

Hing, N., Russell, A. M., & Browne, M. (2017). Risk factors for gambling problems on online electronic gaming machines, race betting and sports betting. *Frontiers in Psychology, 8*: 779, https://doi.org/10.3389/fpsyg.2017.00779

Hofstede, G. (1984). *Culture's consequences: International differences in work-related values* (Vol. 5). London: Sage.

Hofstede, G., & Bond, M. H. (1984). Hofstede's culture dimensions: An independent validation using Rokeach's value survey. *Journal of Cross-Cultural Psychology, 15*(4), 417–433

Hogg, M. A., & Reid, S. A. (2006). Social identity, self-categorization, and the communication of group norms. *Communication Theory, 16*(1), 7–30.

Holdsworth, L., Hing, N., & Breen, H. (2012). Exploring women's problem gambling: a review of the literature. *International Gambling Studies, 12*(2), 199–213.

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science, 10*(2), 227–237.

Hornsey, M. J. (2008). Social identity theory and self-categorization theory: A historical review. *Social and Personality Psychology Compass, 2*(1), 204–222.

Horváth, C., & Paap, R. (2012). The effect of recessions on gambling expenditures. *Journal of Gambling Studies, 28*(4), 703–717.

Inglehart, R., & Welzel, C. (2012). The WVS cultural map of the world. World Values Survey. Available in: https://web.archive.org/web/20131019112321/http://www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_54. Accessed 30 May, 2020.

Isenberg, D. J. (1986). Group polarization: A critical review and meta-analysis. *Journal of Personality and Social Psychology, 50*(6), 1141–1151.

Jang, S. (2013). Structural Analysis on the Path of Problem Gambling among College Students-Using Jacob's General Theory of Addiction. *Korean Journal of Social Welfare, 65*(2), 231–254.

Jang, S., Hong, S., Kim, S. B., & Sohn, S. (2019). Examining risk and protective factors of problem gambling among college students in South Korea. *Children and Youth Services Review, 105*, 104418.

Jetten, J., Haslam, C., Haslam, S. A., Dingle, G., & Jones, J. M. (2014). How groups affect our health and well-being: The path from theory to policy. *Social Issues and Policy Review, 8*(1), 103–130.

Joinson, A. (1999). Social desirability, anonymity, and Internet-based questionnaires. *Behavior Research Methods, Instruments, & Computers, 31*(3), 433–438.

Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology, 31*(2), 177–192.

Kaakinen, M., Keipi, T., Räsänen, P., & Oksanen, A. (2018). Cybercrime victimization and subjective well-being: An examination of the buffering effect hypothesis among adolescents and young adults. *Cyberpsychology, Behavior, and Social Networking, 21*(2), 129–137.

Kaakinen, M., Sirola, A., Savolainen, I., & Oksanen, A. (2020). Shared identity and shared information in social media: development and validation of the identity bubble reinforcement scale. *Media Psychology, 23*(1), 25–51.

Kahneman, D. (2011). *Thinking, Fast and Slow*. New York, NY: Farrar, Straus & Giroux.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons, 53*(1), 59–68.

Kaplan, M. F., & Miller, C. E. (1987). Group decision making and normative versus informational influence: Effects of type of issue and assigned decision rule. *Journal of Personality and Social Psychology, 53*(2), 306–313.

Karlsson, A., & Håkansson, A. (2018). Gambling disorder, increased mortality, suicidality, and associated comorbidity: A longitudinal nationwide register study. *Journal of Behavioral Addictions, 7*(4), 1091–1099.

Kaye, L. K., Kowert, R., & Quinn, S. (2017). The role of social identity and online social capital on psychosocial outcomes in MMO players. *Computers in Human Behavior, 74*, 215–223.

Keipi, T. (2018). Relatedness online: An analysis of youth narratives concerning the effects of internet anonymity. *Young, 26*(2), 91–107.

Keipi, T., & Oksanen, A. (2014). Self-exploration, anonymity and risks in the online setting: Analysis of narratives by 14–18-year olds. *Journal of Youth Studies, 17*(8), 1097–1113.

Keipi, T., Näsi, M., Oksanen, A., & Räsänen, P. (2017). *Online hate and harmful content: Cross-national perspectives*. New York, NY: Routledge.

Kiesler, S., Siegel, J., & McGuire, T. W. (1984). Social psychological aspects of computer-mediated communication. *American Psychologist, 39*(10), 1123–1134.

Kim, H. S., Hollingshead, S., & Wohl, M. J. (2017). Who spends money to play for free? Identifying who makes micro-transactions on social casino games (and why). *Journal of Gambling Studies, 33*(2), 525–538.

Kim, H. S., Wohl, M. J., Salmon, M. M., Gupta, R., & Derevensky, J. (2015). Do social casino gamers migrate to online gambling? An assessment of migration rate and potential predictors. *Journal of Gambling Studies, 31*(4), 1819–1831.

Kim, J., Lim, T. S., Dindia, K., & Burrell, N. (2010). Reframing the cultural differences between the East and the West. *Communication Studies, 61*(5), 543–566.

Kim, Y., Sohn, D., & Choi, S. M. (2011). Cultural difference in motivations for using social network sites: A comparative study of American and Korean college students. *Computers in Human Behavior, 27*(1), 365–372.

King, D. L., & Delfabbro, P. H. (2019). Video game monetization (eg,'loot boxes'): a blueprint for practical social responsibility measures. *International Journal of Mental Health and Addiction, 17*(1), 166–179.

King, D. L., & Delfabbro, P. H. (2020). The convergence of gambling and monetised gaming activities. *Current Opinion in Behavioral Sciences, 31*, 32–36.

King, D., Delfabbro, P., & Griffiths, M. (2010). The convergence of gambling and digital media: Implications for gambling in young people. *Journal of Gambling Studies, 26*(2), 175–187.

King, D. L., Delfabbro, P. H., Kaptsis, D., & Zwaans, T. (2014). Adolescent simulated gambling via digital and social media: An emerging problem. *Computers in Human Behavior, 31*, 305–313.

King, D. L., Gainsbury, S. M., Delfabbro, P. H., Hing, N., & Abarbanel, B. (2015). Distinguishing between gaming and gambling activities in addiction research. *Journal of Behavioral Addictions, 4*(4), 215–220.

Kozinets, R. V. (1999). E-tribalized marketing?: The strategic implications of virtual communities of consumption. *European Management Journal, 17*(3), 252–264.

Kristiansen, S., & Severin, M. C. (2020). Loot box engagement and problem gambling among adolescent gamers: Findings from a national survey. *Addictive Behaviors, 103*: 106254.

Ladhari, R., Massa, E., & Skandrani, H. (2020). YouTube vloggers' popularity and influence: The roles of homophily, emotional attachment, and expertise. *Journal of Retailing and Consumer Services, 54*: 102027.

Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology, 32*(2), 311–328.

Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2015). Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC Public Health, 16*: 80.

Larche, C. J., Chini, K., Lee, C., Dixon, M. J., & Fernandes, M. (2019). Rare Loot Box Rewards Trigger Larger Arousal and Reward Responses, and Greater Urge to Open More Loot Boxes. *Journal of Gambling Studies*, https://doi-org.libproxy.tuni.fi/10.1007/s10899-019-09913-5

Lea, M., Spears, R., & de Groot, D. (2001). Knowing me, knowing you: Anonymity effects on social identity processes within groups. *Personality and Social Psychology Bulletin, 27*(5), 526–537.

Lee, J. E., & Watkins, B. (2016). YouTube vloggers' influence on consumer luxury brand perceptions and intentions. *Journal of Business Research, 69*(12), 5753–5760.

Lee, M. K., Shi, N., Cheung, C. M., Lim, K. H., & Sia, C. L. (2011). Consumer's decision to shop online: The moderating role of positive informational social influence. *Information & Management, 48*(6), 185–191.

Lehdonvirta, V., & Räsänen, P. (2011). How do young people identify with online and offline peer groups? A comparison between UK, Spain and Japan. *Journal of Youth Studies, 14*(1), 91–108.

Leonard, C. A., & Williams, R. J. (2016). The relationship between gambling fallacies and problem gambling. *Psychology of Addictive Behaviors, 30*(6), 694–704.

Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*(9), 1184–1188.

Li, W., Mills, D., & Nower, L. (2019). The relationship of loot box purchases to problem video gaming and problem gambling. *Addictive Behaviors, 97*, 27–34.

Liao, G. Y., Pham, T. T. L., Cheng, T. C. E., & Teng, C. I. (2020). How online gamers' participation fosters their team commitment: Perspective of social identity theory. *International Journal of Information Management, 52*, https://doi.org/10.1016/j.ijinfomgt.2020.102095

Lind, K., & Kääriäinen, J. (2018). Cheating and stealing to finance gambling: analysis of screening data from a problem gambling self-help program. *Journal of Gambling Issues, 39*, http://dx.doi.org/10.4309/jgi.2018.39.9

Lopez-Gonzalez, H., & Griffiths, M. D. (2018). Understanding the convergence of markets in online sports betting. *International Review for the Sociology of Sport, 53*(7), 807–823.
Macey, J., & Hamari, J. (2018). Investigating relationships between video gaming, spectating esports, and gambling. *Computers in Human Behavior, 80*, 344–353.
Macey, J., & Hamari, J. (2019). eSports, skins and loot boxes: Participants, practices and problematic behaviour associated with emergent forms of gambling. *New Media & Society, 21*(1), 20–41.
Malinen, S. (2015). Understanding user participation in online communities: A systematic literature review of empirical studies. *Computers in Human Behavior, 46*, 228–238.
Marwick, A. E., & Boyd, D. (2011). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society, 13*(1), 114–133.
Matook, S., Cummings, J., & Bala, H. (2015). Are you feeling lonely? The impact of relationship characteristics and online social network features on loneliness. *Journal of Management Information Systems, 31*(4), 278–310.
Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth and Adolescence, 31*(4), 267–277.
McNamara, N., & Parsons, H. (2016). 'Everyone here wants everyone else to get better': The role of social identity in eating disorder recovery. *British Journal of Social Psychology, 55*(4), 662–680.
McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology, 27*(1), 415–444.
Merkouris, S. S., Thomas, A. C., Shandley, K. A., Rodda, S. N., Oldenhof, E., & Dowling, N. A. (2016). An update on gender differences in the characteristics associated with problem gambling: A systematic review. *Current Addiction Reports, 3*(3), 254–267.
Meyer, G., von Meduna, M., Brosowski, T., & Hayer, T. (2013). Is poker a game of skill or chance? A quasi-experimental study. *Journal of Gambling Studies, 29*(3), 535–550.
Minkkinen, J., Oksanen, A., Näsi, M., Keipi, T., Kaakinen, M., & Räsänen, P. (2015). Does social belonging to primary groups protect young people from the effects of pro-suicide sites? *Crisis, 37*(1), 31–41.
Molinaro, S., Benedetti, E., Scalese, M., Bastiani, L., Fortunato, L., Cerrai, S., ... & Fotiou, A. (2018). Prevalence of youth gambling and potential influence of substance use and other risk factors throughout 33 European countries: first results from the 2015 ESPAD study. *Addiction, 113*(10), 1862–1873.
Moon, J., Hossain, M. D., Sanders, G. L., Garrity, E. J., & Jo, S. (2013). Player commitment to massively multiplayer online role-playing games (MMORPGs): An integrated model. *International Journal of Electronic Commerce, 17*(4), 7–38.
Moreau, A., Chabrol, H., & Chauchard, E. (2016). Psychopathology of online poker players: Review of literature. *Journal of Behavioral Addictions, 5*(2), 155–168.
Myrseth, H., Brunborg, G. S., & Eidem, M. (2010). Differences in cognitive distortions between pathological and non-pathological gamblers with preferences for chance or skill games. *Journal of Gambling Studies, 26*(4), 561–569.
Myers, D. G., & Lamm, H. (1976). The group polarization phenomenon. *Psychological Bulletin, 83*(4), 602–627.
Naslund, J. A., Aschbrenner, K. A., Marsch, L. A., & Bartels, S. J. (2016). The future of mental health care: peer-to-peer support and social media. *Epidemiology and Psychiatric Sciences, 25*(2), 113–122.

Nielsen, R. K. L., & Grabarczyk, P. (2019). Are Loot Boxes Gambling? Random reward mechanisms in video games. *Transactions of the Digital Games Research Association, 4*(3), 171–207.

Nielsen, R. K., & Schrøder, K. C. (2014). The relative importance of social media for accessing, finding, and engaging with news: An eight-country cross-media comparison. *Digital Journalism, 2*(4), 472–489.

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review, 108*(2), 291–310.

Nowland, R., Necka, E. A., & Cacioppo, J. T. (2018). Loneliness and social internet use: pathways to reconnection in a digital world? *Perspectives on Psychological Science, 13*(1), 70–87.

Näsi, M., Räsänen, P., Oksanen, A., Hawdon, J., Keipi, T., & Holkeri, E. (2014). Association between online harassment and exposure to harmful online content: A cross-national comparison between the United States and Finland. *Computers in Human Behavior, 41*, 137–145.

OECD. (2018). Children and young people's mental health in the digital age: Shaping the future. Available in: http://www.oecd.org/els/health-systems/Children-and-Young-People-Mental-Health-in-the-Digital-Age.pdf

Oksanen, A., Garcia, D., & Räsänen, P. (2016). Proanorexia communities on social media. *Pediatrics, 137*(1), e20153372.

Oksanen, A., Hawdon, J., & Räsänen, P. (2014). Glamorizing rampage online: School shooting fan communities on YouTube. *Technology in Society, 39*, 55–67.

Oksanen, A., Savolainen, I., Sirola, A., & Kaakinen, M. (2018). Problem gambling and psychological distress: a cross-national perspective on the mediating effect of consumer debt and debt problems among emerging adults. *Harm Reduction Journal, 15:* 45.

Orford, J. (2001). *Excessive Appetites: A psychological view of addictions*. New York, NY: Wiley & Sons.

Orford, J. (2010). *An Unsafe Bet?: The dangerous rise of gambling and the debate we should be having*. Chichester, UK: John Wiley & Sons.

Orlowski, S., Tietjen, E., Bischof, A., Brandt, D., Schulte, L., Bischof, G., ... & Rumpf, H. J. (2020). The association of cognitive distortions and the type of gambling in problematic and disordered gambling. *Addictive Behaviors, 108,* 106445.

Pariser, E. (2011). *The Filter Bubble: What the Internet is hiding from you*. London, England: Penguin.

Parke, A., & Griffiths, M. D. (2011). Poker gambling virtual communities: The use of Computer-Mediated Communication to develop cognitive poker gambling skills. *International Journal of Cyber Behavior, Psychology and Learning (IJCBPL), 1*(2), 31–44.

Perfumi, S. C., Bagnoli, F., Caudek, C., & Guazzini, A. (2019). Deindividuation effects on normative and informational social influence within computer-mediated-communication. *Computers in Human Behavior, 92*, 230–237.

Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In S. Duck & R. Gilmour (Eds.), *Personal Relationships in Disorder* (pp. 31–56). London, England: Academic Press.

Pitt, H., Thomas, S. L., Bestman, A., Daube, M., & Derevensky, J. (2017). Factors that influence children's gambling attitudes and consumption intentions: lessons for gambling harm prevention research, policies and advocacy strategies. *Harm Reduction Journal, 14*: 11, https://doi.org/10.1186/s12954-017-0136-3

Pittman, M. (2015). Creating, consuming, and Connecting: Examining the relationship between social media engagement and loneliness. *The Journal of Social Media in Society, 4*(1), 66–98.

Postmes, T., Spears, R., & Lea, M. (1998). Breaching or building social boundaries? SIDE-effects of computer-mediated communication. *Communication Research, 25*(6), 689–715.

Postmes, T., Spears, R., & Lea, M. (1999). Social identity, normative content, and "deindividuation" in computer-mediated groups. In N. Ellemers, R. Spears, & B. Doosje (Eds.), *Social Identity: Context, commitment, content* (p. 164–183). Blackwell Science.

Postmes, T., Spears, R., & Lea, M. (2000). The formation of group norms in computer-mediated communication. *Human Communication Research, 26*(3), 341–371.

Postmes, T., Spears, R., Sakhel, K., & De Groot, D. (2001). Social influence in computer-mediated communication: The effects of anonymity on group behavior. *Personality and Social Psychology Bulletin, 27*(10), 1243–1254.

Postmes, T., Spears, R., & Lea, M. (2002). Intergroup differentiation in computer-mediated communication: Effects of depersonalization. *Group Dynamics: Theory, Research, and Practice, 6*(1), 3–16.

Preece, J. (2000). *Online communities: Designing usability and supporting sociability*. New York: Wiley.

Prendergast, G., Ko, D., & Siu Yin, V. Y. (2010). Online word of mouth and consumer purchase intentions. *International Journal of Advertising, 29*(5), 687–708.

Qualter, P., Vanhalst, J., Harris, R., Van Roekel, E., Lodder, G., Bangee, M., . . . Verhagen, M. (2015). Loneliness across the life span. *Perspectives on Psychological Science, 10*(2), 250–264.

Raisamo, S., Halme, J., Murto, A., & Lintonen, T. (2013). Gambling-related harms among adolescents: a population-based study. *Journal of Gambling Studies, 29*(1), 151–159.

Raisamo, S., Kinnunen, J. M., Pere, L., Lindfors, P., & Rimpelä, A. (2019). Adolescent Gambling, Gambling Expenditure and Gambling–Related Harms in Finland, 2011–2017. *Journal of Gambling Studies, 36*, 597–610.

Raitanen, J., & Oksanen, A. (2018). Global online subculture surrounding school shootings. *American Behavioral Scientist, 62(*2), 195–209.

Reicher, S. D., Spears, R., & Postmes, T. (1995). A social identity model of deindividuation phenomena. *European Review of Social Psychology, 6*(1), 161–198.

Reynolds, J. (2019). Gambling on Big Data: Designing Risk in Social Casino Games. *European Journal of Risk Regulation, 10*(1), 116–131.

Rheingold, H. (1993). *The Virtual Community: Finding connection in a computerized world.* Boston, MA: Addison-Wesley Longman Publishing Co., Inc.

Ridings, C. M., & Gefen, D. (2004). Virtual community attraction: Why people hang out online. *Journal of Computer-mediated communication, 10*(1), JCMC10110. https://doi.org/10.1111/j.1083-6101.2004.tb00229.x

Rockloff, M., Russell, A. M., Greer, N., Lolé, L., Hing, N., & Browne, M. (2020). Loot boxes: Are they grooming youth for gambling? NSW Responsible Gambling Fund. 1–131, Central Queensland University. https://doi.org/10.25946/5ef151ac1ce6f

Rodgers, S., & Chen, Q. (2005). Internet community group participation: Psychosocial benefits for women with breast cancer. *Journal of Computer-Mediated Communication, 10*(4), JCMC1047. https://doi.org/10.1111/j.1083-6101.2005.tb00268.x

Salonen, A., & Raisamo, S. (2015). Suomalaisten rahapelaaminen 2015: Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla

[Finnish gambling 2015: Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15–74] (Report 16/2015). Helsinki, Finland: National Institute for Health and Welfare (THL).

Salonen, A., Alho, H., & Castrén, S. (2017). Attitudes towards gambling, gambling participation, and gambling-related harm: cross-sectional Finnish population studies in 2011 and 2015. *BMC Public Health, 17*: 122, https://doi.org/10.1186/s12889-017-4056-7

Salonen, A., Lind, K., Castrén, S., Lahdenkari, M., Kontto, J., Selin, J., Hellman, M. & Järvinen-Tassopoulos, J. (2019). Rahapelaaminen, rahapelihaitat ja rahapelien markkinointiin liittyvät mielipiteet kolmessa maakunnassa: Rahapelikyselyn 2016-2017 perustulokset yksinoikeusjärjestelmän uudistuksessa. [Gambling, gambling-related harm and opinions on gambling marketing in three regions in connection with the reform of the Finnish gambling monopoly] (Report 4/2019). Helsinki, Finland: National Institute for Health and Welfare (THL).

Savolainen, I., Sirola, A., Kaakinen, M., & Oksanen, A. (2019). Peer group identification as determinant of youth behavior and the role of perceived social support in problem gambling. *Journal of Gambling Studies, 35*(1), 15–30.

Schwämmlein, E., & Wodzicki, K. (2012). What to tell about me? Self-presentation in online communities. *Journal of Computer-Mediated Communication, 17*(4), 387–407.

Seay, A. F., Jerome, W. J., Lee, K. S., & Kraut, R. E. (2004, April). Project Massive: A study of online gaming communities. In *CHI'04 extended abstracts on Human factors in computing systems* (pp. 1421–1424).

Secades-Villa, R., Martínez-Loredo, V., Grande-Gosende, A., & Fernández-Hermida, J. R. (2016). The relationship between impulsivity and problem gambling in adolescence. *Frontiers in Psychology, 7*, https://doi.org/10.3389/fpsyg.2016.01931

Setoyama, Y., Yamazaki, Y., & Namayama, K. (2011). Benefits of peer support in online Japanese breast cancer communities: differences between lurkers and posters. *Journal of Medical Internet Research, 13*(4), e122.

Shang, S. S., Wu, Y. L., & Sie, Y. J. (2017). Generating consumer resonance for purchase intention on social network sites. *Computers in Human Behavior, 69*, 18–28.

Sherif, M. (1936). *The Psychology of Social Norms*. New York: Harper.

Sherman, L. E., Payton, A. A., Hernandez, L. M., Greenfield, P. M., & Dapretto, M. (2016). The power of the like in adolescence: Effects of peer influence on neural and behavioral responses to social media. *Psychological Science, 27*(7), 1027–1035.

Smith, M. D., Rousu, M. C., & Dion, P. (2012). Internet poker: examining motivations, behaviors, outcomes, and player traits using structural equations analysis. *Journal of Gambling Issues, 27*, 1–23.

Snyder, D. G., & Newman, K. P. (2019). Reducing consumer loneliness through brand communities. *Journal of Consumer Marketing, 36*(2), 337–347.

Song, H., Omori, K., Kim, J., Tenzek, K. E., Hawkins, J. M., Lin, W. Y., . . . Jung, J. Y. (2016). Trusting social media as a source of health information: Online surveys comparing the United States, Korea, and Hong Kong. *Journal of Medical Internet Research, 18*(3), e25.

Spear, L. P. (2000). Neurobehavioral changes in adolescence. *Current Directions in Psychological Science, 9*(4), 111–114.

Spears, R. (2020). Social influence and group identity. Annual Review of Psychology. Advance online publication, https://doi-org.libproxy.tuni.fi/10.1146/annurev-psych-070620-111818

Spears, R., & Postmes, T. (2015). Group identity, social influence, and collective action online: Extensions and applications of the SIDE model. In S. Shyam Shundar (Ed.), *The Handbook of the Psychology of Communication Technology* (pp. 23-46). Oxford, UK: Wiley-Blackwell.

Spears, R., Lea, M., & Lee, S. (1990). De-individuation and group polarization in computer-mediated communication. *British Journal of Social Psychology, 29*(2), 121–134.

Spears, R., Postmes, T., Lea, M., & Wolbert, A. (2002). When are net effects gross products? *Communication. Journal of Social Issues, 58*(1), 91–107.

Splevins, K., Mireskandari, S., Clayton, K., & Blaszczynski, A. (2010). Prevalence of adolescent problem gambling, related harms and help-seeking behaviours among an Australian population. *Journal of Gambling Studies, 26*(2), 189–204.

Sproull, L., & Kiesler, S. (1986). Reducing social context cues: Electronic mail in organizational communication. *Management Science, 32*(11), 1492–1512.

Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology, 52*(1), 83–110.

Stevens, M., & Young, M. (2010). Who plays what? Participation profiles in chance versus skill-based gambling. *Journal of Gambling Studies, 26*(1), 89–103.

Sudau, F., Friede, T., Grabowski, J., Koschack, J., Makedonski, P., & Himmel, W. (2014). Sources of information and behavioral patterns in online health forums: observational study. *Journal of Medical Internet Research, 16*(1), e10.

Suri, H. (2020). Ethical Considerations of Conducting Systematic Reviews in Educational Research. In *Systematic Reviews in Educational Research* (pp. 41–54). Wiesbaden: Springer.

Suurvali, H., Cordingley, J., Hodgins, D. C., & Cunningham, J. (2009). Barriers to seeking help for gambling problems: A review of the empirical literature. *Journal of Gambling Studies, 25*(3), 407–424.

Syed-Abdul, S., Fernandez-Luque, L., Jian, W. S., Li, Y. C., Crain, S., Hsu, M. H., . . . Liou, D. M. (2013). Misleading health-related information promoted through video-based social media: Anorexia on YouTube. *Journal of Medical Internet Research, 15*(2), e30.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American, 223*(5), 96–103.

Tajfel, H. & Turner, J. C. (1979) An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The Social Psychology of Intergroup Relations* (pp. 33–47). Monterey, CA: Brooks Cole.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology, 1*(2), 149–178.

Toneatto, T. (1999). Cognitive psychopathology of problem gambling. *Substance Use & Misuse, 34*(11), 1593–1604.

Turel, O., & Osatuyi, B. (2017). A peer-influence perspective on compulsive social networking site use: Trait mindfulness as a double-edged sword. *Computers in Human Behavior, 77*, 47–53.

Turner, J. C. (1982). Towards a cognitive redefinition of the social group. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 15-40). Cambridge, UK: Cambridge University Press.

Turner, J. C. (1985). Social categorization and the self-concept: A social cognitive theory of group behavior. In E. J. Lawler (Ed.), *Advances in Group Processes: Theory and Research* (Vol. 2.) (pp. 77–122). Greenwich, CT: JAI Press.

Turner, J. C., & Reynolds, K. J. (2010). The story of social identity. In T. Postmes and N. Branscombe (Eds.), *Rediscovering Social Identity: Key readings* (pp. 13–32). New York: Psychology Press.

Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin, 20*(5), 454–463.

Vachon, J., Vitaro, F., Wanner, B., & Tremblay, R. E. (2004). Adolescent gambling: relationships with parent gambling and parenting practices. *Psychology of Addictive Behaviors, 18*(4), 398–401.

Vergnes, J. N., Marchal-Sixou, C., Nabet, C., Maret, D., & Hamel, O. (2010). Ethics in systematic reviews. *Journal of Medical Ethics, 36*(12), 771–774.

Vitaro, F., Arseneault, L., & Tremblay, R. E. (1999). Impulsivity predicts problem gambling in low SES adolescent males. *Addiction, 94*(4), 565–575.

Vogel, E. A., Rose, J. P., Okdie, B. M., Eckles, K., & Franz, B. (2015). Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes. *Personality and Individual Differences, 86*, 249–256.

Volberg, R. A., Gupta, R., Griffiths, M. D., Olason, D. T., & Delfabbro, P. (2010). An international perspective on youth gambling prevalence studies. *International Journal of Adolescent Medicine and Health, 22*(1), 3–38.

von Meduna, M., Steinmetz, F., Ante, L., Reynolds, J., & Fiedler, I. (2020). Loot boxes are gambling-like elements in video games with harmful potential: Results from a large-scale population survey. *Technology in Society*, 63, 101395. https://doi.org/10.1016/j.techsoc.2020.101395

Walker, G. J., Hinch, T. D., & Weighill, A. J. (2005). Inter-and intra-gender similarities and differences in motivations for casino gambling. *Leisure Sciences, 27*(2), 111–130.

Wang, X., Yu, C., & Wei, Y. (2012). Social media peer communication and impacts on purchase intentions: A consumer socialization framework. *Journal of Interactive Marketing, 26*(4), 198–208.

Weidberg, S., González-Roz, A., Fernández-Hermida, J. R., Martínez-Loredo, V., Grande-Gosende, A., García-Pérez, Á., & Secades-Villa, R. (2018). Gender differences among adolescent gamblers. *Personality and Individual Differences, 125*, 38–43.

Weiss, R. S. (1973). *Loneliness: The Experience of Emotional and Social Isolation*. Cambridge, MA: Massachusetts Institute of Technology Press.

Wellman, B. (1997). An electronic group is virtually a social network. *Culture of the Internet, 4*, 179–205.

Wellman, B., Boase, J., & Chen, W. (2002). The networked nature of community: Online and offline. *It & Society, 1*(1), 151–165.

Welte, J. W., Barnes, G. M., Tidwell, M. C. O., & Hoffman, J. H. (2011). Gambling and problem gambling across the lifespan. *Journal of Gambling Studies, 27*(1), 49–61.

Welte, J. W., Barnes, G. M., Tidwell, M. C. O., Hoffman, J. H., & Wieczorek, W. F. (2015). Gambling and problem gambling in the United States: Changes between 1999 and 2013. *Journal of Gambling Studies, 31*(3), 695–715.

WHO. (2019a) Gambling disorder. In ICD-11, available in: https://icd.who.int/browse11/l-m/en#/http://id.who.int/icd/entity/1041487064. Accessed 26 May, 2020.

WHO. (2019b) Gaming disorder. In ICD-11, available in: https://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2ficd%2fentity%2f1448597234. Accessed 26 May, 2020.

Williams, R. J., Lee, C. K., & Back, K. J. (2013). The prevalence and nature of gambling and problem gambling in South Korea. *Social Psychiatry and Psychiatric Epidemiology, 48*(5), 821–834.

Winter, S., Brückner, C., & Krämer, N. C. (2015). They came, they liked, they commented: Social influence on Facebook news channels. *Cyberpsychology, Behavior, and Social Networking, 18*(8), 431–436.

Yao, M. Z., & Zhong, Z. J. (2014). Loneliness, social contacts and Internet addiction: A cross-lagged panel study. *Computers in Human Behavior, 30*, 164–170.

Yau, M. Y. H., & Potenza, M. N. (2015). Gambling disorder and other behavioral addictions: recognition and treatment. *Harvard Review of Psychiatry, 23*(2), 134-146.

Zendle, D., & Cairns, P. (2019). Loot boxes are again linked to problem gambling: Results of a replication study. *PloS ONE, 14*(3), https://doi.org/10.1371/journal.pone.0213194

Zhao, Y., Marchica, L., Derevensky, J. L., & Ivoska, W. (2018). Mobile gambling among youth: A warning sign for problem gambling? *Journal of Gambling Issues, 38*, http://dx.doi.org/10.4309/jgi.2018.38.14

Zhong, Z. J. (2011). The effects of collective MMORPG (Massively Multiplayer Online Role-Playing Games) play on gamers' online and offline social capital. *Computers in Human Behavior, 27*(6), 2352–2363.

Zimbardo, P. G. (1969). The human choice: Individuation, reason, and order versus deindividuation, impulse, and chaos. *Nebraska Symposium on Motivation, 17*, 237–307.

Zollo, F., Bessi, A., Del Vicario, M., Scala, A., Caldarelli, G., Shekhtman, L., . . . Quattrociocchi, W. (2017). Debunking in a world of tribes. *PloS ONE, 12*(7), e0181821. https://doi.org/10.1371/journal.pone.0181821

APPENDIX A

English-translated Vignettes and Manipulations Used in the Survey Experiment

Condition	Message
Experience-driven, pro-gambling	*Me and many of my friends* **gamble**. Gambling **brings *me enjoyment***, and it ***has brought significant benefits*** *to me and my family's well-being*. Behind the following link, you can read more *about Americans' experiences* on gambling.
Fact-driven, pro-gambling	*According to a recent report, 77% of Americans* **gamble**. Gambling **brings *enjoyment*,** and it ***brings significant benefits to*** *the society and people's well-being*. Behind the following link, you can read more *research findings* on gambling.
Experience-driven, anti-gambling	*Me and many of my friends* **suffer from gambling problems**. Gambling **causes *me problems***, and it ***has caused significant damage*** *to me and my family's well-being*. Behind the following link, you can read more *about Americans' experiences* on gambling.
Fact-driven, anti-gambling	*According to a recent report, more than 5 million Americans* **suffer from gambling problems**. Gambling **causes *problems***, and it ***causes significant damage for*** *the society and people's well-being*. Behind the following link, you can read more *research findings* on gambling.

Note. Italics indicate fact-driven/experience-driven manipulations. Bold font indicates pro-gambling/anti-gambling manipulations. Gambling rates presented in the messages were modified for each country to mirror its current estimated gambling rate.

PUBLICATIONS

PUBLICATION I

The role of virtual communities in gambling and gaming behaviors: A systematic review

Anu Sirola, Nina Savela, Iina Savolainen, Markus Kaakinen & Atte Oksanen

Journal of Gambling Studies
https://doi.org/10.1007/s10899-020-09946-1

Journal of Gambling Studies
https://doi.org/10.1007/s10899-020-09946-1

REVIEW PAPER

The Role of Virtual Communities in Gambling and Gaming Behaviors: A Systematic Review

Anu Sirola[1] · **Nina Savela**[1] · **Iina Savolainen**[1] · **Markus Kaakinen**[2] · **Atte Oksanen**[1]

Abstract

Gambling opportunities are facilitated by the growth of the Internet and social media platforms. Digital games also increasingly include monetary features, such as microtransactions, blurring the line between gambling and gaming. The Internet provides a variety of virtual communities for gamblers and gamers, but comprehensive research on these communities and their relevance in gambling and monetary gaming behaviors remains scarce. This paper summarizes research of online gambling and monetary gaming communities based on a systematic literature review. A systematic literature search was conducted from five databases: Scopus, Web of Science, PsycINFO, Social Science Premium Collection, and EBSCOhost. The search was limited to empirical articles that focused on gambling or gaming involving money and examined online interaction between gamblers or gamers. Preliminary search resulted in 1056 articles, from which 55 were selected for the analyses based on pre-determined criteria. According to results, online communities serve different functions in gambling and gaming behaviors. Gambling communities are typically forums for discussing and sharing gambling experiences, strategies, and tips as well as gambling problems, while gaming communities are inherently embedded inside a game being an essential part of the gaming experience. Identification with virtual communities influences gambling behavior and monetary gaming behavior through mechanisms of perceived norms, social influence, and community feedback. Whereas some gambling communities may provide protection from excessive gambling habits, gaming communities seem to solely motivate gaming behavior and purchase intentions. The role of online communities should be acknowledged in prevention and treatment of gambling and gaming problems.

Keywords Gambling · Gaming · Virtual communities · Social media

✉ Anu Sirola
anu.sirola@tuni.fi

[1] Faculty of Social Sciences, Tampere University, 33014 Tampere, Finland

[2] Institute of Criminology and Legal Policy, University of Helsinki, Helsinki, Finland

Published online: 18 April 2020

Introduction

The Internet and social media have facilitated and extended gambling opportunities via exponential growth of online gambling platforms. Consequently, social media users are increasingly exposed to gambling content and gambling-like activities in social media (King and Delfabbro 2016). At the same time, gambling problems are growing globally (Calado and Griffiths 2016). Online games and video games increasingly include gambling-like and monetary features, such as microtransactions (Jacques et al. 2016; H. S. Kim et al. 2017; King et al. 2015), blurring the line between gambling and gaming. Gambling and gambling-like behaviors can be detrimental particularly when excessive, and lead to severe and long-lasting problems, such as economic difficulties (Oksanen et al. 2018).

In addition to gambling and gaming platforms, the Internet also offers social environments for gamblers and gamers, such as discussion forums and in-game interaction tools. These kinds of consumption-related online communities (Kozinets 1999) and their social aspects may have an important role in gambling and monetary gaming behaviors, but comprehensive research on these communities and their relevance to users remains scarce. In this systematic literature review, we aim to summarize earlier research on online gambling and gaming communities and their role in gambling and monetary gaming behaviors.

The Blurring Line Between Gambling and Gaming

Gambling and gaming have been traditionally perceived as distinct activities. King et al. (2015) roughly distinguish gambling and gaming based on their central features: gambling is characterized by its risk-involving, chance-determined outcomes and monetary features, such as wagering and betting mechanisms, whereas gaming is characterized by interactive, skill-based play and contextual relevance in game progress and success. However, these boundaries have become more and more blurred, partly due to technological divergence.

Digital games increasingly utilize monetary features, typically microtransactions, as revenue models. Microtransactions are needed, for example, to get additional features or better equipment in a game. Also, so called “loot boxes” have become common particularly in video games, sharing the chance-determined features of gambling. Loot boxes are virtual entities that contain randomized items (e.g., weapons or other equipment) and can be paid with real-world money. Recent research found that spending on loot boxes was associated with problematic gambling (Zendle and Cairns 2018). It has also been suggested that due to many similarities between gambling and gaming, playing video games would increase a desire to gamble; but recent research has not fully supported this (Forrest et al. 2016; Macey and Hamari 2018).

In addition to video games, online games increasingly include gambling-like features. For example, social media sites, such as Facebook, include social games that simulate gambling activities like poker, roulette, or slot machines (Calado et al. 2018; Jacques et al. 2016; King et al. 2014). Although these types of games are often perceived as harmless and safe alternatives for real-money gambling, their gambling-like characteristics may also trigger motivation for real gambling (King et al. 2014) and teach mechanisms of gambling to children and adolescents (King et al. 2010). Moreover, while “free-to-play” games do not initially require real-money use, they typically encourage players to make in-game purchases (i.e., microtransactions) to get access to additional features (H. S. Kim et al. 2017; Paavilainen et al. 2013). The aforementioned studies demonstrate that gambling and

gaming can no longer be perceived as fully distinct activities. Rather, they increasingly share common characteristics related to gambling-like mechanisms.

Online Communities: Social Dimension of Gambling and Gaming

Humans have a basic need for social belonging and relatedness (Baumeister and Leary 1995; Deci and Ryan 2000), which is one of the reasons behind the success of online communities and social media (Keipi and Oksanen 2014; McKenna and Bargh 1999; Reich and Vorderer 2013; William et al. 2000). Following Kozinets' (1999) fundamental definition, virtual communities (i.e., online communities) consist of groups of people sharing social interactions, social ties, and virtual spaces for interactions. Communities are characterized by shared interests, goals, and norms that unite like-minded individuals (Preece 2000; Rheingold 1993). Indeed, in a virtual environment people have a tendency toward homophily, that is, to seek for and interact with similar others (Centola and van de Rijt 2015; McPherson et al. 2001).

Identifying with a virtual community consisting of like-minded people may have important consequences for a user (Kaakinen et al. 2020). Identifying with the community's shared social identity and internalizing its group norms affect user behavior (Zhou 2011). Moreover, social media research shows that people often rely on information and content provided by their in-group members (Flanagin et al. 2014). Particularly when talking about potentially addictive behaviors, identifying with an online community can influence intentions and attitudes toward harmful direction and normalize maladaptive behavior (Oksanen et al. 2016). However, online communities and shared identity may also be beneficial in overcoming an addiction (McNamara and Parsons 2016).

In terms of gambling and gaming, online communities cover various kinds of virtual spaces, such as discussion forums and social network sites, where gamblers and gamers can interact with other gamblers and gamers. However, social interaction is not limited to distinct online platforms, as games often also include in-game interactive tools. Video games, in particular, are typically formed around interactive elements, such as communicating with one's team members during the game, which are not essentially the case in traditional forms of gambling activities (Cole and Griffiths 2007; King et al. 2015). In particular, Massively Multiplayer Online Role-Playing Games (MMORPGs) are characterized by their community aspects and joint playing. In MMORPGs, gaming typically takes place in "guilds" that can be defined as long-lasting social structures where players are interdependent on each other's contribution (Zhong 2011). Guild playing is also important in terms of a player's game-related social identity (Guegan et al. 2015). In this review, we examine these different virtual spaces and their role in gambling and monetary gaming behaviors in more depth.

Current Study

The aim of this study is to bring additional insight into the gambling and gaming phenomena by investigating the role of online communities in gambling and monetary gaming behaviors. In this review, we adopt a loose definition of online communities (see Kozinets 1999; Preece 2000; Rheingold 1993) to cover various kinds of interactive online platforms for gamblers and gamers.

Some systematic reviews close to our topic have been conducted, for example in terms of online game communities (Warmelink and Siitonen 2013) and user participation in

different online communities (Malinen 2015). However, our focus lies in the social aspects of the online gambling and monetary gaming phenomena. Thus, we aim to synthesize empirical evidence of the key characteristics and the roles of virtual gambling and gaming communities in gambling and monetary gaming behaviors. Since we are specifically interested in the role of virtual communities in gambling and gambling-like behaviors, we narrow our perspective of gaming to cover only gaming involving money. We believe this is reasonable when examining gaming alongside gambling. As we argued earlier, it is meaningful to include both gambling and gaming phenomena because of their combined monetary features; but, as such, we are also able to compare possible differences among these communities. Consequently, the more general role of online communities in gaming is out of our focus.

Our research questions are as follows:

RQ1 What is the role of virtual gambling communities in gambling behavior?
RQ2 What is the role of virtual gaming communities in monetary gaming behavior?
RQ3 Are there notable qualitative differences between virtual gambling and gaming communities?

Method

Data Collection

To answer our research questions, we conducted a conceptual review with a systematic data collection process (e.g., Petticrew and Roberts 2006, p. 39). The data were collected in two phases: The original search was conducted in July 2018 from five comprehensive databases: Scopus (Elsevier), Web of Science (Clarivate), PsycINFO (APA), Social Science Premium Collection (ProQuest), and EBSCOhost (EBSCO) with all databases selected. The search engines were set to search hits from abstracts, titles, and keywords using the same search phrase in each database: (gambl* OR gaming OR gamer) AND (internet OR online OR virtual OR digital) AND ("online communit*" OR "virtual communit*" OR "online group*" OR "virtual group*" OR "online discuss*" OR "chat room*" OR "online social network*" OR "forum*"). In addition to author keywords, the database keyword indexes were included in the search fields when applicable. Due to the vast amount of magazines and other irrelevant sources in Social Science Premium Collection and EBSCOhost, only scholarly or academic journals were selected using the filtering options within the search engines. We used no other limits in the search engines, for example, year or language. After removing duplicates, the database search resulted in 885 articles.

In order to keep the data up-to-date, we conducted an additional literature search in February 2020, following the same steps and guidelines established in 2018. The search was conducted from the same five databases: Scopus (Elsevier), Web of Science (Clarivate), PsycINFO (APA), Social Science Premium Collection (ProQuest), and EBSCOhost (EBSCO). In databases, the publication time was limited to cover years 2018-2020. After removing duplicates and overlaps with data gathered in 2018, the additional database search resulted in 171 articles.

In both data collection phases, studies were included based on the following criteria. (1) The article empirically examines participation or social interaction in online communities or networks related to gambling or gaming involving money. Participation or interaction

can include aspects such as participation frequency, motivation, level of identification, or shared content between users. (2) The article empirically examines behavioral factors associated with participation or social interaction in online community or networks related to gambling or gaming involving money. Behavioral factors can include aspects such as virtual purchase behavior, frequency of gambling or gaming behaviors or other kinds of gambling and gaming behaviors involving money. Consequently, studies were excluded if they did not mention gambling, monetary gaming, or social interaction between gamblers and gamers; if they were theoretical articles or literature reviews; book or conference introductions; or were not published in English.

In the first data collection phase in 2018, two coders independently checked the 885 articles with pre-determined inclusion criteria. An inter-rater reliability test revealed that the average inter-rater agreement was 87.39% (Cohen's kappa = .61). After this, the first author (not involved in the previous inclusion check) checked the articles that previous coders classified as included by reading the articles thoroughly. Disagreements and borderline cases were discussed within the research team. The final selection check of this first phase resulted in 44 articles (see Fig. 1).

In the second data collection phase in 2020, two coders independently checked the 171 articles using the same pre-determined inclusion criteria defined in 2018. The average inter-rater agreement was 94.34% (Cohen's kappa = .58). Disagreements and borderline

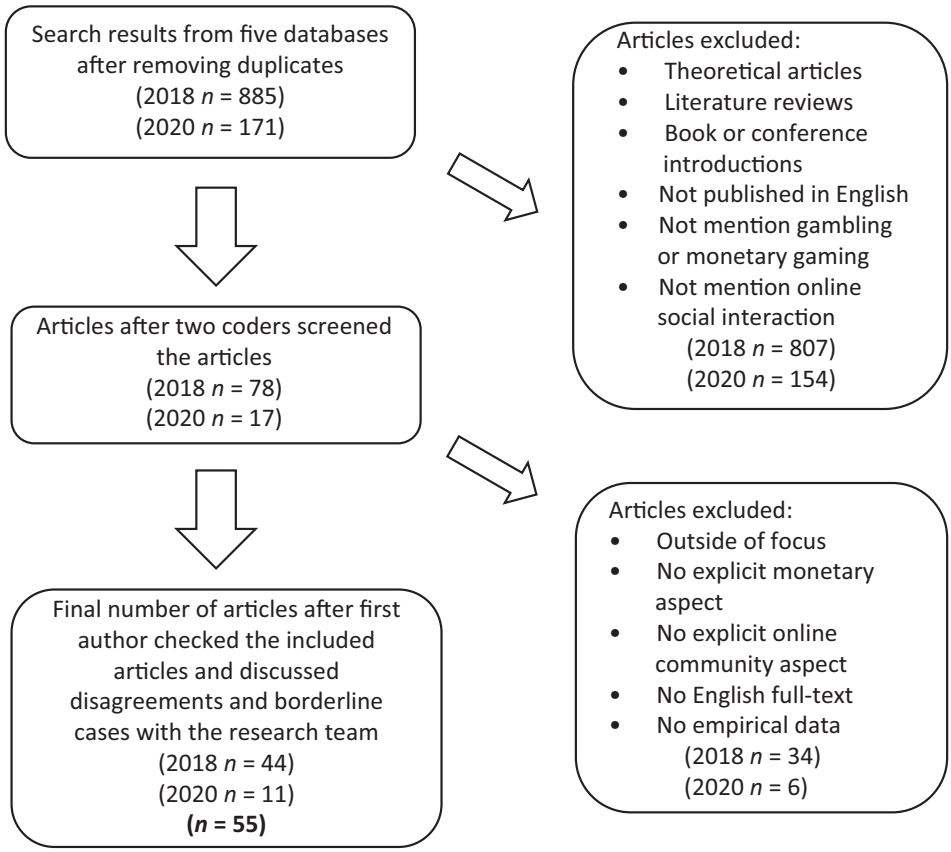

Fig. 1 Data collection and selection process accomplished in two phases in 2018 and 2020

cases were discussed with the research team. The final selection check of this additional phase resulted in 11 articles. After additional data collection, we obtained a final dataset consisting of 55 articles (see Fig. 1).

Method of Analysis

Our aim was to summarize evidence of the role of online gambling and gaming communities in gambling and monetary gaming behaviors. We categorized the articles by characteristics relevant to our research: research type (quantitative or qualitative), sample characteristics, study context, topic (gambling, gaming, or both), and type of virtual community (e.g., discussion forum or in-game community). We used content analysis to summarize the main findings of the studies relevant to our research questions. Due to heterogeneity in terms of study design, participants, measures, and methods, we did not conduct a meta-analysis of the results.

Results

General Details About Published Studies

Studies included in the data ($n = 55$) were published between 2003 and 2020. Out of all the studies, over half (60%) were quantitative, 31% qualitative, and 9% mixed method, utilizing both quantitative and qualitative methods. Over half (60%) of the studies were gaming studies, while 35% were gambling studies, and 5% examined both gambling and gaming. In about half of the studies (48%), respondents were either from multiple countries or the study context was not explicitly mentioned. One reason for this is many of the studies utilized online surveys gathered via international online websites and forums or ethnographic data from online platforms. Regarding specific country locations, most research was conducted in Taiwan (15%), followed by Australia (7%), Finland (5%), and the United States (5%) (see Table 1). Main characteristics of the included studies are reported in Table 2.

Online Gambling Communities

According to the reviewed studies, online gambling communities exist typically outside the game, for example, in the form of discussion forums that are created around gambling discussions. There are gambling forums for mutual gambling discussions, such as sharing gambling tips, strategies, and experiences (Howe et al. 2019; O'Leary and Carroll 2013; Parke and Griffiths 2011; Schüll 2016; Sirola et al. 2018, 2019), and also forums for sharing gambling problem experiences and discussing the downsides and related problems of gambling (Caputo 2015; Hing et al. 2015; Järvinen-Tassopoulos 2016; McGowan 2003; Mudry and Strong 2013; Rantala and Sulkunen 2012; Rodda et al. 2018; Sirola et al. 2018, 2019; Wood and Wood 2009). In addition, there are also some in-game interactional tools, such as chat opportunities, for gamblers, particularly in online poker (Khazaal et al. 2017; Schüll 2016; Smith et al. 2012) and in online social casino games (Gainsbury et al. 2015).

Participation in online communities with positive gambling attitudes is a risk factor for excessive gambling (Howe et al. 2019; Sirola et al. 2018, 2019). A study by Sirola et al. (2019) found that sense of loneliness moderated the association between

Table 1 Descriptive information about the included studies ($n=55$)

Topic	Gambling ($n=19$)	Gaming ($n=33$)	Both ($n=3$)	Total ($n=55$)
Method	% $n=19$	% $n=33$	% $n=3$	% $n=55$
Quantitative	42% (8)	70% (23)	67% (2)	60% (33)
Qualitative	42% (8)	24% (8)	33% (1)	31% (17)
Mixed method	16% (3)	6% (2)	–	9% (5)
Study context	% $n=19$	% $n=33$	% $n=3$	% $n=55$
Taiwan	5% (1)	21% (7)	–	15% (8)
Australia	21% (4)	–	–	7% (4)
Finland	16% (3)	–	–	5% (3)
Italy	5% (1)	3% (1)	–	4% (2)
UK	5% (1)	3% (1)	–	4% (2)
USA	–	9% (3)	–	5% (3)
China	–	6% (2)	–	4% (2)
South Korea	–	3% (1)	33% (1)	4% (2)
Canada, France, Malaysia	5% (1)	6% (2)	–	5% (3)
Multiple countries	16% (3)	12% (4)	–	13% (7)
Country not explicitly mentioned	26% (5)	36% (12)	67% (2)	35% (19)

excessive gambling and daily online gambling community participation in Finland, indicating that lonely problem gamblers are most likely to actively participate in such communities. Online poker communities are mostly used for sharing poker experiences and seeking social reinforcement for gambling successes; these kinds of communities may also increase poker playing and help develop cognitive biases concerning gambling (Parke and Griffiths 2011). However, there was also some evidence that actively participating in mutual discussion in a gambling community and actively consuming money in online gambling are mutually exclusive activities (Kaptein et al. 2015; Lindholm et al. 2012). Using longitudinal data of online poker players, it was noticed that when consumers increased their community activity, they also reduced their poker-related consumption (Lindholm et al. 2012). In addition, when relatively inactive community members increased their community activity, it was related to increased money consumption, while already active members' increase in community engagement was related to decreased spending (Kaptein et al. 2015).

Online poker players share their poker data and experiences of former games with other poker players in online forums, chat threads, and message boards to get feedback and help to identify flaws in performance; this may also protect from overvaluing one's poker skills (Schüll 2016). Feedback from the community members is considered helpful in developing one's poker skills, and it may even reduce the risk of problematic gambling, as long as the information provided is accurate (Parke and Griffiths 2011). In addition, socializing with other players during online gambling by utilizing in-game interaction tools is associated with less problematic forms of gambling (Khazaal et al. 2017; Smith et al. 2012). A study by Khazaal et al. (2017) found that gambling problems were more severe among lonely online gamblers who did not utilize social interaction tools in a game or preferred to gamble against the computer. Thus, it seems that in online poker, utilizing poker communities both in- and outside the game may protect the player from developing excessive poker gambling habits.

Table 2 Main characteristics of the included studies ($n = 55$)

References	Method	Type of the study	*n*	Age	Female, %	Focus	Type of the virtual community
Badrinarayanan et al. (2014)	Quantit.	Cross-sectional	970	< 15–43+	15.0%	Gaming	MMORPG
Badrinarayanan et al. (2015)	Quantit.	Cross-sectional	970	< 15–43+	15.0%	Gaming	MMORPG
Ben-Ur et al. (2015)	Mixed	Multimethod	1695	N/A	N/A	Gaming	MMORPG; game forum
Blackburn et al. (2014)	Quantit.	Longitudinal	> 12 million	N/A	N/A	Gaming	Game community
Canossa et al. (2019)	Quantit.	Longitudinal	Multiple data	N/A	N/A	Gaming	In-game community
Caputo (2015)	Mixed	Content analytic	24	Adults	12.5%	Gambl.	PG forum
Chang et al. (2014)	Quantit.	Cross-sectional	166	< 19–40+	44.0%	Gaming	Game networks
Deans et al. (2017)	Qualit.	Interview	50	20–37	0.0%	Gambl.	SNS sites
Fang et al. (2009)	Mixed	Multimethod	33	Multiple data	Multiple data	Gaming	MMORPG
Gainsbury et al. (2015)	Qualit.	Interview	10	20–65+	40.0%	Both	SNS sites/in-game interaction
Ghazali et al. (2019)	Quantit.	Cross-sectional	362	< 18–45+	38.7%	Gaming	Game community
Gong et al. (2019)	Quantit.	Longitudinal	410	< 20–40+	29.0%	Gaming	In-game community
Goodfellow (2015)	Qualit.	Multimethod	75	N/A	N/A	Gaming	Game forums; in-game community
Griffiths and Light (2008)	Qualit.	Field study	N/A	N/A	N/A	Gaming	In-game community
Gui (2018)	Qualit.	Ethnographic	190	N/A	N/A	Gaming	Game forum; MMORPG
Hickerson and Mowen (2012)	Quantit.	Cross-sectional	141	12–38	1.0%	Gaming	In-game community
Hing et al. (2015)	Quantit.	Cross-sectional	620	Mean age 37.6	20.2%	Gambl.	PG forum/support group
Hota and Derbaix (2016)	Qualit.	Interview	20	8–12	50.0%	Gaming	MMORPG
Howe et al. (2019)	Quantit.	Cross-sectional	3361	18–88	52.0%	Gambl.	Discussion boards
Hsieh and Tseng (2018)	Quantit.	Cross-sectional	605	< 20–39	18.0%	Gaming	Online social groups
Hsu and Lu (2007)	Quantit.	Cross-sectional	356	Majority < 25	24.0%	Gaming	In-game community
Huang et al. (2012)	Quantit.	Cross-sectional	850	Majority < 24	About 33.3%	Gaming	Game forum
Huang et al. (2018)	Quantit.	Cross-sectional	2212	18–55	15.6%	Gaming	In-game community
Järvinen-Tassopoulos (2016)	Qualit.	Content analytic	48	N/A	N/A	Gambl.	PG forum
Jin et al. (2017)	Quantit.	Cross-sectional	214	< 21–36+	8.4%	Gaming	MMORPG
Kaptein et al. (2015)	Quantit.	Longitudinal	Multiple data	Multiple data	Multiple data	Both	Gambling/gaming forum
Khazaal et al. (2017)	Quantit.	Cross-sectional	372	19–61	9.0%	Gambl.	In-game interaction

Table 2 (continued)

References	Method	Type of the study	*n*	Age	Female, %	Focus	Type of the virtual community
Y. B. Kim et al. (2015)	Quantit.	Sentiment analytic	Multiple data	N/A	N/A	Gaming	Game forum
Y. B. Kim et al. (2017)	Quantit.	Sentiment analytic	2,931,748	N/A	N/A	Gaming	Game forum
M. Kim and J. Kim (2018)	Quantit.	Cross-sectional	348	10–40+	14.4%	Gaming	Game community
King et al. (2020)	Quantit.	Cross-sectional	428	18–60+	6.5%	Gaming	In-game community
Lee et al. (2018)	Quantit.	Cross-sectional	320	< 20–30+	37.5%	Both	Online social networks
Lehdonvirta (2009)	Qualit.	Exploratory	N/A	N/A	N/A	Gaming	In-game community
Liao et al. (2012)	Quantit.	Cross-sectional	280	< 12–49+	19.6%	Gaming	Game community
Lin et al. (2008)	Quantit.	Cross-sectional	501	N/A	32.0%	Gaming	In-game community
Lindholm et al. (2012)	Quantit.	Longitudinal	4475	N/A	N/A	Gambl.	Poker community
McGowan (2003)	Qualit.	Discourse analytic	N/A	N/A	100.0%	Gambl.	PG forum/support group
Mudry and Strong (2013)	Qualit.	Ethnographic	1791	N/A	N/A	Gambl.	PG forum
O'Leary and Carroll (2013)	Qualit.	Ethnographic	N/A	N/A	N/A	Gambl.	Poker forum
Park et al. (2018)	Quantit.	Longitudinal	4645	N/A	N/A	Gaming	MMORPG
Parke and Griffiths (2011)	Qualit.	Ethnographic	271	N/A	N/A	Gambl.	Poker community
Pinto et al. (2015)	Qualit.	Multimethod	Multiple data	15–26	0.0%	Gaming	MMORPG
Rantala and Sulkunen (2012)	Qualit.	Content analytic	487	N/A	N/A	Gambl.	PG forum
Rapp (2018)	Qualit.	Ethnographic	Multiple data	Multiple data	Multiple data	Gaming	MMORPG
Rodda et al. (2018)	Mixed	Content analytic	1370	N/A	N/A	Gambl.	PG forum
Schüll (2016)	Qualit.	Multimethod	Multiple data	N/A	N/A	Gambl.	Poker forum; in-game interaction
Shukla and Drennan (2018)	Quantit.	Cross-sectional	358	18–35+	36.3%	Gaming	MMORPG
Sierra et al. (2016)	Quantit.	Cross-sectional	970	< 15–43+	15.0%	Gaming	MMORPG
Sirola et al. (2018)	Quantit.	Cross-sectional	1200	15–25	50.0%	Gambl.	Gambling forums (PG and other)
Sirola et al. (2019)	Quantit.	Cross-sectional	Multiple data	15–30	Multiple data	Gambl.	Gambling forums (PG and other)
Smith et al. (2012)	Quantit.	Cross-sectional	194	18–51+	2.6%	Gambl.	In-game interaction
Vella et al. (2019)	Qualitat.	Interview	36	19–30	30.56%	Gaming	In-game community

Table 2 (continued)

References	Method	Type of the study	*n*	Age	Female, %	Focus	Type of the virtual community
Wen et al. (2016)	Quantit.	Prototyping development	277	18–40+	36.46%	Gambl.	SNS sports betting community
Wood and Wood (2009)	Mixed	Multimethod	Multiple data	Multiple data	Multiple data	Gambl.	PG forum
Zhang et al. (2018)	Quantit.	Cross-sectional	2753	N/A	N/A	Gaming	Game community

Qualit. qualitative, *quantit.* quantitative, *gambl.* gambling, *PG* problem gambling, *SNS* social network site, *N/A* not applicable/not mentioned

Although communities may offer safeguards for poker players, research shows that gambling-related social networks and exposure to the gambling activities of peers may normalize gambling and make it attractive. Gambling-related activities of Facebook friends, such as "liking" social casino games and inviting friends to play, influence users' intentions to try these gambling or gambling-like activities (Gainsbury et al. 2015). In mobile social-network games, the perceived number of users and friends increases the jackpot and purchase intentions of probability-based items (Lee et al. 2018). In online sports betting communities, users prefer sharing personal betting results and wagering opinions and predictions with others (Wen et al. 2016). Users can also extend their gambling-related networks to share wagering tips and celebrate wins with others; these kinds of gambling-positive discussions may contribute to the normalization of gambling (Deans et al. 2017).

Communities focusing on gambling problems have essential roles for those coping with problematic gambling; they may even help with overcoming problems. Discussions on gambling problem forums are grounded in sharing gambling problem experiences and related problems (Caputo 2015; Järvinen-Tassopoulos 2016; Rantala and Sulkunen 2012), and also strategies for getting rid of gambling problems (Rodda et al. 2018). From a user's perspective, these kinds of communities are important sources of mutual support, by helping him or her to better cope with gambling problems and to feel less alone with his or her problems (Wood and Wood 2009). However, a survey study from Finland on young respondents aged 15–25 found that the main motivation for respondents to engage in online gambling communities was to share gambling tips and general gambling information, while only a few mentioned discussing gambling problems and recovery (Sirola et al. 2018). Also, a study by Hing et al. (2015) found that online problem gamblers were more reluctant to utilize online support groups or discussion boards compared to land-based problem gamblers.

Gambling communities are grounded on mutual norms, where it is important to conform in order to be accepted as a legitimate member of the community (Mudry and Strong 2013; O'Leary and Carroll 2013). Communities are also important for a gambler's identity; poker forums are spaces to construct poker player identities (O'Leary and Carroll 2013), but online communities focused on problem gambling can also be utilized in negotiating and (re)constructing problem gambler identities (Järvinen-Tassopoulos 2016; Mudry and Strong 2013).

There was also some evidence of gender-specific differences in the use of online gambling communities. In a study by Khazaal et al. (2017), women were less prone to utilize in-game interaction tools; this could be at least partly explained by the male-dominance typically associated with gambling. Since gambling problems have traditionally been more common among males than females, online forums offer a space for female problem gamblers to anonymously share their gambling problem experiences (Järvinen-Tassopoulos 2016; McGowan 2003; Wood and Wood 2009), which can be challenging or intimidating in male-dominated face-to-face groups (McGowan 2003). Also, in a study by Wood and Wood (2009), significantly more women than men found gambling problem forums helpful in coping with their gambling problem.

Online Gaming Communities

According to reviewed studies, online gaming communities inherently exist inside the game. This is especially true with MMORPGs (Badrinarayanan et al. 2014, 2015; Ben-Ur et al. 2015; Fang et al. 2009; Gui 2018; Hota and Derbaix 2016; Jin et al. 2017; Park et al.

2018; Pinto et al. 2015). MMORPG playing typically takes place in guilds, that is, long-lasting social groups where players collaborate in order to better game success. In guilds, players share their skills, knowledge, and virtual resources, such as money, with each other (Gui 2018; Pinto et al. 2015). The player roles in guilds are important in terms of teamwork contributions. An example of this type of contribution would be taking care of a guild bank that is used for sharing common resources, like items and money (Rapp 2018). Social interaction with other players is one of the motivating factors in playing (Fang et al. 2009), and it may also have positive outcomes for a player's social capital. Indeed, a study by Hickerson and Mowen (2012) found that gamers who utilized social bonding in video games reported positive social outcomes, such as friend-based social support.

Perceived group cohesion is an important determinant in a user's preference for participating in an online game community, and a community's social norms can affect a customer's loyalty towards the community (Hsu and Lu 2007). Ben-Ur et al. (2015) suggested that a strong virtual game community intensifies hedonic consumption experience and satisfaction among its members. Lin et al. (2008) found that women are more likely than men to commit to a game if it utilizes interactional tools to create and maintain social relationships with other gamers; this was also associated with consumer satisfaction and loyalty. According to M. Kim and J. Kim (2018), financial incentives (e.g. special price offerings or rewards) in an online game community, alongside with social and structural bonds, play an important role in users' online community engagement.

Various studies indicated that a game community, either in-game or out-game, has an important role in terms of purchase intentions and consumption behavior within a game. Huang et al. (2018) found that gamers' interdependence (i.e. depending on other players' opinions) and network convergence (i.e. shared friends with other players) were positively related to continuance intention. A study by Zhang et al. (2018) found that players' sense of community in game communities is positively associated with purchase behavior. In a study of Pokémon Go users by Ghazali et al. (2019), discussing the game and sharing experiences in a virtual game community enhanced gaming experience, and online community involvement mediated the relationship between network externality and continuance intention. In terms of MMORPG communities, studies utilizing structural equation modeling illustrated that identifying with a specific MMORPG community drives purchase intention and consumption behavior (Badrinarayanan et al. 2014, 2015). Sierra et al. (2016) found that becoming attached to a MMORPG community intensifies a player's tribal psyche associated with the MMORPG, which in turn enhances self-esteem. Further, self-esteem positively influences virtual purchase intentions within the MMORPG. A study by Canossa et al. (2019) indicated that game networks have a social contagion effect in a way that certain active players serve as influencers in a gaming network. These influencers then impact other players' gaming habits, such as time and money invested in a game, and social play with others (Canossa et al. 2019).

Studies also examined the role of social influence in gaming communities in terms of virtual purchases. According to Hsieh and Tseng (2018), online informational influence (i.e., relying on online peers' knowledge of online games and virtual items) directly affects intentions to buy virtual items, and this relationship was also mediated by happiness. In a study by Shukla and Drennan (2018), it was found that normative interpersonal influence (i.e., conformity in order to be approved by peers) and community identity within the MMORPG community influence virtual purchase intentions. In a study by Chang et al. (2014), peer-influence was positively associated with subjective norm, and subjective norm was further positively related to continuance intention to play online games. Park et al. (2018) found that social interaction between users in a

MMORPG community positively affects both hedonic and functional product purchases, but social influence has a stronger impact on consumption of hedonic rather than functional products. Hota and Derbaix (2016) found that even 8–12-year-old children utilize teamwork aspects in their gaming and are susceptible to peer influence in virtual consumption. Observed gaming behavior and social norms of other players may influence excessive gaming behavior through social learning mechanisms (Gong et al. 2019). A study by King et al. (2020) found that in a highly popular online game Fortnite, spending on microtransactions was influenced by in-game friends' purchase behavior. In addition, those who belonged to a larger online social network of Fortnite players were likely to spend money on microtransactions.

The motives for buying virtual items in online games are functional, hedonistic, and social; virtual items have social value, for example, in terms of social distinction and status (Lehdonvirta 2009). Interviews with 8–12-year-old children revealed that boys prefer buying virtual items for better game performance, while girls buy items for social status (Hota and Derbaix 2016). According to Gong et al. (2019), young gamers who play excessively spend lots of money on in-game purchases, which can lead to conflicts with family members.

Players help each other in virtual game communities by giving tips to better game performance (Ben-Ur et al. 2015; Hota and Derbaix 2016), sharing knowledge of the virtual products (Hota and Derbaix 2016), and recommending suitable and discounted games for others (Ben-Ur et al. 2015; Vella et al. 2019). Symbolic customer value, such as group membership in a game community, positively affects purchase intentions and likelihood to recommend products or services in online word-of-mouth communications (Liao et al. 2012). In a study by Huang et al. (2012), a sense of virtual community moderated the influence of other users' comments on attitudes and purchase intentions.

Membership of a guild becomes an important and extended part of the identity, which becomes manifested in game-related consumption (Pinto et al. 2015). Both technological (i.e., interactivity, social presence) and user factors (i.e., social ties, social identity) have strong positive relationships with the users' purchase intentions; further, social ties and social identities affect user engagement and community satisfaction (Jin et al. 2017).

MMORPGs and their guild-systems are characterized by shared roles (Rapp 2018) and mutual norms and policies concerning acceptable gaming behaviors. Malicious and grief (i.e., impolite and unethical) players are perceived as threatening to the community and its playing policies (Hsu and Lu 2007). Cheating and scamming in order to gain monetary benefits and virtual items are seen as norm-breaking and are socially sanctioned behaviors within game communities (Blackburn et al. 2014; Goodfellow 2015). However, in some game communities, such as in Habbo Hotel, scamming and cheating are regarded as normal and harmless activities despite their antisocial nature (Griffiths and Light 2008).

In addition to in-game communities, there are also game-related discussion forums where gamers can interact (Ben-Ur et al. 2015; Goodfellow 2015; Gui 2018; Huang et al. 2012; Y. B. Kim et al. 2015, 2017). Game forums are important platforms for gamers to share experiences of games, and this kind of word-of-mouth communication may also affect game purchase intentions (Huang et al. 2012). In game review forums, gamers give recommendations of games for other players (Ben-Ur et al. 2015). In game-specific discussion forums, gamers can discuss all the things related to a specific game and, for example, criticize other players' playing strategies and habits (Goodfellow 2015). Gamers also share their opinions of in-game virtual currencies in game-specific discussion forums, and even currency value fluctuations can be predicted based on these user opinions (Y. B. Kim et al. 2015, 2017).

Similarities and Differences Between Online Gambling and Gaming Communities

Online gambling and gaming communities have both differences and similarities regarding characteristics, reasons of use, and outcomes of use (see Table 3). In gambling studies, online communities are typically discussion forums and other virtual spaces that exist outside a game (Caputo 2015; Hing et al. 2015; Howe et al. 2019; Järvinen-Tassopoulos 2016; McGowan 2003; Mudry and Strong 2013; O'Leary and Carroll 2013; Parke and Griffiths 2011; Rantala and Sulkunen 2012; Rodda et al. 2018; Schüll 2016; Sirola et al. 2018, 2019; Wood and Wood 2009), but also some in-game interaction tools exist particularly in online poker (Khazaal et al. 2017; Schüll 2016; Smith et al. 2012) and in social casino games (Gainsbury et al. 2015). Gaming communities, on the other hand, exist inherently embedded inside the game, as is the case particularly in MMORPGs and their guild-based systems (Badrinarayanan et al. 2014, 2015; Ben-Ur et al. 2015; Fang et al. 2009; Gui 2018; Hota and Derbaix 2016; Jin et al. 2017; Park et al. 2018; Pinto et al. 2015), but also external communities such as discussion forums exist for gamers (Ben-Ur et al. 2015; Y. B. Kim et al. 2015, 2017). Strikingly, at least within this data, no gaming problem forums or communities were identified, as was the case with gambling.

Mutual for both gambling and gaming communities is the importance of their community-specific norm system; being accepted as a legitimate member of the community requires following and conforming to the community's norms (Blackburn et al. 2014; Goodfellow 2015; Griffiths and Light 2008; Gui 2018; Mudry and Strong 2013; O'Leary and Carroll 2013). Both gambling and gaming communities are also important in gambling- and gaming-related identity constructions (Järvinen-Tassopoulos 2016; Mudry and Strong 2013; O'Leary and Carroll 2013; Pinto et al. 2015).

According to the studies reviewed, utilizing in-game interaction and socializing with other players during the game have different functions and outcomes in online gambling and gaming. In gaming studies, there is strong evidence that identifying with in-game communities has a great potential to influence gaming behavior and in-game purchase intentions (Badrinarayanan et al. 2014, 2015; Canossa et al. 2019; Ghazali et al. 2019; Gong et al. 2019; Hota and Derbaix 2016; Hsieh and Tseng 2018; Huang et al. 2018; King et al. 2020; Park et al. 2018; Shukla and Drennan 2018; Sierra et al. 2016; Zhang et al. 2018). In gambling studies, on the contrary, there is evidence that socializing with other players during a game, particularly in online poker, might be a protective factor, as this kind of social playing was associated with less severe and non-problematic forms of gambling (Khazaal et al. 2017; Smith et al. 2012). In general, it seems that social motives are more inherently embedded in video gaming compared to online gambling. For example, when interviewing players of social casino games (i.e., gambling-like online games), few of the interviewees mentioned playing for social motives, despite the interactional opportunities of the game (Gainsbury et al. 2015); while in video gaming, social interaction with other players is considered an important motive for playing (Fang et al. 2009; Hickerson and Mowen 2012).

Studies also indicate differences concerning a community's potential protective role and feedback in terms of excessive gambling or gaming habits. In gambling studies, there was evidence that feedback from an online gambling community could influence gambling behavior to a more moderate direction and protect from overvaluing one's poker skills (Parke and Griffiths 2011; Schüll 2016). There was also some evidence that actively contributing in an online gambling community could decrease gambling-related consumption (Kaptein et al. 2015; Lindholm et al. 2012). On the contrary, there were no studies or results indicating a gaming community's protective role or critical feedback concerning

Table 3 Summarizing key differences and similarities between gambling and gaming communities in relation to gambling and monetary gaming

	Gambling	Gaming
External communities	Gambling-related discussion forums (e.g., for discussions on gambling in general, gambling tips and problem gambling)	Game-specific discussion forums, game review forums
In-game communities	In-game interaction tools in online poker and social casino games	Community aspect inherently embedded (e.g., in MMORPGs)
	In-game community aspect not central	
Community role in gambling/monetary gaming	Normalize gambling and involve risks for excessive gambling	In-game interaction is an essential part of gaming experience
	Feedback from the community helps to develop poker skills	Identifying with a gaming community drives game-related purchase intentions
	Reinforce gambler identities	Gamers help each other to better game performance and provide information of virtual items
	Utilizing in-game interaction is associated with non-problematic forms of gambling	Reinforce gamer identities
Community role in problematic gambling/monetary gaming	Critical feedback from the community may protect from maladaptive gambling habits	Not examined in the included studies
	Peer-support in gambling problem forums helps to cope with one's gambling problem and aiming for recovery	
	Important in (re)constructing problem gambler identities	

excessive gaming or in-game purchase behaviors. Instead, studies consistently showed the motivating effect of a gaming community in terms of gaming continuation and purchase intentions.

There was also some evidence concerning gender differences in the use of virtual gambling and gaming communities. In online poker, females did not prefer using in-game interaction tools, while men did (Khazaal et al. 2017). Instead, women with a gambling problem found discussion forums important in coping with their gambling-related problems (Järvinen-Tassopoulos 2016; Wood and Wood 2009). In gaming studies, Lin et al. (2008) found that women were more likely than men to commit to a game if it provided tools to create and maintain social relationships. However, since the proportion of female participants in the reviewed studies was significantly smaller compared to males, evidence of potential gender differences remains weak.

Discussion

The aim of this review was to summarize research on online gambling and gaming communities and their role in gambling and monetary gaming behaviors. In total, 55 articles filled the criteria; 60% of them were quantitative, and the rest were either qualitative or mixed method. Out of the articles, 33 were on gaming, 19 on gambling, and only three studies investigated both gambling and gaming. Despite a relatively limited number of studies on this area, the results show that identification with virtual communities has an influential role in gambling and monetary gaming behaviors, but there were also some notable differences in community types and possible outcomes of the community use between gambling and gaming communities.

In line with research on online identity formation (Kaakinen et al. 2020; McNamara and Parsons 2016), results show that virtual communities are important spaces for gamblers and gamers to construct and extend their identities concerning gambling and gaming with like-minded others. In MMORPGs, virtual game communities are grounded on collaboration, teamwork, and mutual goals, and the communities can become an extended part of the identity. In gambling, poker communities are important spaces for poker players to enhance their poker player identities via social reinforcement and community feedback. For problem gamblers, there are virtual communities to share their experiences with other problem gamblers and receive socio-emotional peer support for dealing with problems. Various studies of this review also pointed out the role of social influence in both gambling and gaming communities, for example, in terms of purchase intentions and trying out new gambling activities. Normalizing and promoting gambling and gambling-like activities in social media can make gambling attractive and encourage excessive gambling habits via social influence and perceived norms (e.g., Cialdini and Goldstein 2004).

One notable difference of gambling and gaming communities concerned the communities' roles in game-related money use and purchase intentions. Whereas studies suggested that feedback from gambling communities can also protect from developing excessive gambling habits, gaming communities seem to solely motivate gaming behaviors and purchase intentions. A possible explanation for the differences is the fundamentally different nature of gambling compared to gaming. Succeeding in gambling, in terms of winning money, is highly individual by nature. Thus, members of a gambling community may be more prone to notice and criticize potentially problematic gambling behavior, as no one else of the community shares the benefits of the gambling success

or money invested in gambling other than the gambler. In video gaming, in contrast, success in game and money invested for it could also benefit the community teammates, particularly in MMORPGs where gaming is typically formed around guilds. In other words, if committed to teamwork play, purchasing virtual items are for the community's good and not solely for the individual's. Thus, even excessive gaming and money use within the game can be important in terms of a team's performance and success in the game. This makes it unlikely that members of the community would try to restrain their team players' gaming activity because it would mean poorer game performance for the team.

Differences also existed concerning the role of in-game interaction. Although both digital games and online gambling games include in-game interaction tools, the role of in-game socialization in gambling and gaming proved to be inherently different. Indeed, it can be suggested based on the results that in online gambling lonely gamblers who do not socialize with other gamblers are more prone to use more money and to develop more severe gambling problems; in other words, social playing was associated with non-problematic forms of gambling. In video gaming, on the other hand, playing in isolation may result in less purchase intention within a game, since identifying with a game community was consistently and positively associated with in-game purchase intentions. Thus, the roles of social interaction and social influence should be taken into consideration when screening for potentially problematic forms of gaming behavior.

It is also noteworthy that while in gambling studies, there were forums for those seeking help for and sharing experiences of gambling problems, there were no studies on communities of problematic gaming in our data. A plausible explanation for the lack or scarcity of these communities is that there is a general lack of consensus on the phenomenon and definition of problematic gaming and whether it can be qualified as an addiction (Griffiths et al. 2015). Recently, "gaming disorder" has been included in the latest International Classification of Diseases (ICD-11), and in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), it is recognized as a condition that requires more research before including it into mental disorders. The proposal of gaming disorder as a diagnosis has aroused a great deal of criticism among scholars due to, for example, low quality of the research base and problems in operationalization (Aarseth et al. 2017). However, it may be that if gaming disorder becomes established in general discourses and addiction treatments, gaming problem forums and online self-help groups will become more common.

From a theoretical perspective of virtual communities, the results of this systematic review show that virtual communities in gambling and gaming are grounded on mutual goals, shared interests, and norms. These aspects have been previously noted in studies on online communities (Boellstorff 2015; Preece 2000; Oksanen et al. 2014), and these communities play an important yet different role for gamblers and gamers. Despite some notable differences between gambling and gaming communities, it is clear that both types of communities provide their users virtual spaces to fulfill a fundamental need to belong and form social ties (Baumeister and Leary 1995; Deci and Ryan's 2000). Virtual social ties may be valuable for those who have deficient offline relationships, and socialization with online friends is also a significant part of the fun, particularly in video gaming, and may have positive outcomes for a player's social capital. However, this systematic literature review emphasizes the risks involved. It particularly recognizes the impact communities have, through social mechanisms, on monetary behavior and other potentially harmful consequences. Based on the results, we highlight that more emphasis should be placed in examining online communities' roles in problematic gambling and gaming habits, particularly in terms of excessive money consumption.

Limitations

This study is not without its limitations. First, it is possible that some relevant articles have been excluded in the search phase due to the search words used. Second, in terms of gaming phenomena, we limited our focus on studies examining gaming with explicitly mentioned monetary behavior. Although microtransactions and gambling-like mechanisms are common business models in the majority of digital games, we did not include studies where monetary behavior was not explicitly mentioned. Online gaming communities and social interactions within them may play various important roles for gamers in general, but this review only focused on a community's role on monetary gaming behavior, such as virtual purchase intentions. Finally, in this review we studied virtual gambling and gaming communities as factors in gambling and monetary gaming behaviors. Thus, this review does not cover those forms of gambling- or gaming-related virtual interactions and communities whose relationship to actual gambling or gaming behavior remains unstudied.

Conclusion

Although online gambling and gaming are isolated activities in the sense that the player is often physically alone, related virtual communities are an essential part of both activities. Online gambling and gaming communities normalize gambling and gaming behaviors and influence purchase intentions; but at least in gambling, communities may also support moderate forms of gambling, provide socio-emotional support for recovery of addiction and help to cope with a gambling problem. Even though the line between gambling and gaming has become blurred due to increased use of gambling-like mechanisms in digital games, the results of this review indicate that social interactions in these two activities have different functions, and also motives for and outcomes of the interaction differ in terms of monetary behavior.

The role of virtual communities should be acknowledged in prevention and treatment of gambling and gaming problems. In particular, it would be crucial to understand social mechanisms, such as social influence and social learning, taking place in virtual gambling and gaming environments. Raising awareness of social underpinnings and influential mechanisms behind gambling and monetary gaming would be important for players, parents and health care professionals when aiming to reduce excessive behavior and money consumption. Limiting players' in-game social interaction would be required to reduce excessive money spending, particularly in group- and guild-based gaming, where purchase intention often follows strong belonging or attachment to the community. In gambling, utilizing recovery-oriented virtual communities for problem gamblers would be useful given that such communities are proven to be useful in implementing beneficial aspects of peer-influence, support and anonymity. Finally, improving gamblers' and gamers' offline relationships and healthy activities would be crucial in risk-prevention. Meaningful offline relationships and social activities would decrease the need for spending lots of time gambling and gaming online, but also diminish the need for belonging to virtual communities and searching for social contacts online.

Acknowledgements This study was funded by the Finnish Foundation for Alcohol Studies (Problem Gambling & Social Media Project, PI Atte Oksanen, 2017-2019).

Compliance with Ethical Standards

Conflict of interest Authors declare that they have no conflict of interest.

Ethical Approval This study does not contain any studies with human participants or animals performed by any of the authors.

References

References marked with an asterisk (*) indicate studies included in the data

Aarseth, E., Bean, A. M., Boonen, H., Colder Carras, M., Coulson, M., Das, D., et al. (2017). Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal. *Journal of Behavioral Addictions, 6*(3), 267–270.

*Badrinarayanan, V. A., Sierra, J. J., & Martin, K. M. (2015). A dual identification framework of online multiplayer video games: The case of massively multiplayer online role playing games (MMORPGs). *Journal of Business Research, 68*(5), 1045–1052.

*Badrinarayanan, V. A., Sierra, J. J., & Taute, H. A. (2014). Determinants and outcomes of online brand tribalism: Exploring communities of massively multiplayer online role playing games (MMORPGs). *Psychology and Marketing, 31*(10), 853–870.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497.

*Ben-Ur, J., Mai, E., & Yang, J. (2015). Hedonic consumption in virtual reality. *Journal of Internet Commerce, 14*(3), 406–423.

*Blackburn, J., Kourtellis, N., Skvoretz, J., Ripeanu, M., & Iamnitchi, A. (2014). Cheating in online games: A social network perspective. *ACM Transactions on Internet Technology (TOIT), 13*(3), 9.

Boellstorff, T. (2015). *Coming of age in Second Life: An anthropologist explores the virtually human*. Princeton: University Press.

Calado, F., Alexandre, J., & Griffiths, M. D. (2018). Gambling among adolescents and emerging adults: A cross-cultural study between Portuguese and English youth. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-018-9980-y.

Calado, F., & Griffiths, M. D. (2016). Problem gambling worldwide: An update and systematic review of empirical research (2000–2015). *Journal of Behavioral Addictions, 5*(4), 592–613.

*Canossa, A., Azadvar, A., Harteveld, C., Drachen, A., & Deterding, S. (2019). Influencers in multiplayer online shooters: Evidence of social contagion in playtime and social play. In *Proceedings of the 2019 CHI conference on human factors in computing systems* (pp. 1–12).

*Caputo, A. (2015). Sharing problem gamblers' experiences: a text analysis of gambling stories via online forum. *Mediterranean Journal of Clinical Psychology, 3*(1), 1–26.

Centola, D., & van de Rijt, A. (2015). Choosing your network: Social preferences in an online health community. *Social Science and Medicine, 125,* 19–31.

*Chang, I. C., Liu, C. C., & Chen, K. (2014). The effects of hedonic/utilitarian expectations and social influence on continuance intention to play online games. *Internet Research, 24*(1), 21–45.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology, 55,* 591–621.

Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *Cyberpsychology and Behavior, 10*(4), 575–583.

*Deans, E. G., Thomas, S. L., Daube, M., & Derevensky, J. (2017). The role of peer influences on the normalisation of sports wagering: A qualitative study of Australian men. *Addiction Research and Theory, 25*(2), 103–113.

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227–268.

*Fang, K., Lin, Y. C., & Chuang, T. L. (2009). Why do internet users play massively multiplayer online role-playing games? A mixed method. *Management Decision, 47*(8), 1245–1260.

Flanagin, A. J., Hocevar, K. P., & Samahito, S. N. (2014). Connecting with the user-generated Web: how group identification impacts online information sharing and evaluation. *Information, Communication and Society, 17*(6), 683–694.

Forrest, C. J., King, D. L., & Delfabbro, P. H. (2016). The gambling preferences and behaviors of a community sample of Australian regular video game players. *Journal of Gambling Studies, 32*(2), 409–420.

*Gainsbury, S. M., Hing, N., Delfabbro, P., Dewar, G., & King, D. L. (2015). An exploratory study of interrelationships between social casino gaming, gambling, and problem gambling. *International Journal of Mental Health and Addiction, 13*(1), 136–153.

*Ghazali, E. M., Mutum, D. S., & Woon, M. Y. (2019). Multiple sequential mediation in an extended uses and gratifications model of augmented reality game Pokémon Go. *Internet Research, 29*(3), 504–528.

*Gong, X., Zhang, K. Z., Chen, C., Cheung, C. M., & Lee, M. K. (2019). Antecedents and consequences of excessive online social gaming: A social learning perspective. *Information Technology and People, 33*(2), 657–688.

*Goodfellow, C. (2015). Russian overlords, Vodka, and Logoffski: Russian-and English-language discourse about anti-Russian Xenophobia in the EVE Online community. *Games and Culture, 10*(4), 343–364.

Griffiths, M. D., Király, O., Pontes, H. M., & Demetrovics, Z. (2015). An overview of problematic gaming. In E. Aboujaoude & V. Starcevic (Eds.), *Mental Health in the Digital Age: Grave dangers, great promise* (pp. 27–45). Oxford: University Press.

*Griffiths, M., & Light, B. (2008). Social networking and digital gaming media convergence: Classification and its consequences for appropriation. *Information Systems Frontiers, 10*(4), 447–459.

Guegan, J., Moliner, P., & Buisine, S. (2015). Why are online games so self-involving: A social identity analysis of massively multiplayer online role-playing games. *European Journal of Social Psychology, 45*(3), 349–355.

*Gui, D. A. F. (2018). Virtual sense of community in a world of Warcraft® storytelling open forum thread. *Journal for Virtual Worlds Research*, *11*(2), 1–17.

*Hickerson, B., & Mowen, A. J. (2012). Behavioral and psychological involvement of online video gamers: Building blocks or building walls to socialization. *Loisir et Société/Society and Leisure, 35*(1), 79–103.

*Hing, N., Russell, A. M. T., Gainsbury, S. M., & Blaszczynski, A. (2015). Characteristics and help-seeking behaviors of internet gamblers based on most problematic mode of gambling. *Journal of Medical Internet Research, 17*(1), e13.

*Hota, M., & Derbaix, M. (2016). A real child in a virtual world: Exploring whether children's participation in MMORPGs transforms them into virtual retail shoppers. *International Journal of Retail and Distribution Management, 44*(11), 1132–1148.

*Howe, P. D., Vargas-Sáenz, A., Hulbert, C. A., & Boldero, J. M. (2019). Predictors of gambling and problem gambling in Victoria, Australia. *PLoS ONE, 14*(1), e0209277.

*Hsieh, J. K., & Tseng, C. Y. (2018). Exploring social influence on hedonic buying of digital goods: Online games' virtual items. *Journal of Electronic Commerce Research, 19*(2), 164–185.

*Hsu, C. L., & Lu, H. P. (2007). Consumer behavior in online game communities: A motivational factor perspective. *Computers in Human Behavior, 23*(3), 1642–1659.

*Huang, H. C., Cheng, T. C. E., Huang, W. F., & Teng, C. I. (2018). Impact of online gamers' personality traits on interdependence, network convergence, and continuance intention: Perspective of social exchange theory. *International Journal of Information Management, 38*(1), 232–242.

*Huang, J. H., Hsiao, T. T., & Chen, Y. F. (2012). The effects of electronic word of mouth on product judgment and choice: The moderating role of the sense of virtual community. *Journal of Applied Social Psychology, 42*(9), 2326–2347.

Jacques, C., Fortin-Guichard, D., Bergeron, P. Y., Boudreault, C., Lévesque, D., & Giroux, I. (2016). Gambling content in Facebook games: A common phenomenon? *Computers in Human Behavior, 57,* 48–53.

*Järvinen-Tassopoulos, J. (2016). Problem gambling and drinking among Finnish women. *Nordic Studies on Alcohol and Drugs, 33*(1), 27–42.
*Jin, W., Sun, Y., Wang, N., & Zhang, X. (2017). Why users purchase virtual products in MMORPG? An integrative perspective of social presence and user engagement. *Internet Research, 27*(2), 408–427.
Kaakinen, M., Sirola, A., Savolainen, I., & Oksanen, A. (2020). Shared identity and shared information in social media: Development and validation of the identity bubble reinforcement scale. *Media Psychology*, *23*(1), 25–51.
*Kaptein, M., Parvinen, P., & Pöyry, E. (2015). The danger of engagement: Behavioral observations of online community activity and service spending in the online gaming context. *International Journal of Electronic Commerce, 20*(1), 50–75.
Keipi, T., & Oksanen, A. (2014). Self-exploration, anonymity and risks in the online setting: Analysis of narratives by 14–18-year olds. *Journal of Youth Studies, 17*(8), 1097–1113.
*Khazaal, Y., Chatton, A., Achab, S., Monney, G., Thorens, G., Dufour, M., et al. (2017). Internet gamblers differ on social variables: A latent class analysis. *Journal of Gambling Studies, 33*(3), 881–897.
Kim, H. S., Hollingshead, S., & Wohl, M. J. (2017). Who spends money to play for free? Identifying who makes micro-transactions on social casino games (and why). *Journal of Gambling Studies, 33*(2), 525–538.
*Kim, Y. B., Kang, K., Choo, J., Kang, S. J., Kim, T., Im, J., et al. (2017). Predicting the currency market in online gaming via lexicon-based analysis on its online forum. *Complexity*, *2017*, article ID 4152705.
*Kim, M., & Kim, J. (2018). The effects of perceived online justice on relational bonds and engagement intention: Evidence from an online game community. *Computers in Human Behavior, 84,* 410–419.
*Kim, Y. B., Lee, S. H., Kang, S. J., Choi, M. J., Lee, J., & Kim, C. H. (2015). Virtual world currency value fluctuation prediction system based on user sentiment analysis. *PLoS ONE, 10*(8), e0132944.
King, D. L., & Delfabbro, P. H. (2016). Early exposure to digital simulated gambling: A review and conceptual model. *Computers in Human Behavior, 55,* 198–206.
King, D., Delfabbro, P., & Griffiths, M. (2010). The convergence of gambling and digital media: Implications for gambling in young people. *Journal of Gambling Studies, 26*(2), 175–187.
King, D. L., Delfabbro, P. H., Kaptsis, D., & Zwaans, T. (2014). Adolescent simulated gambling via digital and social media: An emerging problem. *Computers in Human Behavior, 31,* 305–313.
King, D. L., Gainsbury, S. M., Delfabbro, P. H., Hing, N., & Abarbanel, B. (2015). Distinguishing between gaming and gambling activities in addiction research. *Journal of Behavioral Addictions, 4*(4), 215–220.
*King, D. L., Russell, A. M., Delfabbro, P. H., & Polisena, D. (2020). Fortnite microtransaction spending was associated with peers' purchasing behaviors but not gaming disorder symptoms. *Addictive Behaviors, 104,* 106311.
Kozinets, R. V. (1999). E-tribalized marketing? The strategic implications of virtual communities of consumption. *European Management Journal, 17*(3), 252–264.
*Lee, J., Suh, E., Park, H., & Lee, S. (2018). Determinants of users' intention to purchase probability-based items in mobile social network games: A case of South Korea. *IEEE Access, 6,* 12425–12437.
*Lehdonvirta, V. (2009). Virtual item sales as a revenue model: Identifying attributes that drive purchase decisions. *Electronic Commerce Research, 9*(1–2), 97–113.
*Liao, S. H., Wu, C. C., Widowati, R., & Chen, M. Y. (2012). Relationships between brand awareness and online word-of-mouth: An example of online gaming community. *International Journal of Web Based Communities, 8*(2), 177–195.
*Lin, W. K., Chiu, C. K., & Tsai, Y. H. (2008). Modeling relationship quality and consumer loyalty in virtual communities. *Cyberpsychology and Behavior, 11*(5), 561–564.
*Lindholm, J., Kaptein, M., & Parvinen, P. (2012). The tradeoff between online community activity and consumption: evidence from online poker. In *2012 45th Hawaii international conference on system sciences* (pp. 3238–3246). IEEE.
Macey, J., & Hamari, J. (2018). Investigating relationships between video gaming, spectating esports, and gambling. *Computers in Human Behavior, 80,* 344–353.
Malinen, S. (2015). Understanding user participation in online communities: A systematic literature review of empirical studies. *Computers in Human Behavior, 46,* 228–238.
*McGowan, V. (2003). Counter-story, resistance and reconciliation in online narratives of women in recovery from problem gambling. *International Gambling Studies, 3*(2), 115–131.
McKenna, K. Y., & Bargh, J. A. (1999). Causes and consequences of social interaction on the Internet: A conceptual framework. *Media Psychology, 1*(3), 249–269.
McNamara, N., & Parsons, H. (2016). 'Everyone here wants everyone else to get better': The role of social identity in eating disorder recovery. *British Journal of Social Psychology, 55*(4), 662–680.
McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology, 27*(1), 415–444.

*Mudry, T. E., & Strong, T. (2013). Doing recovery online. *Qualitative Health Research, 23*(3), 313–325.
*O'Leary, K., & Carroll, C. (2013). The online poker sub-culture: Dialogues, interactions and networks. *Journal of Gambling Studies, 29*(4), 613–630.
Oksanen, A., Garcia, D., & Räsänen, P. (2016). Proanorexia communities on social media. *Pediatrics, 137*(1), e20153372.
Oksanen, A., Hawdon, J., & Räsänen, P. (2014). Glamorizing rampage online: School shooting fan communities on YouTube. *Technology in Society, 39,* 55–67.
Oksanen, A., Savolainen, I., Sirola, A., & Kaakinen, M. (2018). Problem gambling and psychological distress: A cross-national perspective on the mediating effect of consumer debt and debt problems among emerging adults. *Harm Reduction Journal, 15*(1), 45.
Paavilainen, J., Hamari, J., Stenros, J., & Kinnunen, J. (2013). Social network games: Players' perspectives. *Simulation and Gaming, 44*(6), 794–820.
*Park, E., Rishika, R., Janakiraman, R., Houston, M. B., & Yoo, B. (2018). Social dollars in online communities: The effect of product, user, and network characteristics. *Journal of Marketing, 82*(1), 93–114.
*Parke, A., & Griffiths, M. D. (2011). Poker gambling virtual communities: The use of Computer-Mediated Communication to develop cognitive poker gambling skills. *International Journal of Cyber Behavior, Psychology and Learning (IJCBPL), 1*(2), 31–44.
Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide*. Oxford: Wiley.
*Pinto, D. C., Reale, G., Segabinazzi, R., & Vargas Rossi, C. A. (2015). Online identity construction: How gamers redefine their identity in experiential communities. *Journal of Consumer Behaviour, 14*(6), 399–409.
Preece, J. (2000). *Online communities: Designing usability and supporting sociability*. New York: Wiley.
*Rantala, V., & Sulkunen, P. (2012). Is pathological gambling just a big problem or also an addiction? *Addiction Research and Theory, 20*(1), 1–10.
*Rapp, A. (2018). Social game elements in world of warcraft: Interpersonal relations, groups, and organizations for gamification design. *International Journal of Human-Computer Interaction, 34*(8), 759–773.
Reich, S., & Vorderer, P. (2013). Individual differences in need to belong in users of social networking sites. In P. Moy (Ed.), *Communication and community* (pp. 129–148). New York: Hampton Press.
Rheingold, H. (1993). *The virtual community: Finding connection in a computerized world*. Reading: Addison-Wesley Longman Publishing Co., Inc.
*Rodda, S. N., Hing, N., Hodgins, D. C., Cheetham, A., Dickins, M., & Lubman, D. I. (2018). Behaviour change strategies for problem gambling: An analysis of online posts. *International Gambling Studies, 18*(3), 420–438.
*Schüll, N. D. (2016). Abiding chance: Online poker and the software of self-discipline. *Public Culture, 28*(3 (80)), 563–592.
*Shukla, P., & Drennan, J. (2018). Interactive effects of individual-and group-level variables on virtual purchase behavior in online communities. *Information and Management, 55*(5), 598–607.
*Sierra, J. J., Badrinarayanan, V. A., & Taute, H. A. (2016). Explaining behavior in brand communities: A sequential model of attachment, tribalism, and self-esteem. *Computers in Human Behavior, 55,* 626–632.
*Sirola, A., Kaakinen, M., & Oksanen, A. (2018). Excessive gambling and online gambling communities. *Journal of Gambling Studies, 34*(4), 1313–1325.
*Sirola, A., Kaakinen, M., Savolainen, I., & Oksanen, A. (2019). Loneliness and online gambling-community participation of young social media users. *Computers in Human Behavior, 95,* 136–145.
*Smith, M. D., Rousu, M. C., & Dion, P. (2012). Internet poker: examining motivations, behaviors, outcomes, and player traits using structural equations analysis. *Journal of Gambling Issues, 27,* 1–23.
*Vella, K., Klarkowski, M., Turkay, S., & Johnson, D. (2019). Making friends in online games: Gender differences and designing for greater social connectedness. *Behaviour and Information Technology*. https://doi.org/10.1080/0144929X.2019.1625442.
Warmelink, H., & Siitonen, M. (2013). A decade of research into player communities in online games. *Journal of Gaming and Virtual Worlds, 5*(3), 271–293.
*Wen, Y. F., Hung, K. Y., Hwang, Y. T., & Lin, Y. S. F. (2016). Sports lottery game prediction system development and evaluation on social networks. *Internet Research, 26*(3), 758–788.
Williams, K. D., Cheung, C. K., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology, 79*(5), 748–762.
*Wood, R. T., & Wood, S. A. (2009). An evaluation of two United Kingdom online support forums designed to help people with gambling issues. *Journal of Gambling Issues, 23,* 5–30.
Zendle, D., & Cairns, P. (2018). Video game loot boxes are linked to problem gambling: Results of a large-scale survey. *PLoS ONE, 13*(11), e0206767.

*Zhang, Y., Wang, J., Wang, Y., & He, Y. (2018). Research on effect of virtual community internet interaction to online purchasing behavior. In *2018 4th international conference on information management (ICIM)* (pp. 66–70). IEEE.

Zhong, Z. J. (2011). The effects of collective MMORPG (Massively Multiplayer Online Role-Playing Games) play on gamers' online and offline social capital. *Computers in Human Behavior, 27*(6), 2352–2363.

Zhou, T. (2011). Understanding online community user participation: A social influence perspective. *Internet Research, 21*(1), 67–81.

PUBLICATION II

Excessive gambling and online gambling communities

Anu Sirola, Markus Kaakinen & Atte Oksanen

Journal of Gambling Studies, 34(4), 1313–1325
https://doi.org/10.1007/s10899-018-9772-0

J Gambl Stud (2018) 34:1313–1325
https://doi.org/10.1007/s10899-018-9772-0

ORIGINAL PAPER

Excessive Gambling and Online Gambling Communities

Anu Sirola[1] · **Markus Kaakinen**[1] · **Atte Oksanen**[1]

Published online: 5 April 2018

Abstract The Internet provides an accessible context for online gambling and gambling-related online communities, such as discussion forums for gamblers. These communities may be particularly attractive to young gamblers who are active Internet users. The aim of this study was to examine the use of gambling-related online communities and their relevance to excessive gambling among 15–25-year-old Finnish Internet users (N = 1200). Excessive gambling was assessed by using the South Oaks Gambling Screen. Respondents were asked in a survey about their use of various kinds of gambling-related online communities, and sociodemographic and behavioral factors were adjusted. The results of the study revealed that over half (54.33%) of respondents who had visited gambling-related online communities were either at-risk gamblers or probable pathological gamblers. Discussion in these communities was mainly based on sharing gambling tips and experiences, and very few respondents said that they related to gambling problems and recovery. In three different regression models, visiting gambling-related online communities was a significant predictor for excessive gambling (with 95% confidence level) even after adjusting confounding factors. The association of visiting such sites was even stronger among probable pathological gamblers than among at-risk gamblers. Health professionals working with young people should be aware of the role of online communities in terms of development and persistence of excessive gambling. Monitoring the use of online gambling communities as well as utilizing recovery-oriented support both offline and online would be important in preventing further problems. Gambling platforms should also include warnings about excessive gambling and provide links to helpful sources.

Keywords Gambling · Excessive gambling · Internet · Online communities

✉ Atte Oksanen
atte.oksanen@uta.fi

[1] Faculty of Social Sciences, University of Tampere, 33014 Tampere, Finland

Introduction

Digital and technological advancements, such as increased opportunities for online gambling, have had a major impact on the nature of gambling (Gainsbury et al. 2015). The amount and use of online gambling sites, such as online casinos, have grown significantly over the past decade (Gainsbury et al. 2015; King et al. 2010; Raisamo et al. 2013), and particularly online poker has gained popularity (Biolcati et al. 2015; Griffiths et al. 2010). Online gambling has various context-specific risk factors, such as constant availability and accessibility, anonymity and privacy, and electronic money transfers (Gainsbury et al. 2015; Griffiths 2003). Particularly, young gamblers are at a high-risk to be exposed to and engage in online gambling and experience significant problems (Gainsbury et al. 2015; King et al. 2010; Raisamo et al. 2013). This is partly due to their high involvement with the Internet and social media in general (De Freitas and Griffiths 2008) and the relative ease of gambling without surveillance or age-restrictions on gambling websites (Cotte and LaTour 2008). Gambling is also widely advertised and promoted online, which may increase gambling consumption and its positive stance (Binde 2009b; Hing et al. 2014).

In addition to gambling sites, the Internet and social media provide an efficient context for interaction with, dissemination of, and exposure to various gambling-related user-generated online content. A prominent example of this are various kinds of social networking communities such as discussion forums for gamblers (Caputo 2015; Mudry and Strong 2013; O'Leary and Carroll 2013). Together with online gambling sites, these forums of networking and content sharing can form ecosystems of interconnected gambling-related platforms. Socializing with other players may also be a motivational factor for increased gambling and consequently lead to excessive forms of gambling (Corney and Davis 2010; O'Leary and Carroll 2013). Although the existence of gambling-related online communities has been acknowledged, more research is needed on the use of these communities and their potential relevance to excessive gambling among young people. This study examines excessive gambling from a social psychological perspective, focusing on the social dimension of online gambling communities and their attractivity to young gamblers.

Excessive gambling is treated as a form of addictive or an excessive mode of behavior (Orford 2001), covering potentially risky, problematic and pathological forms of gambling. From a medical perspective, excessive gambling is defined as an addiction characterized by high involvement in gambling activities despite adverse consequences (Binde 2009a; Orford 2001). The diagnostic criteria in the DSM-IV categorizes pathological gambling and its milder form, problem gambling, as impulse control disorders (see Castrén et al. 2013). In the fifth revision of the DSM, pathological gambling was moved to substance-related and addictive disorders and named as "gambling disorder", with classifications of mild, moderate and severe (Petry et al. 2013; Sleczka et al. 2015). Also, the current beta draft of forthcoming ICD-11 revised "pathological gambling" as "gambling disorder" (WHO 2017). Gambling and substance-related disorders have many similarities, such as craving and loss of control (Romanczuk-Seiferth et al. 2014), and disordered gambling also has high comorbidity with hazardous alcohol and drug use, as well as mood and anxiety disorders (Castrén et al. 2013; Lorains et al. 2011; Martin et al. 2014; Petry et al. 2005).

Studies show that at-risk gambling and pathological gambling are more common among men than women (Blanco et al. 2006; Hing et al. 2016b; Petry et al. 2005; Salonen and Raisamo 2015). Excessive gambling is also associated with having financial problems, such as taking instant loans (Lind et al. 2015; Worthy et al. 2010). In addition to psychiatric pathology, excessive gambling can be conceived as a multidimensional

phenomenon that includes a complex interaction between individual, social and environmental factors in terms of gambling motivation, involvement and developing possible problems (Binde 2009a; Blaszczynski and Nower 2002). For example, a lack of perceived social support from primary groups, such as family and friends, is associated with developing and maintaining gambling-related problems (Hardoon et al. 2004; Petry and Weiss 2009).

Despite that gambling activities are in many countries illegal for underaged people, a review by Calado et al. (2017) shows that gambling is a popular activity among adolescents, and that approximately 0.2–12.3% of young people have gambling problems. Youth gambling and problem gambling are worldwide concerns (Calado et al. 2017; Volberg et al. 2010) and additional research is thus needed, particularly in countries with high gambling and problem gambling prevalence. In Europe, Finland represents one of the highest gambling prevalence rates (Calado et al. 2017; Salonen and Raisamo 2015). According to the Finnish National Institute for Health and Welfare (THL), gambling activity among Finnish people typically starts at the age of 16, and gambling problems are most common in the 18–24-year-old age group (Salonen and Raisamo 2015).

In addition to high problem gambling prevalence, young people are also active social media users, which may further reinforce gambling behavior and positive stance on gambling. Young people tend to form strong social bonds in online communities, and online peer networks and the content shared within them may also have major impacts on young users' behaviors (Huang et al. 2014; Lehdonvirta and Räsänen 2011) and risk-taking (Hoorn et al. 2017). From users' point of view, online gambling communities are safe environments that are based on a mutual identity and interaction with like-minded others, countering the potential lack of understanding and social support in offline settings (Mudry and Strong 2013; O'Leary and Carroll 2013). However, use of the Internet itself can become addictive (Kuss et al. 2014; Van Rooij and Prause 2014), and it is known that high use of the Internet and technology is related to excessive gambling (Phillips et al. 2012; Spada 2014). In terms of risky health behaviors, a study by Syed-Abdul et al. (2013) revealed that user-generated online content is more appealing to young users than information from health authorities. User-generated online communities serve as important identification contexts for young people; thus, research is needed to examine their potential role regarding risky health behaviors. Gambling-related communities may have an analogous role for young people.

When examining potential risks, it is also important to acknowledge that online gambling communities have differing stances on gambling and its acceptability. Some gambling communities such as poker forums focus on promoting and sharing gambling strategies, tips and knowledge between users (O'Leary and Carroll 2013; Parke and Griffiths 2013). These kinds of communities can contribute to the spread and normalization of gambling and other risk behavior (Daine et al. 2013; O'Leary and Carroll 2013). They can also help develop cognitive biases concerning gambling, such as the illusion of control (Parke and Griffiths 2013), which has been linked to severe gambling problems (Barrault and Varescon 2013). However, there are also gambling communities based on recovery-oriented peer-support for gambling problems (Caputo 2015; Gainsbury and Blaszczynski 2011; Mudry and Strong 2013). These kinds of recovery-oriented platforms may be beneficial for developing a recovery identity and overcoming addiction (McNamara and Parsons 2016; Mudry and Strong 2013). Thus, depending their norms and belief-systems concerning gambling, communities offer different kinds of identification contexts for gambling-involved online users. For a community user, it is important to conform to community's norms and shared belief systems to become a socially accepted member of a community

(O'Leary and Carroll 2013). Thus, in terms of gambling problems, it is crucial what kinds of communities a user becomes identified with.

The Current Study

In past studies, the existence of gambling-related online communities has been suggested as a potential motivating factor for excessive gambling (Corney and Davis 2010; O'Leary and Carroll 2013), but little is known about who uses these communities or their relevance to at-risk or probable pathological gambling. It is also important to gain more knowledge on online gambling behavior by younger age groups, as currently, those born in the 1990s and the 2000s are the first generations growing up with social media. The main aim of this study is to analyze the association between the use of gambling-related online communities and excessive gambling. As previous studies showed, use of online communities may encourage young people for risk behavior (Daine et al. 2013; Huang et al. 2014). Therefore, it was hypothesized that the use of gambling-related online communities is associated with excessive gambling.

Method

Participants and Procedures

The participants of this study included a demographically balanced sample of Finnish participants, aged 15–25 (n = 1200, 50% male, mean age = 21.29, SD = 2.85). The participants were recruited from a pool of volunteer respondents administrated by Survey Sample International (SSI) from March to April 2017. The pool of respondents mirrored sociodemographic measures of age, gender and regional area type of Finnish young people of the same age. Age, gender and residential area structure of the sample are close to the Finnish population aged 15–25 (see Statistics Finland 2016).

All participants responded to a *YouGamble* online survey that was designed to study online gambling from a social psychological perspective. The survey questionnaire was constructed using Limesurvey software, and it was optimized for both computers and mobile devices. The median response time for the survey was 15.50 min.

The Academic Ethics Committee of the Tampere Region reviewed the research proposal in December 2016 and stated that the research does not include any ethical problems (decision 62/2016). All participants were informed about the aims of the study and the use of the data.

Measures

Excessive Gambling

The South Oaks Gambling Screen (SOGS) was used to measure excessive gambling. SOGS is based on DSM-III and DSM-IV criteria for pathological gambling (Lesieur and Blume 1987) and is among the most widely used screeners for problem gambling (Shaffer et al. 1999). It is also widely used in Finnish studies involving populations of 15 to 25 (Castrén et al. 2013; Edgren et al. 2016; Salonen and Raisamo 2015). In addition to

DSM-III and DSM-IV criteria, the measure is also reported as having a strong correlation with DSM-V symptoms (Goodie et al. 2013). Within this study, the SOGS scores ranged from 0 to 20, and the Cronbach alpha for SOGS was .89. Standard cutoffs were used for SOGS: 0–2 = no problem gambling, 3–4 = at-risk gambling, ≥ 5 = probable pathological gambling (e.g. Castrén et al. 2013). Because the cutoff of ≥ 5 for probable pathological gambling has been discussed in the literature due to potentially excessive false positives, additional analyzes were run based on DSM-V criteria and a cutoff of ≥ 8 for disordered gambling (Goodie et al. 2013). These categorical variables were used in the analysis as dependent variables.

Online Gambling Communities

The use of online gambling communities was asked with the question: "How often do you use gambling-related discussion forums or communities?" The answer options were "never", "seldom", "daily" and "many times a day". The answers were categorized as a dummy variable (0 = no i.e., "never", 1 = yes i.e., at least "seldom"). Those who answered that they used these communities at least seldomly were given an additional multiple-choice question about what the discussion on these sites usually related to. The options were "gambling tips", "users' gambling experiences", "gambling problems and recovery", "gambling in general" and "other issues". The respondents were able to select multiple options.

Sociodemographic Controls included gender and age. Age was categorized into three categories (15–17, 18–21 and 22–25), and the youngest age group was used as a reference category in the models. Survey also included a self-reported measure of whether participants had taken instant loans.

Control Factors included both behavioral and attitudinal measures related to problem gambling. First of all, visiting online casino sites was controlled. This was asked with the question: "How often do you use betting agencies or online casino sites? (e.g., Veikkaus, NettiCasino)". The answer options were "never", "seldom", "daily" and "many times a day". The answers were categorized into a dummy variable (0 = no i.e. "never", 1 = yes i.e. at least "seldom"). Other controls included hazardous drinking (3-item AUDIT-C, range 0–3, $\alpha = .82$) and compulsive Internet use (14-item Compulsive Internet Use Scale, range 0–56, $\alpha = .93$; see also Meerkerk et al. 2009). Models for belonging to primary groups were also adjusted. This was measured with three items: "How closely do you feel to belong to each of the following? (a) Family, (b) friendship group, (c) school or work community". The scale varied from 1 ("not at all close") to 10 ("very close"). These measures were combined to form a composite variable (range 3–30; $\alpha = .75$).

Statistical Techniques

The analyses were carried out by using Stata 12 software. First, descriptive statistics on not-at-risk gamblers, at-risk gamblers and probable pathological gamblers were provided. To adjust the potential confounding factors, a multinomial logistic regression was run. Age- and gender-adjusted results are reported in the text, and Table 2 includes the final models. No at-risk gambling was used as a reference. Relative risk ratios (RRR), standard errors (SE) and the statistical significance of results (p) are reported. Additional model fit statistics include pseudo-coefficients of determination and likelihood ratio χ^2 test statistics.

Additional analyses were run with linear ordinary least square (OLS) regression as a further confirmation of the results and is only reported in the text.

Results

Out of 1200 respondents, 10.83% reported probable pathological gambling (SOGS ≥ 5), 10.33% (SOGS = 3–4) reported at-risk gambling and 78.83% did not report at-risk gambling (Table 1). The findings showed that 14.42% of the respondents had participated in online gambling communities. The discussions in such communities included gambling tips (46.82%, 81/173), gambling experiences (29.48%, 51/173), gambling in general (52.60%, 91/173) and other issues (16.18%, 28/173). Very few of the respondents said that discussions were related to gambling problems and recovery (9.25%, 16/173). The visitors of gambling-related communities were more often males than females ($p < .001$). Age was not associated with visiting such sites.

Descriptive statistics showed that at-risk gamblers and probable pathological gamblers were more likely to visit gambling-related online communities. Out of those who had not visited these sites, only 15.58% reported at-risk gambling or probable pathological gambling, while for those who had visited gambling-related online communities, the respective

Table 1 Descriptive statistics of variables

Discrete variables	n	%		%, No at risk gambling	%, At risk gambling	%, Probable pathological gambling
All	1200	100		78.83	10.33	10.83
Online gambling communities						
No	1027	85.58		84.42	9.15	6.43
Yes	173	14.42		45.66	17.34	36.99
Gender						
Female	600	50.00		88.00	7.33	4.67
Male	600	50.00		69.67	13.33	17.00
Age						
15–17	215	17.92		84.19	7.44	8.37
18–21	490	40.83		73.67	11.02	15.31
22–25	495	41.25		81.62	10.91	7.47
Instant loans						
No	1054	87.83		81.88	9.49	8.63
Yes	146	12.17		56.85	16.44	26.71
Online casino sites						
No	692	57.67		91.18	5.2	3.61
Yes	508	42.33		62.01	17.32	20.67
Continuous variables	Scale	Mean	SD	Mean	Mean	Mean
Hazardous drinking (AUDIT C)	0–13	4.14	2.98	3.90	4.89	5.18
Compulsive internet use (CIUS)	0–56	18.79	11.13	17.74	22.75	22.65
Belonging to primary groups	3–30	20.19	6.14	20.53	19.67	18.21

figure was 54.33%. The descriptive table also shows that both at-risk gambling and probable pathological gambling were more common among males and young people aged 18–21 than among others. Both results were also more common among those who had visited online casino sites and among those who had taken instant loans.

Multinomial logistic regression models were run to further investigate whether visiting gambling-related online communities could be considered a risk factor for at-risk gambling and probable pathological gambling. Age- and gender-adjusted models were run first, which confirmed that visiting gambling related online communities was positively associated with both at-risk gambling (RRR = 2.76, $p < .001$) and probable pathological gambling (RRR = 7.82, $p < .001$). The final models that included all the confounding factors confirmed these findings (Table 2). Adding numbers of confounders showed that visiting gambling-related online communities was positively associated with probable pathological gambling (RRR = 2.91, $p = <.001$).

The full model also indicated that both at-risk gambling and pathological gambling were more common among males than females and most common among the age group of 18–21 years old. In addition, taking instant loans, visiting online gambling casino sites and compulsively using the Internet were associated with both at-risk gambling and probable pathological gambling. It was also found that probable pathological gamblers reported weaker senses of belonging to primary groups. The full model was statistically significant ($p < .001$) and had reasonably high pseudo-coefficients of determination (Nagelkerke $R^2 = .33$; McFadden $R^2 = .21$).

The additional analyses were run using an alternative cutoff point (≥ 8) based on DSM-V criteria for gambling disorder (Goodie et al. 2013). Based on these criteria, 3.67% reported disordered gambling (SOGS ≥ 8), 10.33% reported at-risk gambling (SOGS = 3–7) and 78.83% did not report at-risk gambling. These did not change the main results, as it was found that visiting gambling-related online communities was positively associated with both at-risk gambling (RRR = 1.74, $p = .013$) and disordered gambling (RRR = 2.90,

Table 2 At-risk gambling and pathological gambling by independent variables (relative-risk ratios, standard errors and *p* values)

	At-risk gambling			Probable pathological gambling		
	SOGS 3–4			SOGS ≥ 5		
	RRR	SE	*p*	RRR	SE	*p*
Online gambling communities	1.17	0.32	.566	2.91	0.75	< .001
Male	2.14	0.47	.001	3.70	0.95	< .001
Age (ref. 22–25)						
15–17	1.24	0.42	.531	3.03	1.13	.003
18–21	1.33	0.29	.205	3.13	0.79	< .001
Instant loans	1.95	0.55	.017	3.83	1.05	< .001
Online casino sites	4.04	0.96	< .001	5.05	1.42	< .001
Hazardous drinking (AUDIT C)	1.07	0.04	.059	1.07	0.04	.078
Compulsive internet use (CIUS)	1.05	0.01	< .001	1.05	0.01	< .001
Belonging to primary groups	0.98	0.02	.267	0.94	0.02	< .001

No at-risk gambling is the reference category for the model. Model statistics: Nagelkerke pseudo-$R^2 = .33$; McFadden pseudo-$R^2 = .21$; Likelihood ratio $\chi^2 = 336.63$, $p < .001$

$p = .005$). This model is reported in Table 3. SOGS scores through a standard linear OLS regression were also run. The model included the same covariants as the multinomial logistic regression model and confirmed that visiting gambling-related online communities increased SOGS scores by 1.43 ($\beta = .20$; $p < .001$). These results further confirmed the findings of this study.

Discussion

The aim of this study was to examine the use of gambling-related online communities and its relevance to excessive gambling among Finnish young people. It was found that over half (54.33%) of the respondents who had visited gambling-related online communities were either at-risk gamblers or probable disordered gamblers. These communities were mostly based on mutual discussions about gambling and sharing gambling experiences and tips. Both descriptive statistics and regression models showed that visiting gambling-related online communities was a risk factor for excessive gambling. Further, the association of visiting such sites was even stronger among probable pathological gamblers than among at-risk gamblers. The models adjusted the number of sociodemographic and behavioral factors. Additional analyses based on DSM criteria and a SOGS cutoff point of 8 further confirmed these findings.

Results also supported previous research indicating that excessive gambling is more common among men than women (Blanco et al. 2006; Hing et al. 2016b; Petry et al. 2005; Salonen and Raisamo 2015) and among those who had taken instant loans (Worthy et al. 2010). Both problem and probable pathological gambling were more common among the age group of 18–21. Other Finnish studies have indicated that, during this period, severe financial problems in Finland increase dramatically, as young people are given opportunities for consumer choices and instant loans (Autio et al. 2009; Oksanen et al. 2016). Both hazardous drinking and compulsive Internet use were associated with probable

Table 3 At-risk gambling and disordered gambling (DSM-5) by independent variables (relative-risk ratios, standard errors and *p* values)

	At-risk gambling			Disordered gambling		
	SOGS 3–7			SOGS ≥ 8		
	RRR	SE	*p*	RRR	SE	*p*
Online gambling communities	1.74	0.39	.013	2.90	1.09	.005
Male	2.59	0.49	< .001	3.60	1.48	.002
Age (ref. 22–25)						
15–17	1.67	0.48	.071	3.58	2.79	.102
18–21	1.79	0.34	.002	3.72	1.78	.006
Instant loans	2.18	0.52	.001	9.76	4.48	< .001
Online casino sites	4.10	0.83	< .001	8.08	4.09	< .001
Hazardous drinking (AUDIT C)	1.07	0.03	.023	1.06	0.06	.304
Compulsive internet use (CIUS)	1.05	0.01	< .001	1.03	0.02	.034
Belonging to primary groups	0.97	0.01	.023	0.91	0.03	.001

No at-risk gambling is the reference category for the model. Model statistics: Nagelkerke pseudo-$R^2 = .34$; McFadden pseudo-$R^2 = .22$; Likelihood ratio $\chi^2 = 324.04$, $p < .001$

pathological gambling, indicating that probable pathological gamblers have multiple problems (see also Blaszczynski and Nower 2002; Hardoon et al. 2004; Hartmann and Blaszczynski 2018; Petry et al. 2005).

Probable pathological gamblers also had weaker social belonging to primary groups, which supports previous research indicating that a lack of social support from family and friends is a risk factor for excessive gambling and other addictive behaviors (Hardoon et al. 2004; Petry and Weiss 2009). This is also in line with literature showing that online risks are taken by young people who may face problems in their offline lives (Livingstone and Helsper 2007; Mitchell et al. 2011; Noll et al. 2013). This study confirms that we should be especially worried about young people who use the Internet compulsively and lack proper social relationships and support in their offline networks. As such, the current study indicates that strong social ties to primary groups and investing in supportive offline relationships could protect young people from developing such problems.

People who suffer from excessive gambling and its negative consequences are prone to hide problems from others and seek support online instead (Gainsbury and Blaszczynski 2011; Mudry and Strong 2013). Indeed, only a minority of excessive gamblers seek professional help (Gainsbury et al. 2014). However, in this data, only very few participants of online gambling communities reported using communities related to gambling problems and recovery, while communities mostly concerned gambling tips and carried generally positive stance on gambling. This was partly surprising considering the existence of recovery-oriented gambling communities online has been acknowledged in studies (Caputo 2015; Mudry and Strong 2013). However, this result can be explained partly by the young age of respondents. Despite that many of respondents scored high in their problem gambling severity, young people may not recognize that their gambling is problematic (e.g. Splevins et al. 2010) or they can be unaware of sources that could help them (Gainsbury et al. 2014). Generally, young people might prefer engaging in sites and discussions that carry gambling-positive messages. For example, online poker carries a lot of glamor within popular culture, and there are many celebrities and young poker stars that may be a major influence for young people's gambling attitudes (Shead et al. 2011). However, online poker is not the only gambling activity among young people and thus, more research is needed to examine different gambling activities and their association with the use of online gambling communities.

Given the results of this study, it should be investigated how Internet and its social networking platforms could be utilized better in terms of gambling problem recovery among young people. For example, gambling sites and communities could include warnings about excessive gambling and provide links to helpful resources. Raising awareness particularly of online interventions and support groups for young problem gamblers would be beneficial, especially given that young people often prefer Internet as a source for help (Gainsbury et al. 2014; Monaghan and Wood 2010). Since excessive gambling, like other addictions, is a widely stigmatized phenomenon (Hing et al. 2016a; Horch and Hodgins 2008), stigma may increase reluctance to seek professional help (Gainsbury et al. 2014). Instead, online anonymity and the relative ease of finding others who are similarly minded may facilitate self-disclosure (Joinson 2001; Suler 2004) and even improve wellbeing (Best et al. 2014). Indeed, the beneficial role of online support groups and shared recovery identities have been acknowledged in terms of overcoming an addiction (see McNamara and Parsons 2016; Mudry and Strong 2013).

In online gambling ecosystems, various gambling sites provide unrestricted access to gambling while gambling communities such as discussion forums function as social platforms for discussion and content-sharing. Given the crucial roles of peer influence and

online environment among young people, these social parts of gambling ecosystems are potential risk factors for developing and maintaining excessive gambling, particularly when interaction is based on promoting gambling behavior. Excessive gambling is a multidimensional phenomenon and has various motivational and involvement risk factors; however, not all people are likely to develop excessive gambling habits despite involvement in risky practices (Binde 2009a, p. 65). This study indicates that using gambling-related online communities is associated with excessive gambling. High involvement in and identification with gambling-positive communities may normalize gambling behavior and reinforce cognitive biases and thus lead to development of problematic forms of gambling behaviors. Qualitative research would be valuable in examining what kinds of motivational aspects are present when seeking for, ending up to and identifying with different gambling-related online communities.

Limitations

This study was cross-sectional, so it was impossible to investigate any kind of causal mechanisms or longer-term effects of gambling-related online communities. Longitudinal datasets on the phenomenon would be important but also demanding to collect. The study was also limited to a sample of Finnish young people aged 15–25. Hence, the results should not be generalized to older populations, and more studies would be needed to investigate whether the association is the same among older people. Finally, types of gambling activities and their association with the use of online gambling communities were not examined. Thus, it cannot be determined whether some forms of gambling, such as online poker, are more likely than others to be discussed in online gambling communities. This issue should be investigated in future studies.

Conclusion

Visiting gambling-related online communities is a risk factor for both at-risk gambling and probable pathological gambling, and the association of visiting such sites is even stronger among probable pathological gamblers than at-risk gamblers. Using gambling-positive sites and interacting with other gamblers may reinforce problematic gambling behavior and further inhibit help-seeking and recovery. Given the high use of the Internet and social media among young people, health professionals should be aware of online communities and their potential relevance with maintaining and developing problematic gambling habits. Monitoring the use of gambling-related online sites and communities among young problem gamblers as well as utilizing recovery-oriented support both offline and online would be important in preventing further problems. Gambling sites and communities should also include warnings about excessive gambling and provide links to online intervention programs and other helpful sources for problematic gambling.

Funding This research received funding from the Finnish Foundation for Alcohol Studies (Problem Gambling and Social Media project, Grant Decisions 2016 & 2017).

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and Animal Rights All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

References

Autio, M., Wilska, T. A., Kaartinen, R., & Lähteenmaa, J. (2009). The use of small instant loans among young adults—A gateway to a consumer insolvency? *International Journal of Consumer Studies, 33*(4), 407–415.

Barrault, S., & Varescon, I. (2013). Cognitive distortions, anxiety, and depression among regular and pathological gambling online poker players. *Cyberpsychology, Behavior, and Social Networking, 16*(3), 183–188.

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review, 41,* 27–36.

Binde, P. (2009a). *Gambling motivation and involvement: A review of social science research*. Stockholm: Swedish National Institute of Public Health.

Binde, P. (2009b). Exploring the impact of gambling advertising: An interview study of problem gamblers. *International Journal of Mental Health and Addiction, 7*(4), 541–554.

Biolcati, R., Passini, S., & Griffiths, M. D. (2015). All-in and bad beat: Professional poker players and pathological gambling. *International Journal of Mental Health and Addiction, 13*(1), 19–32.

Blanco, C., Hasin, D. S., Petry, N., Stinson, F. S., & Grant, B. F. (2006). Sex differences in subclinical and DSM-IV pathological gambling: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychological Medicine, 36*(7), 943–953.

Blaszczynski, A., & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction, 97*(5), 487–499.

Calado, F., Alexandre, J., & Griffiths, M. D. (2017). Prevalence of adolescent problem gambling: A systematic review of recent research. *Journal of Gambling Studies, 33*(2), 397–424.

Caputo, A. (2015). Sharing problem gamblers' experiences: A text analysis of gambling stories via online forum. *Mediterranean Journal of Clinical Psychology, 3*(1), 1–26.

Castrén, S., Basnet, S., Salonen, A. H., Pankakoski, M., Ronkainen, J. E., Alho, H., et al. (2013). Factors associated with disordered gambling in Finland. *Substance Abuse Treatment, Prevention, and Policy, 8,* 24.

Corney, R., & Davis, J. (2010). The attractions and risks of Internet gambling for women: A qualitative study. *Journal of Gambling Issues, 24,* 121–139.

Cotte, J., & Latour, K. A. (2008). Blackjack in the kitchen: Understanding online versus casino gambling. *Journal of Consumer Research, 35*(5), 742–758.

Daine, K., Hawton, K., Singaravelu, V., Stewart, A., Simkin, S., & Montgomery, P. (2013). The power of the web: A systematic review of studies of the influence of the internet on self-harm and suicide in young people. *PLoS ONE, 8*(10), e77555.

De Freitas, S., & Griffiths, M. (2008). The convergence of gaming practices with other media forms: What potential for learning? A review of the literature. *Learning, Media and Technology, 33*(1), 11–20.

Edgren, R., Castrén, S., Mäkelä, M., Pörtfors, P., Alho, H., & Salonen, A. H. (2016). Reliability of instruments measuring at-risk and problem gambling among young individuals: A systematic review covering years 2009–2015. *Journal of Adolescent Health, 58*(6), 600–615.

Gainsbury, S., & Blaszczynski, A. (2011). Online self-guided interventions for the treatment of problem gambling. *International Gambling Studies, 11*(3), 289–308.

Gainsbury, S., Hing, N., & Suhonen, N. (2014). Professional help-seeking for gambling problems: Awareness, barriers and motivators for treatment. *Journal of Gambling Studies, 30*(2), 503–519.

Gainsbury, S. M., Russell, A., Wood, R., Hing, N., & Blaszczynski, A. (2015). How risky is Internet gambling? A comparison of subgroups of Internet gamblers based on problem gambling status. *New Media & Society, 17*(6), 861–879.

Goodie, A. S., MacKillop, J., Miller, J. D., Fortune, E. E., Maples, J., Lance, C. E., et al. (2013). Evaluating the South Oaks Gambling Screen with DSM-IV and DSM-V criteria: Results from a diverse community sample of gamblers. *Assessment, 20*(5), 523–531.

Griffiths, M. (2003). Internet gambling: Issues, concerns, and recommendations. *CyberPsychology & Behavior, 6*(6), 557–568.

Griffiths, M., Parke, J., Wood, R., & Rigbye, J. (2010). Online poker gambling in university students: Further findings from an online survey. *International Journal of Mental Health and Addiction, 8*(1), 82–89.

Hardoon, K. K., Gupta, R., & Derevensky, J. L. (2004). Psychosocial variables associated with adolescent gambling. *Psychology of Addictive Behaviors, 18*(2), 170–179.

Hartmann, M., & Blaszczynski, A. (2018). The longitudinal relationships between psychiatric disorders and gambling disorders. *International Journal of Mental Health and Addiction, 16*(1), 16–44.

Hing, N., Cherney, L., Blaszczynski, A., Gainsbury, S. M., & Lubman, D. I. (2014). Do advertising and promotions for online gambling increase gambling consumption? An exploratory study. *International Gambling Studies, 14*(3), 394–409.

Hing, N., Russell, A. M., Gainsbury, S. M., & Nuske, E. (2016a). The public stigma of problem gambling: Its nature and relative intensity compared to other health conditions. *Journal of Gambling Studies, 32*(3), 847–864.

Hing, N., Russell, A., Tolchard, B., & Nower, L. (2016b). Risk factors for gambling problems: An analysis by gender. *Journal of Gambling Studies, 32*(2), 511–534.

Hoorn, J., Crone, E. A., & Leijenhorst, L. (2017). Hanging out with the right crowd: Peer influence on risk-taking behavior in adolescence. *Journal of Research on Adolescence, 27*(1), 189–200.

Horch, J. D., & Hodgins, D. C. (2008). Public stigma of disordered gambling: Social distance, dangerousness, and familiarity. *Journal of Social and Clinical Psychology, 27*(5), 505–528.

Huang, G. C., Unger, J. B., Soto, D., Fujimoto, K., Pentz, M. A., Jordan-Marsh, M., et al. (2014). Peer influences: The impact of online and offline friendship networks on adolescent smoking and alcohol use. *Journal of Adolescent Health, 54*(5), 508–514.

Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology, 31*(2), 177–192.

King, D., Delfabbro, P., & Griffiths, M. (2010). The convergence of gambling and digital media: Implications for gambling in young people. *Journal of Gambling Studies, 26*(2), 175–187.

Kuss, D. J., Griffiths, M., Karila, L., & Billieux, J. (2014). Internet addiction: A systematic review of epidemiological research for the last decade. *Current Pharmaceutical Design, 20*(25), 4026–4052.

Lehdonvirta, V., & Räsänen, P. (2011). How do young people identify with online and offline peer groups? A comparison between UK, Spain and Japan. *Journal of Youth Studies, 14*(1), 91–108.

Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*(9), 1184–1188.

Lind, K., Kääriäinen, J., & Kuoppamäki, S. M. (2015). From problem gambling to crime? Findings from the Finnish national police information system. *Journal of Gambling Issues, 30,* 98–123.

Livingstone, S., & Helsper, E. J. (2007). Taking risks when communicating on the Internet: The role of offline social-psychological factors in young people's vulnerability to online risks. *Information, Communication & Society, 10*(5), 619–644.

Lorains, F. K., Cowlishaw, S., & Thomas, S. A. (2011). Prevalence of comorbid disorders in problem and pathological gambling: Systematic review and meta-analysis of population surveys. *Addiction, 106*(3), 490–498.

Martin, R. J., Usdan, S., Cremeens, J., & Vail-Smith, K. (2014). Disordered gambling and co-morbidity of psychiatric disorders among college students: An examination of problem drinking, anxiety and depression. *Journal of Gambling Studies, 30*(2), 321–333.

McNamara, N., & Parsons, H. (2016). 'Everyone here wants everyone else to get better': The role of social identity in eating disorder recovery. *British Journal of Social Psychology, 55*(4), 662–680.

Meerkerk, G. J., Van Den Eijnden, R. J., Vermulst, A. A., & Garretsen, H. F. (2009). The compulsive internet use scale (CIUS): Some psychometric properties. *Cyberpsychology & Behavior, 12*(1), 1–6.

Mitchell, K. J., Finkelhor, D., Wolak, J., Ybarra, M. L., & Turner, H. (2011). Youth internet victimization in a broader victimization context. *Journal of Adolescent Health, 48*(2), 128–134.

Monaghan, S., & Wood, R. T. (2010). Internet-based interventions for youth dealing with gambling problems. *International Journal of Adolescent Medicine and Health, 22*(1), 113.

Mudry, T. E., & Strong, T. (2013). Doing recovery online. *Qualitative Health Research, 23*(3), 313–325.

Noll, J. G., Shenk, C. E., Barnes, J. E., & Haralson, K. J. (2013). Association of maltreatment with high-risk internet behaviors and offline encounters. *Pediatrics, 131*(2), e510–e517.

O'Leary, K., & Carroll, C. (2013). The online poker sub-culture: Dialogues, interactions and networks. *Journal of Gambling Studies, 29*(4), 613–630.

Oksanen, A., Aaltonen, M., & Rantala, K. (2016). Debt problems and life transitions: A register-based panel study of Finnish young people. *Journal of Youth Studies, 19*(9), 1184–1203.

Orford, J. (2001). *Excessive appetites: A psychological view of addictions*. New York: Wiley.

Parke, A., & Griffiths, M. (2013). Poker gambling virtual communities: The use of computer-mediated communication to develop cognitive poker gambling skills. In R. Zheng (ed.), *Evolving psychological and educational perspectives on cyber behavior* (pp. 190–204). IGI Global.

Petry, N. M., Blanco, C., Stinchfield, R., & Volberg, R. (2013). An empirical evaluation of proposed changes for gambling diagnosis in the DSM-5. *Addiction, 108*(3), 575–581.

Petry, N. M., Stinson, F. S., & Grant, B. F. (2005). Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of Clinical Psychiatry, 66*(5), 564–574.

Petry, N. M., & Weiss, L. (2009). Social support is associated with gambling treatment outcomes in pathological gamblers. *The American Journal on Addictions, 18*(5), 402–408.

Phillips, J. G., Ogeil, R. P., & Blaszczynski, A. (2012). Electronic interests and behaviours associated with gambling problems. *International Journal of Mental Health and Addiction, 10*(4), 585–596.

Raisamo, S., Halme, J., Murto, A., & Lintonen, T. (2013). Gambling-related harms among adolescents: A population-based study. *Journal of Gambling Studies, 29*(1), 151–159.

Romanczuk-Seiferth, N., Van Den Brink, W., & Goudriaan, A. E. (2014). From symptoms to neurobiology: Pathological gambling in the light of the new classification in DSM-5. *Neuropsychobiology, 70*(2), 95–102.

Salonen, A., & Raisamo, S. (2015). *Suomalaisten rahapelaaminen 2015-Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla.* [Finnish gambling 2015. Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15–74.] National Institute for Health and Welfare (THL). Report 16/2015.

Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1999). Estimating the prevalence of disordered gambling behavior in the United States and Canada: A research synthesis. *American Journal of Public Health, 89*(9), 1369–1376.

Shead, N. W., Walsh, K., Taylor, A., Derevensky, J. L., & Gupta, R. (2011). Youth gambling prevention: Can public service announcements featuring celebrity spokespersons be effective? *International Journal of Mental Health and Addiction, 9*(2), 165–179.

Sleczka, P., Braun, B., Piontek, D., Bühringer, G., & Kraus, L. (2015). DSM-5 criteria for gambling disorder: Underlying structure and applicability to specific groups of gamblers. *Journal of Behavioral Addictions, 4*(4), 226–235.

Spada, M. M. (2014). An overview of problematic Internet use. *Addictive Behaviors, 39*(1), 3–6.

Splevins, K., Mireskandari, S., Clayton, K., & Blaszczynski, A. (2010). Prevalence of adolescent problem gambling, related harms and help-seeking behaviours among an Australian population. *Journal of Gambling Studies, 26*(2), 189–204.

Statistics Finland. (2016). Population structure in Finland. *Statistics Finland PX-Web Database*. http://pxnet2.stat.fi/PXWeb/pxweb/fi/StatFin/. Accessed 15 August 2017.

Suler, J. (2004). The online disinhibition effect. *Cyberpsychology & Behavior, 7*(3), 321–326.

Syed-Abdul, S., Fernandez-Luque, L., Jian, W. S., Li, Y. C., Crain, S., Hsu, M. H., et al. (2013). Misleading health-related information promoted through video-based social media: Anorexia on YouTube. *Journal of Medical Internet Research, 15*(2), e30.

Van Rooij, A., & Prause, N. (2014). A critical review of "Internet addiction" criteria with suggestions for the future. *Journal of Behavioral Addictions, 3*(4), 203–213.

Volberg, R. A., Gupta, R., Griffiths, M. D., Ólason, D. T., & Delfabbro, P. (2010). An international perspective on youth gambling prevalence studies. *International Journal of Adolescent Medicine and Health, 22*(1), 3–38.

WHO. (2017). Gambling disorder. In *ICD-11 (beta draft)*. http://apps.who.int/classifications/icd11/browse/f/en#/http%3a%2f%2fid.who.int%2ficd%2fentity%2f1041487064. Accessed 20 August 2017.

Worthy, S. L., Jonkman, J., & Blinn-Pike, L. (2010). Sensation-seeking, risk-taking, and problematic financial behaviors of college students. *Journal of Family and Economic Issues, 31*(2), 161–170.

PUBLICATION III

Loneliness and online gambling-community participation of young social media users

Anu Sirola, Markus Kaakinen, Iina Savolainen & Atte Oksanen

Computers in Human Behavior, 95, 136–145
https://doi.org/10.1016/j.chb.2019.01.023

Computers in Human Behavior 95 (2019) 136–145

Contents lists available at ScienceDirect

Computers in Human Behavior

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

Full length article

Loneliness and online gambling-community participation of young social media users☆

Anu Sirola*, Markus Kaakinen, Iina Savolainen, Atte Oksanen

Faculty of Social Sciences, Tampere University, Finland

ARTICLE INFO

Keywords:
Gambling
Excessive gambling
Loneliness
Online communities
Internet
Vignette experiment

ABSTRACT

Individuals use online communities for social networking and to find similar others. These communities can be attractive for individuals who are dissatisfied with their offline relationships. This article reports two studies analyzing the daily participation in online gambling-communities. In Study 1, self-reported measures were used to examine the role of loneliness, excessive gambling, and Internet use in daily online gambling-community participation. In Study 2, a gambling-related vignette experiment was used to analyze how characteristics of online behavior predict daily online gambling-community participation. Both studies are based on three samples collected among Finnish ($N = 1200$ and $N = 230$) and U.S. ($N = 1212$) adolescents and young adults. In Finland and the U.S., daily online gambling-community participation was more likely among compulsive Internet users and individuals who gambled excessively. In Finland, loneliness moderated the effect between gambling problems and daily gambling-community participation, but in the U.S., loneliness had no moderating effect. Preferring pro-gambling to antigambling content also predicted more likely daily online gambling-community participation. Online gambling-communities are attractive for young individuals who experience gambling problems and are interested in gambling overall.

1. Introduction

Internet and social media have expanded the characteristics of human interaction, as different social networking platforms such as online communities nowadays have a ubiquitous role particularly in young individuals' life (Boyd, 2014; Keipi, Näsi, Oksanen, & Räsänen, 2017; Kuss & Griffiths, 2017). Online communities and their relevance in individuals' everyday life have been in researchers' interest since the early days of the Internet (Baym, 2000; Preece, 2000; Rheingold, 1993). While individuals' online networks often consist of pre-existing social bonds, it is also possible to search for new contacts and form communities based on shared interests, activities and goals (Boyd & Ellison, 2007). According to Preece (2000, 10), an online community needs enough people to interact with a shared purpose, and a community's norms guide interaction within the community. Although online communities can be formed around an endless variety of shared interests, the need to find similar others online is particularly central for individuals who suffer from psychosocial problems and those who lack meaningful offline relationships and support (Barak, Boniel-Nissim, & Suler, 2008; Csipke & Horne, 2007; Rice et al., 2014).

In this paper, we examine online gambling-community participation from a social psychological perspective by investigating both individual and social factors associated with such participation. Our theoretical framework is grounded on the social psychological theory of loneliness and this paper further follows the theory and tradition laid upon previous research on online communities. The Internet provides a virtually endless environment for gambling and its related activities. In addition to gambling sites, gamblers can seek like-minded others and form online communities around shared gambling interests. In these gambling-related online communities (e.g., discussion forums) gamblers can, for example, share gambling tips and knowledge (Gainsbury & Blaszczynski, 2011; Parke & Griffiths, 2011) or discuss gambling-related problems and recovery (Mudry & Strong, 2013; O'Leary & Carroll, 2013). Since loneliness is associated with problem gambling among both adolescents and adults (Botterill, Gill, McLaren, & Gomez, 2016; Castrén et al., 2013; Hardoon, Gupta, & Derevensky, 2004; McQuade & Gill, 2012; Petry & Weiss, 2009), and loneliness is often accompanied by high Internet use (Kuss, Griffiths, Karila, & Billieux, 2014), gambling-communities may be appealing to individuals with problematic gambling and those who search for belonging through similar experiences and gambling material online (Sirola, Kaakinen, & Oksanen, 2018; Wood & Wood, 2009).

☆ The research was funded by the Finnish Foundation for Alcohol Studies (research grant 2017-2019). The authors have no declarations of interest.
* Corresponding author. Faculty of Social Sciences, Tampere University, Kalevantie 4, 33100 Tampere, Finland.
E-mail address: anu.sirola@tuni.fi (A. Sirola).

https://doi.org/10.1016/j.chb.2019.01.023
Received 10 July 2018; Received in revised form 16 January 2019; Accepted 18 January 2019
Available online 25 January 2019

Earlier research indicates that actively visiting online gambling-communities is a potential risk factor for problem gambling (i.e., excessive gambling)—especially in adolescence and emerging adulthood (Sirola et al., 2018). Peer-interaction in online gambling-communities can influence gambling behavior by promoting responsible gambling habits, but inaccurate information via shared experiences can also lead individuals to develop cognitive distortions concerning gambling, such as illusion of control (Parke & Griffiths, 2011). Despite of the potential benefits that online communities obtain, they can also foster harmful behavior and attitudes. This is why it is important to gain deeper knowledge on the users of these communities and their motivations for seeking them.

1.1. Loneliness and excessive gambling in the online era

Humans have a fundamental need to belong (Baumeister & Leary, 1995). Satisfying social relationships thus have a major impact on health and well-being (Heinrich & Gullone, 2006), and social support serves as a buffering factor, both for various psychosocial difficulties and for harms encountered on the Internet (Cohen & Wills, 1985; Kaakinen, Keipi, Räsänen, & Oksanen, 2018; Lee & Goldstein, 2016; Minkkinen et al., 2015; Turja et al., 2017). In contrast, loneliness is an adverse state with harmful consequences across the life span (Cacioppo, Grippo, London, Goossens, & Cacioppo, 2015; Qualter et al., 2015). Although social isolation can be seen as an objective and quantifiable dimension of social relationships, loneliness is a subjective emotional state of social isolation (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). In other words, the sense of loneliness is driven by the individual's perceived solitude, disconnectedness, and inadequate social relationships, rather than by the individual's actual amount of social contact (Heinrich & Gullone, 2006; Hughes, Waite, Hawkley, & Cacioppo, 2004; Masi, Chen, Hawkley, & Cacioppo, 2011). The essential thought in theories of loneliness is that humans need meaningful contact with others whom they trust and can feel connected to (Cacioppo et al., 2015). Loneliness is associated with increased risk of premature death (Holt-Lunstad et al., 2015), which emphasizes the vital role of meaningful relationships.

Loneliness is an emotionally intense and unpleasant subjective experience that is derived from a perceived deficiency in social relationships (Perlman & Peplau, 1981). In Weiss's (1973) typology, the concept of loneliness is divided into social and emotional loneliness; the former is characterized by a lack of social connections more generally, and the latter refers to a lack of reliable and close relationships such as romantic partnerships. Researchers have supported the theory that these dimensions of loneliness are distinct experiences (DiTommaso & Spinner, 1997; Van Baarsen, Snijders, Smit, & Van Duijn, 2001) but have also found that the characteristics of these dimensions overlap, at least to some extent (Russell, Cutrona, Rose, & Yurko, 1984).

Although loneliness occurs throughout the life span, researchers have found it to be particularly prevalent in late adolescence and early adulthood (Qualter et al., 2015). People in these age groups face many challenges related to the transition to adulthood and are thus vulnerable to loneliness and its adverse effects (Heinrich & Gullone, 2006; Qualter et al., 2015). Among adolescents, loneliness is associated with risky health behaviors such as substance use (Stickley, Koyanagi, Koposov, Schwab-Stone, & Ruchkin, 2014). Among adolescents and young adults, loneliness is also a risk factor for many psychosocial difficulties such as depression (Demir & Kutlu, 2016; Matthews et al., 2016) and various forms of addictive behaviors (Bian & Leung, 2015; Kuss et al., 2014), including excessive gambling (Castrén et al., 2013; Hardoon et al., 2004; Khazaal et al., 2017; McQuade & Gill, 2012; Petry & Weiss, 2009).

Excessive gambling, in broad terms, can be defined as an addictive or impulse-control disorder characterized by mental and financial harms caused by gambling. It covers potentially risky, problematic and pathological forms of gambling (Orford, 2001; Saunders, Degenhardt, & Farrell, 2017). Within the medical paradigm, in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013), excessive gambling is labeled "Gambling Disorder" and is classified to the "Substance-Related and Addictive Disorders" (Petry, Blanco, Stinchfield, & Volberg, 2013; Sleczka, Braun, Piontek, Bühringer, & Kraus, 2015). While excessive gambling and Gambling Disorder as defined by the DSM-V are not diagnostically interchangeable, they both describe problem gambling that is compatible in terms of the harms caused to the individual (APA, 2013; Blaszczynski & Nower, 2002). Gambling problems are most common among young adults between the ages of 18 and 24 (Salonen & Raisamo, 2015). Although many countries have age restrictions for gambling, the increase in gambling opportunities, including the rapid rise of online gambling sites, has made gambling a typical activity even among adolescents; the prevalence of gambling problems is increasing in young age groups (Calado, Alexandre, & Griffiths, 2017; Canale, Griffiths, Vieno, Siciliano, & Molinaro, 2016a).

In terms of addictions such as excessive gambling, the sense of loneliness and isolation may be essentially derived from a perceived lack of understanding and support from like-minded others rather than from a lack of social contact per se. Individuals are prone to hide their gambling problems from loved ones and can be reluctant to seek professional help, partly because of the shame and stigma associated with these issues (Gainsbury, Hing, & Suhonen, 2014; Mudry & Strong, 2013). However, because loneliness is an adverse emotional state, those who suffer from it are motivated to reconnect with people (Qualter et al., 2015). As a result of their perceived loneliness and perceived lack of understanding and support, excessive gamblers may be motivated to seek gambling-related social contacts and supportive interactions through online communities.

The Internet enables the formation of online gambling subcultures and the identity generation therein (O'Leary & Carroll, 2013). On the Internet, it is relatively easy to find others who share similar gambling interests and values; this applies to both those who are interested in or involved in gambling activities and those who have gambling problems and are aiming for recovery. Indeed, the desire for social companionship with like-minded others is a strong motivation for Internet use (Chung, 2013; McKenna & Bargh, 2000; Wang, Jackson, Wang, & Gaskin, 2015). For lonely and socially sanctioned or stigmatized people in particular, the Internet offers a fruitful way to form social ties and construct identity—all with the safeguard of anonymity (McKenna & Bargh, 2000).

Scholars have found that loneliness and deficiency in offline relationships are motivational factors for participation in online communities (Barak et al., 2008; Csipke & Horne, 2007). Through online communication, peers can provide valuable social support (Ali, Farrer, Gulliver, & Griffiths, 2015), which may be particularly central for young individuals with psychosocial problems. Individuals can also use supportive online networks as an alternative to dissatisfying offline relationships (Chung, 2013). According to the social compensation hypothesis, high online presence and a large number of online contacts can compensate for a perceived lack of meaningful social relationships or for a lack of social skills (Hood, Creed, & Mills, 2017; Song et al., 2014; Zywica & Danowski, 2008). Young people also prefer online peer support to in-person support when seeking help for difficulties such as mental health problems (Ali et al., 2015).

Despite the social aspects of social media and the potential benefits of online communities, researchers have indicated that social networking in online communities is not necessarily enough to make up for a lack of offline relationships or to reduce feelings of loneliness (Yao & Zhong, 2014). Indeed, high Internet use can have adverse effects, particularly in its excessive forms. Loneliness is associated with Internet addiction (Kuss et al., 2014), and high levels of perceived online social support can lead to excessive Internet use (Hardie & Tee, 2007). In online communities, people may also feel social pressure to actively participate in peer-activity, thus leading to excessive use of the Internet

(Turel & Osatuyi, 2017). Extensive use of social communication technologies can even decrease well-being and the sense of social support (Herrero, Urueña, Torres, & Hidalgo, 2017; Kross et al., 2013). Although supportive social interaction and the sense of community in an online environment can enhance positive affect, the quality of online interaction is more important than the number of online contacts (Oh, Ozkaya, & LaRose, 2014). To this effect, Pittman and Reich (2016) indicated that only image-based social media platforms serve to decrease users' sense of loneliness and to increase their positive affect; text-based platforms did not produce the same benefits.

Because social media platforms allow practically any social media user to contribute to the generation of content (Walther & Jang, 2012), the credibility of the shared content may be questionable, and the information shared on online networks may be misleading or even harmful (Custers, 2015; Daine et al., 2013; Huang et al., 2014; Syed-Abdul et al., 2013). Westerwick, Johnson, and Knobloch-Westerwick (2017) found that time spent viewing online health messages had an impact on health attitudes, regardless of the sources' credibility. Moreover, researchers have shown that social media users tend to rely on information and content that similar people have shared (Flanagin, Hocevar, & Samahito, 2014; Hocevar, Flanagin, & Metzger, 2014; Shin, Van Der Heide, Beyea, Dai, & Prchal, 2017) and that these users also prefer peer experiences to fact-driven information (Oksanen et al., 2015; Syed-Abdul et al., 2013). The social preference for content that similar individuals have shared limits the diversity of information sources (Centola & van de Rijt, 2015), which is particularly worrisome if the content promotes harmful or excessive behavior (Syed-Abdul et al., 2013).

The role of online communities may be particularly central for adolescents and young adults, as they are active online users and tend to identify strongly with online groups (Lehdonvirta & Räsänen, 2011; Mikal, Rice, Kent, & Uchino, 2016). Group processes and social influence in online communities can have an important impact on how users perceive, evaluate, and identify with content (Zhou, 2011). According to the social identity model of deindividuation effects, visually anonymous online communication makes social identities more salient and enhances users' social identification with other, like-minded users and groups; such communication is also a starting point for social influence (Lea, Spears, & de Groot, 2001; Postmes, Spears, Sakhel, & De Groot, 2001). Those who identify strongly with their online in-groups are particularly likely to follow their peers' evaluations of online content (Walther, DeAndrea, Kim, & Anthony, 2010).

Given that online communities often attract young people with psycho-social problems and have a power to influence users' attitudes and behavior, online communities' role in potentially problematic and harm-advocating phenomena is not trivial by any means. In terms of online gambling-communities, internalizing a community's group norms and social identity can affect an individual's information evaluation, as well as his or her attitudes concerning gambling behavior; at its worst, this internalization can foster harmful attitudes and excessive gambling behavior. Examining what motivates young people to seek and participate in online gambling-communities allows for better understanding the role of social media and online communities in the youth gambling phenomenon.

1.2. Research overview

In this paper, we examined daily online gambling-community participation and its associated factors in cross-sectional (Study 1) and experimental (Study 2) studies by using three samples consisting of Finnish and U.S. adolescents and young adults. The purpose of Study 1 was to use self-reported measures to assess how loneliness and excessive gambling and Internet use relate to daily online gambling-community participation. In Study 2, we used behavioral measures to further assess how the characteristics of online behavior predict gambling-community participation. That is, whether daily online gambling-community participation is related to a preference for pro-gambling and experience-driven online content, as well as to a propensity for group influence.

Youth gambling is highly prevalent in both Finland and the U.S. (Calado et al., 2017), and cross-cultural research is needed to understand all sides of the phenomenon. Although cultural differences exist between these two countries; Finland being a small, relatively homogenous country and the U.S. consisting of a wide range of diverse populations, the countries share similar features in terms of youth culture and behavior. Both Finland and the U.S. are technologically advanced Western countries where adolescents and young adults extensively use social media on many kinds of devices. Social media research has pointed out major similarities in social media usage among young people in these countries (Keipi et al., 2017; Näsi et al., 2014). At the same time, Finland and the U.S. are also culturally distinct which makes them meaningful for comparison.

Generally, Finns, like their Nordic neighbors, rank high in bridging social capital, but they have lower bonding social capital than, for example, people in the U.S. (Kääriäinen & Lehtonen, 2006). Also, Finns have been traditionally considered as quieter and more reserved than their American counterparts, which makes them an interesting comparison (Sallinen-Kuparinen et al., 1991). These differences might not, however, apply to adolescents and emerging adults. Based on comparative HBSC survey data, the 15-year-olds in these two countries report equally high on having at least three friends, but Finnish young people spend four or more evenings per week with their friends more often than their American counterparts (Currie et al., 2009, pp. 29–36). In addition to both, the similarities and differences between these countries, it is important to investigate same phenomena in different societies and cultures.

Therefore, it is meaningful to examine daily online gambling-community participation in these two countries. Based on the literature review, we formed the following hypotheses:

- H1: Excessive gambling is associated with daily online gambling-community participation.
- H2: Loneliness is associated with daily online gambling-community participation.
- H3: Loneliness moderates the association between excessive gambling and daily online gambling-community participation.
- H4: Compulsive Internet use is associated with daily online gambling-community participation.
- H5: Daily online gambling-community participation is associated with a preference for experience-driven and pro-gambling content and with a propensity for group influence in online behavior.

Hypotheses 1–4 are tested in Study 1 with cross-sectional data and hypothesis 5 is tested in Study 2 with behavioral measures derived from our vignette experiment.

2. Study 1

2.1. Participants and procedures

The participants of Studies 1 and 2 comprise of the three independent samples from Finland and the U.S. Participants responded to a YouGamble online survey that we designed to study gambling behavior and social media use from a social psychological perspective. The surveys were nearly identical but had some minor cultural modifications. All the measures reported in this paper were identical across the three studies. We conducted the survey questionnaire using LimeSurvey software and optimized it for both computers and mobile devices.

The participants in the first sample comprised a demographically balanced sample of Finnish participants ($N = 1200$) aged 15 to 25 ($M = 21.29$, $SD = 2.85$; 50% female). The participants were recruited from a pool of volunteer respondents administrated by Survey Sampling

International (SSI) from March to April 2017. SSI is a leading research data company that operates in three continents and manages online panels in numerous countries. SSI rewards some of their study participants with points that can be later exchanged for cash or vouchers. SSI uses a balanced start methodology to manage quotas and achieve data that is consistent and matches the demographic profile of the examined country, thus advancing digital research data collection. The given methodology allowed that the pool of respondents in Sample 1 mirrored all Finnish adolescents and young adults on the sociodemographic measures of age, gender, and geographical region. The sample is very close to current population estimates in terms of age, gender, residential area structure, education and immigrant background (Oksanen, Savolainen, Sirola, & Kaakinen, 2018). The median response time for the survey was 15 min 30 s.

In case of Sample 2, we replicated the data collection by collecting an additional sample from popular Finnish social networking sites in April through June of 2017. On a message board, we gave participants a short introduction to the study and a survey link. These participants were provided with a possibility to participate in a movie ticket draw, as compensation for their participation. The sample size ($N = 230$) was sufficient to detect effects of $r = \pm 0.22$ (two-tailed $\alpha = 0.05$; $\beta = 0.20$). The participants consisted of Finnish adolescents and young adults aged 15 to 30 ($M = 24.32$, $SD = 3.58$; 53.48% female). The median response time for this sample was 17 min 50 s.

The third sample included U.S. adolescents and young adults ($N = 1212$) aged 15 to 25 ($M = 20.05$, $SD = 3.19$; 50.17% female). The participants were recruited in January 2018 from a pool of volunteer respondents administrated by SSI. The sample was demographically balanced in terms of age, gender, and living area, as described above. The participants were geographically from 50 different states, with the following regional distribution: Northeast (21.44%), West (20.12%), Midwest (21.94%), and South (36.51%). Comparison of the sample with current population estimates showed good resemblance (Oksanen et al., 2018). The median response time was 14 min 49 s.

The Academic Ethics Committee of the Tampere Region approved the research proposal in December 2016, and the committee stated that the research did not pose any ethical problems. We informed all the participants about the study's aims and how the data would be used, and we permitted the participants to withdraw from the study at any time.

2.2. Measures

Daily online gambling-community participation. To examine daily online gambling-community participation, we asked this question: "How often do you use gambling-related discussion forums or communities?" We categorized the answer options (*never*, *seldom*, *daily*, and *many times a day*) as a dummy variable with values 0 (*never* or *seldom*) or 1 (*daily* or *many times a day*).

Excessive gambling. To measure excessive gambling, we used the South Oaks Gambling Screen (SOGS), which is regularly used in studies (both in Finland and worldwide) when screening for pathological gambling behavior (Castrén et al., 2013; Edgren et al., 2016; Salonen & Raisamo, 2015). The SOGS comprises of 20 questions. We used the original English version of the SOGS (Lesieur & Blume, 1987) for the U.S. sample, and the Finnish translation (Salonen & Raisamo, 2015) for the Finnish sample. Additionally, we did some minor cultural modifications to the test items. The score range was from 0 to 20, higher scores indicating problem gambling. The scale had good internal consistency in Study 1 ($\alpha = 0.89$) and excellent internal consistency in Study 2 ($\alpha = 0.90$) and Study 3 ($\alpha = 0.90$). The scale was standardized for the multivariate analyses.

We use the SOGS as a continuous measure in the analysis, but we have provided the suggested estimates of non-problematic gamblers (SOGS 0–2), at-risk-gamblers (SOGS = 3–7) and probable pathological gamblers (≥ 8) (for the SOGS cut-off-scores, see Goodie et al., 2013).

Sense of loneliness. We measured sense of loneliness with the Three-Item Loneliness Scale, which was originally developed to assess an overall sense of loneliness in large-scale surveys. This scale's results are comparable with studies that use full loneliness measures (Hughes et al., 2004). The three items were as follows:

- "How often do you feel that you lack companionship?"
- "How often do you feel left out?"
- "How often do you feel isolated from others?"

The answer options were 1 (*hardly ever*), 2 (*some of the time*), and 3 (*often*). The scale had good internal consistency, with Cronbach's α coefficients of 0.83 in Study 1, 0.80 in Study 2, and 0.82 in Study 3. For this analysis, we summed the scores for the three questions, with a higher score indicating a higher sense of loneliness. Finally, the measure was standardized for the multivariate analyses.

Compulsive Internet use. We measured compulsive Internet use by using the Compulsive Internet Use Scale (Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009), which consists of 14 items about excessive Internet use. The response options ranged from 0 (*never*) to 4 (*very often*), with higher scores indicating more compulsive Internet use. The scale had excellent internal consistency, with Cronbach's α coefficients of 0.93 in Study 1, 0.92 in Study 2, and 0.95 in Study 3. This measure was then standardized for further analyses.

Sociodemographic controls. The used sociodemographic controls included gender, age, housing arrangement and Not in Employment, Education or Training (NEET) status. These control variables are commonly recognized as having an important influence on young people's lives, and we expected them to be associated with both loneliness and daily online gambling-community participation. For example, discussion on NEET status has emphasized its damaging effects, such as vulnerability and social exclusion, during young people's transition to adulthood (Bynner & Parsons, 2002; Furlong, 2006). Housing arrangement was measured with a dummy variable indicating whether the respondent was currently living alone (1) or according to some other housing arrangement (0). The NEET status was measured with a dummy variable indicating whether the respondent was currently unemployed or participating in education or training (0 = employed or participating in education or training, 1 = NEET).

2.3. Statistical techniques

Our statistical analyses included both descriptive analysis and multivariate logistic regression analysis on daily online gambling-community participation. In the descriptive analysis, we calculated the mean values and standard deviations for the continuous variables, as well as the frequencies and percentages for the categorical variables. We conducted logistic regression analyses in two steps: In Model 1, we included the control variables (age, gender, housing arrangements, and the NEET status), loneliness, excessive gambling, and compulsive Internet use. In Model 2, we added the term for the interaction between loneliness and excessive gambling to assess the hypothesized moderation effect. Analyses were conducted with the statistical software Stata (version 15.1) and standard errors were estimated using robust (sandwich) estimator. For all models, we reported odds ratios (with 95% confidence intervals), standard errors, and values of the *z* statistic and *p*. We used the 95% confidence interval from Sample 1 (a demographically balanced Finnish sample) to test whether the found associations could be replicated with a smaller Finnish sample (Sample 2; for similar approach for replication, see Patil, Peng, & Leek, 2016).

2.4. Results

According to this study's descriptive findings (Table 1), daily online gambling-community participation was relatively rare in all the samples, with the frequency of active users ranging from 4% in Sample 1,

Table 1
Descriptive Statistics for Study 1 variables.

Continuous Variables	Range	Sample 1 (Fin, N = 1200)		Sample 2 (Fin, N = 230)		Sample 3 (US, N = 1212)	
		M	*SD*	*M*	*SD*	*M*	*SD*
Age	15 to 25/30	21.29	2.85	24.32	3.58	20	3.19
Loneliness*	0 to 6	2.53	1.78	3.12	1.85	1.94	1.20
Compulsive Internet use*	0 to 56	18.79	11.13	18.47	11.12	21.73	13.54
Categorical Variables	**Coding**	***n***	**%**	***n***	**%**	***n***	**%**
Daily gambling-community participation	no	1155	96.25	148	92.5	1125	92.82
	yes	45	3.75	19	8.26	87	7.18
Gender	male	600	50	107	46.52	604	49.83
	female	600	50	123	53.48	608	50.17
Living alone	no	804	67	130	56.52	1076	88.78
	yes	396	33	100	43.48	136	11.22
NEET	no	1060	88.33	153	66.52	1068	88.12
	yes	140	11.67	77	33.48	144	11.88
SOGS cut-off score	0–2	946	78.83	174	75.65	1011	83.42
	3–7	210	17.50	37	16.09	157	12.95
	≥8	44	3.67	19	8.26	44	3.63

Note. * = descriptive statistics before standardizing, the SOGS is used as a continuous variable in logistic regression analyses. The SOGS cut-off scores used were *no problem gambling* (0–2), *at risk gambling* (3–7) and *probable pathological gambling* (≥8).

8% in Sample 2 and 7% in Sample 3.

Logistic regression analysis on daily online gambling-community participation is reported in Table 2. Excessive gambling was associated with daily online gambling-community participation in Samples 1, 2, and 3 (Table 2), thus supporting our first hypothesis. In Model 1, the odds ratio for excessive gambling was 1.74 in Sample 1 ($z = 6.41$, $p < .001$), 1.73 in Sample 2 ($z = 2.68$, $p = .007$), and 2.06 in Sample 3 ($z = 7.80$, $p < .001$). Loneliness, in turn, was not associated with gambling-community participation in any of the samples, leaving the second hypothesis unsupported. However, loneliness did moderate the association between excessive gambling and daily online gambling-community participation in Sample 1, as the interaction term between loneliness and excessive gambling was positive and significant ($OR = 1.20$, $z = 2.74$, $p = .006$). In Sample 2, the moderation effect was replicated in the sense that the positive interaction term was within Sample 1's 95% confidence interval ($OR = 1.19$, $z = 0.82$, $p = .415$). However, this effect was not statistically significant in Sample 2, which had a substantially smaller amount of observations. In both Sample 1 and Sample 2, the odds ratio for excessive gambling was higher in case of those who reported higher loneliness. In Sample 3, the interaction term was not significant and was not within Sample 1's 95% confidence interval ($OR = 0.88$, $z = -1.22$, $p = .222$). Thus, the third hypothesis was supported only in the Finnish studies.

Compulsive Internet use was associated with more likely daily online gambling-community participation in both Sample 1 ($OR = 1.49$, $z = 2.33$, $p = .020$) and Sample 3 ($OR = 1.68$, $z = 3.94$, $p < .001$). In Sample 2, compulsive Internet use was not associated with daily online gambling-community participation and was outside Sample 1's 95% confidence interval ($OR = 0.72$, $z = -1.00$, $p = .318$). Consequently, our fourth hypothesis on compulsive Internet use and daily gambling-community site participation was mostly supported.

Of the covariates, only gender was related to daily online gambling-community participation in all three samples. The odds ratio for female participants varied: 0.17 ($z = -3.47$, $p < .001$) in Sample 1; 0.06 ($z = -2.58$, $p = .010$) in Sample 2; and 0.43 ($z = -2.94$, $p = .003$) in Sample 3. Age, housing arrangements, or NEET status did not associate with daily gambling-community participation in any of our samples.

3. Study 2

3.1. Participants and procedures

Our second study utilized the same dataset as in Study 1.

3.2. Measures

Daily online gambling-community participation. Study 2 utilized the same dependent variable as Study 1.

Vignette experiment. The respondents first filled in the section concerning their background factors (e.g., age and gender) and their type and frequency of social media use. After that, we randomly

Table 2
Logistic Regression Analysis on daily online gambling-community participation (Study 1).

	Sample 1 (Fin)						Sample 2 (Fin)						Sample 3 (US)					
	OR	SE	z	*p*	95% CI		OR	SE	z	*p*	95% CI		OR	SE	z	*p*	95% CI	
Model 1																		
Female	0.17	0.09	−3.47	**.001**	0.06	0.46	0.06	0.07	−2.58	**.010**	0.01	0.51	0.43	0.12	−2.94	**.003**	0.25	0.76
Age	1.11	0.07	1.58	.114	0.98	1.25	0.95	0.06	−0.71	.477	0.83	1.09	1.08	0.05	1.66	.098	0.99	1.18
Living alone	0.95	0.36	−0.14	.892	0.45	2.01	1.89	1.07	1.12	.262	0.62	5.74	1.51	0.47	1.32	.185	0.82	2.76
NEET	0.39	0.28	−1.33	.184	0.10	1.56	0.23	0.20	−1.65	.099	0.04	1.32	0.91	0.39	−0.23	.818	0.39	2.11
Compulsive Internet use	1.49	0.25	2.33	**.020**	1.06	2.08	0.72	0.23	−1.00	.318	0.39	1.36	1.68	0.22	3.94	< **.001**	1.30	2.17
Loneliness	1.07	0.19	0.41	.681	0.76	1.51	0.99	0.31	−0.04	.968	0.53	1.83	0.86	0.12	−1.09	.274	0.66	1.13
Excessive gambling	1.74	0.15	6.41	< **.001**	1.47	2.07	1.73	0.35	2.68	**.007**	1.16	2.57	2.06	0.19	7.80	< **.001**	1.72	2.46
Constant	0.01	0.01	−3.92	< **.001**	0.00	0.08	0.50	0.85	−0.41	.683	0.02	14.44	0.01	0.01	−4.63	< **.001**	0.00	0.08
Pseudo R^2	.19						.28						.25					
Model 2																		
Female	0.18	0.09	−3.35	**.001**	0.07	0.49	0.06	0.07	−2.56	**.010**	0.01	0.52	0.42	0.12	−2.96	**.003**	0.24	0.75
Age	1.11	0.07	1.61	.107	0.98	1.25	0.96	0.07	−0.57	.568	0.84	1.10	1.08	0.05	1.67	.094	0.99	1.18
Living alone	1.02	0.39	0.06	.949	0.49	2.15	1.90	1.07	1.14	.255	0.63	5.75	1.50	0.46	1.34	.181	0.83	2.74
NEET	0.38	0.27	−1.35	.176	0.09	1.54	0.23	0.21	−1.61	.108	0.04	1.38	0.89	0.38	−0.26	.792	0.38	2.07
Compulsive Internet use	1.53	0.27	2.43	**.015**	1.09	2.16	0.69	0.24	−1.07	.284	0.35	1.36	1.68	0.22	3.90	< **.001**	1.30	2.18
Loneliness	0.87	0.19	−0.66	.511	0.57	1.32	0.94	0.29	−0.22	.829	0.51	1.72	0.92	0.13	−0.61	.542	0.69	1.22
Excessive gambling	1.75	0.16	6.22	< **.001**	1.47	2.09	1.81	0.37	2.94	**.003**	1.22	2.69	2.12	0.20	7.85	< **.001**	1.76	2.56
Lonel.*excessive gambling	1.20	0.08	2.74	**.006**	1.05	1.37	1.19	0.26	0.82	.415	0.78	1.83	0.88	0.09	−1.22	.222	0.71	1.08
Constant	0.01	0.01	−3.95	< **.001**	0.00	0.07	0.38	0.67	−0.55	.582	0.01	12.01	0.01	0.01	−4.64	< **.001**	0.00	0.08
Pseudo R^2	.20						.28						.25					

Note. Lonel. = loneliness.

Table 3
Descriptive Statistics for Study 2 variables.

Continuous Variables	Range	Sample 1 (Fin, $N = 1200$)		Sample 2 (Fin, $N = 230$)		Sample 3 (US, $N = 1212$)	
		M	*SD*	*M*	*SD*	*M*	*SD*
Pro-gambling preference*	−108 to 108	−5.23	16.04	−6.98	19.85	−4.53	20.51
Group influence*	−108 to 108	1.81	11.32	1.05	9.64	2.00	12.99
Experience preference*	−108 to 108	−1.50	10.88	−1.61	10.70	−1.93	12.72

Note. * = descriptive statistics before standardizing.

assigned the respondents into either a salient group-identity condition or a control condition. For the salient group-identity condition, we told the respondents that they had been assigned to Group C, consisting of respondents who gave similar answers to the previous questions. We gave the respondents in the control condition no group information.

In the vignette experiment, we showed the respondents vignette scenarios concerning gambling-related social media content and asked them to indicate how they would react ("like," "dislike," or "no reaction") to such content in a real social media setting. In the vignettes, we showed the respondents a manipulated distribution of other respondents' earlier reactions. In half of the vignettes, a strong majority (about 85%) of the earlier respondents had chosen "dislike"; the majority had chosen "like" in the other half of the vignettes. For those in the salient identity condition, we framed this distribution as the reactions of in-group members, but for those in the control condition, we framed the distribution simply as the reactions of other respondents. We also manipulated the stance toward gambling that was presented in the vignettes. In half of the vignettes, the content was pro-gambling (focused on the upsides of gambling, such as entertainment); in the other half, the content was antigambling (focused on gambling-related harms, such as gambling problems). The third manipulated factor was the narration of the content. Half of the vignettes had experience-driven (first-person) narration, and the other half had fact-driven (third-person) narration. For the exact manipulations, see the English-translated vignettes in the Appendix.

This $2 \times 2 \times 2$ within-subject factorial design resulted in eight vignette scenarios; the vignettes were partitioned into two sets so that each participant saw four scenarios. We designed this factorial structure such that each option (pro-gambling or antigambling content; experience-driven or fact-driven narration) was disliked by the majority of previous respondents once (Atzmüller & Steiner, 2010). Thus, the group, overall, did not favor any form of gambling orientation or narration.

After each vignette, we presented the respondents with six follow-up questions that asked them to assess how they would react to the presented vignette content. These questions included items such as "How likely would you find the message interesting?" and "How likely would you seek similar content online in the future?" The response scale for these items was from 1 (*not at all likely*) to 10 (*very likely*). We summed the responses to these follow-up questions to form composite variables (with a range of 6–60), thus measuring the respondents' overall interest in the presented vignette content. We then used these composite variables to calculate the behavioral measures.

We calculated the preference for pro-gambling content as the sum of the positive reactions in the pro-gambling vignettes minus the sum of the positive reactions in the antigambling vignettes. Thus, higher values indicate that a respondent reacted more positively to the pro-gambling vignettes, and lower values indicate a preference for antigambling vignettes. We calculated the group influence and the preference for experience-driven online content in a similar manner. For the group influence, higher values indicate a more positive reaction to the vignettes that the majority of previous respondents had liked. Higher values in experience preference indicate a preference for the experience-driven vignettes instead of the fact-driven ones (for a similar approach to behavioral measurement in vignette experiments, see Atzmüller & Steiner, 2010; Bergh, Akrami, Sidanius, & Sibley, 2016). The internal consistency of this measure was very high as the Cronbach's Alpha estimates ranged from 0.92 to 0.93 in Sample 1, from 0.89 to 0.94 in Sample 2, and from 0.95 to 0.97 in Sample 3. All behavioral measures were standardized for the multivariate analyses.

3.3. Statistical techniques

In Study 2, we used a statistical approach similar to Study 1, except for our logistic regression analysis including only one model. In the logistic regression model, daily online gambling-community participation was used as a dependent variable and our behavioral measures of pro-gambling preference, group influence, and experience preference were used as independent variables. In our analysis, standard errors were estimated using robust (sandwich) estimator. Here again, odds ratios (with 95% confidence intervals), standard errors, and values of the z statistic and p are reported and 95% confidence interval from Sample 1 are used to test the replication of the results in Sample 2.

3.4. Results

Study 2 results partly confirmed our fifth hypothesis. In all the samples, the respondents preferred antigambling content, as the measures of pro-gambling preference were (before standardizing) −5.23, −6.98, and −4.53 in the Finnish Samples 1, 2, and the US Sample 3, respectively (Table 3). The respondents reacted more positively toward content that the majority of previous respondents had liked, as the group influence measure was positive in all the samples: 1.81 in Sample 1, 1.05 in Sample 2, and 2.00 in Sample 3 (values before standardizing). In addition, the participants evaluated the experience-driven content less positively than the fact-driven content, as the experience preference measures were −1.50, −1.61, and −1.93 in Samples 1, 2, and 3, respectively (values before standardizing).

Logistic regression analysis on daily online gambling-community participation is reported in Table 4. In all three samples, a preference for pro-gambling content was associated with increased likelihood of daily gambling-community participation. The odds ratio for pro-gambling preference was 1.53 in Sample 1 ($z = 2.01$, $p = .045$), 1.94 in Sample 2 ($z = 2.19$, $p = .029$) and 1.29 in Sample 3 ($z = 2.28$,

Table 4
Logistic Regression Analysis on daily online gambling-community participation (Study 2).

	Sample 1 (Fin)						Sample 2 (Fin)						Sample 3 (US)					
	OR	*SE*	*z*	*p*	95% CI		*OR*	*SE*	*z*	*p*	95% CI		*OR*	*SE*	*z*	*p*	95% CI	
Pro-gambling preference	1.53	0.33	2.01	**.045**	1.01	2.32	1.94	0.59	2.19	**.029**	1.07	3.50	1.29	0.14	2.28	**.022**	1.04	1.60
Experience-preference	0.94	0.14	−0.43	.670	0.70	1.26	0.74	0.14	−1.6	.109	0.52	1.07	0.98	0.11	−0.2	.838	0.79	1.21
Group influence	0.84	0.14	−1.02	.307	0.61	1.17	1.38	0.33	1.35	.176	0.86	2.22	0.91	0.09	−0.97	.330	0.76	1.10
Constant	0.04	0.01	−19.74	< **.001**	0.03	0.05	0.07	0.02	−8.71	< **.001**	0.04	0.13	0.07	0.01	−22.6	< **.001**	0.06	0.09
Pseudo R^2	.02						.08						.01					

$p = .022$). The group influence was not associated with daily gambling-community participation in any of our samples. We added the interaction between the group influence and the experimental condition (group condition = 0, control = 1, not reported in the tables) to test whether the association between daily gambling-community participation and group influence differed for those in the group condition and those in the control condition. The interaction term was not significant in any of the samples (Sample 1: $OR = 0.74$, $z = -0.79$, $p = .432$; Sample 2: $OR = 0.77$, $z = -0.55$, $p = .581$; Sample 3: $OR = 1.30$, $z = 1.35$, $p = .177$). Daily gambling-community participation was not associated with experience preference in any of the samples. Overall, our experiment-based behavioral measures did not predict daily online gambling-community participation as well compared to the self-reported measures concerning social relations and addictive behaviors (Pseudo R^2 coefficients in Tables 2 and 4).

4. Discussion

In this paper, we examined daily online gambling-community participation among Finnish and U.S. adolescents and young adults (ages 15–30), as well as the associated factors. Drawing on the social psychological theory of loneliness (e.g., Baumeister & Leary, 1995; Perlman & Peplau, 1981) and established theoretical framework on online communities (e.g., Boyd & Ellison, 2007; Baym, 2000; Preece, 2000; Rheingold, 1993), our aim was to gain understanding on the relevance of online gambling-communities to their active users as well as identify some of the potentially motivating factors in seeking such communities. In Study 1, we assessed how excessive gambling, loneliness, and the characteristics of online behavior relate to daily online gambling-community participation. In Study 2, we used behavioral measures to further assess whether daily gambling-community participation is related to a preference for pro-gambling and experience-driven online content, as well as to a propensity for group influence.

There were differences and similarities between the three independent samples. Excessive gambling was associated with daily online gambling-community participation in all three samples, but no association between loneliness and daily online gambling-community participation was found. However, in Finland, loneliness moderated the association between excessive gambling and daily online gambling-community participation. Moreover, the association between daily gambling-community participation and excessive gambling was higher among respondents who reported stronger loneliness. In the U.S., however, this moderation effect had no statistical significance.

Compulsive Internet use was associated with daily online gambling-community participation in both Finland (although only in the larger Sample 1) and the U.S. Moreover, in all three samples, the male gender was significantly associated with daily online gambling-community participation. This is in line with what researchers have shown: Men gamble more often and experience more gambling problems than women do (Hing, Russell, Tolchard, & Nower, 2016). In all the samples, those who visited online gambling-communities on a daily basis preferred pro-gambling content. Preference for experience-driven content and propensity to group influence, however, were not associated with daily gambling-community participation in any of our samples.

In the Finnish samples, the study's results concerning the moderating role of loneliness are in line with those of past studies, indicating associations between loneliness and excessive gambling (Castrén et al., 2013; Hardoon et al., 2004; McQuade & Gill, 2012; Petry & Weiss, 2009), as well as between loneliness and Internet use (Kuss et al., 2014). Moreover, results of the Finnish samples support the earlier research on the role that online communities play for lonely individuals who experience psychosocial problems (Barak et al., 2008; Csipke & Horne, 2007; Rice et al., 2014).

The different results regarding loneliness in the Finnish and U.S. samples potentially reflect social and cultural differences. In Finland, daily participation in online gambling-communities was likely only among those who gambled excessively and reported loneliness, while in the U.S., problem gamblers with satisfactory social connections also accessed online gambling-communities. Thus, it appears that, in Finland, participants use gambling-related online ties from these online communities to partially compensate for a lack of meaningful social relationships. In the U.S., however, online gambling-communities can serve other, more individualistic, purposes—or even directly gambling-related ones. More quantitative and qualitative research is needed to better understand the cultural differences regarding loneliness, as well as the other factors that can motivate daily online gambling-community participation.

Although people today are becoming increasingly connected via technology, several concerns remain. Paradoxically, extensive use of social communication technologies can decrease a person's feelings of social support (Herrero et al., 2017), and strongly identifying with online communities and peer networks may lead to compulsive Internet use (Turel & Osatuyi, 2017). In terms of excessive gambling and other addictions, it is important to notice that social support from online communities does not necessarily reduce feelings of loneliness (Yao & Zhong, 2014); perhaps even more importantly, online networks can foster harmful attitudes and habits, as well as allow for the sharing of misleading and incorrect information among vulnerable individuals (Syed-Abdul et al., 2013). Thus, the potential risks of online communities must be addressed. For example, in the field of eating disorders, it is well-known that online eating-disorder communities often promote excessive dieting and normalize unrealistic body images (Custers, 2015). Similarly, online gambling-communities can both cause users to maintain or develop cognitive biases and lead to the normalization of excessive gambling (Parke & Griffiths, 2011; Sirola et al., 2018). These risks derogate the potential benefits of online communities.

Online gambling-communities such as poker forums can act as safe spaces for their users; this also allows for the formation of a mutual identity (O'Leary & Carroll, 2013). Because social identification is a starting point of social influence, it is not trivial what the online context is that a user identifies with, and what are the community's interests and norms concerning gambling. Although it is unrealistic and unnecessary to fully prohibit Internet use among adolescents and young adults, some level of monitoring of online gambling platforms may be required to minimize the potentially harmful impacts of online communities.

Despite the potential risks and harms derived from online communities, Internet-based interventions and anonymous support groups may also be beneficial in overcoming addictions such as problem gambling (Mudry & Strong, 2013). Problem gamblers generally tend to prefer online support to formal in-person support (Gainsbury & Blaszczynski, 2011; Gainsbury et al., 2014; Mudry & Strong, 2013). Anonymous nature of online platforms makes it easier to express oneself, while being free of stigma and shame often associated with problem gambling (Wood & Wood, 2009). In a recent study, there were promising results of web-based intervention for high school students in reducing gambling problems (Canale et al., 2016b). A deeper understanding of the group dynamics and processes in online communication is needed to better understand the attraction and significance of online communities, in order to utilize these aspects in developing effective online interventions for young people.

In terms of youth gambling, the significance of offline support should also be addressed. Offline social support mitigates many of the harmful effects of both offline and online environments (Cohen & Wills, 1985; Kaakinen et al., 2018; Lee & Goldstein, 2016; Minkkinen et al., 2015; Turja et al., 2017), so young problem gamblers should particularly focus on reinforcing their meaningful offline relationships. Recent research shows that support from close adults, such as parents and teachers, is a significant protective factor in adolescent gambling problems (Allami, Vitaro, Brendgen, Carbonneau, & Tremblay, 2018; Canale et al., 2017; Elgar, Canale, Wohl, Lenzi, & Vieno, 2018; Petry & Weiss, 2009; Räsänen, Lintonen, Tolvanen & Koivu, 2016). In addition,

support from peers, such as friends and classmates, may hold important value in prevention and treatment of youth gambling problems (Elgar et al., 2018; Hardoon et al., 2004; Petry & Weiss, 2009; Savolainen, Sirola, Kaakinen, & Oksanen, 2018). Providing young individuals with understanding and support would lessen their need to seek support online, and further, shelter from the potential risks of online gambling-communities.

Our results help to understand the role of online gambling-communities in the youth gambling phenomenon. Although the majority of adolescents and young adults may not find online gambling content to be interesting, those who are interested in (or excessively involved in) gambling activities find it relatively easy to use the Internet to identify gambling-related platforms and like-minded individuals. This can be particularly worrisome for individuals who lack meaningful offline relationships, and who compensate the lack of them by strongly identifying with online communities and the social networks therein. Replacing offline relationships with gambling-related online ties can narrow down individual's worldview and motivate to engage in problematic gambling behavior and excessive Internet use. This study's results indicate the presence of some cultural differences in terms of motivation to seek out online gambling-communities, which in turn emphasizes the need for further cross-cultural research.

In this paper, we focused on online gambling-communities, but it is important to examine the relevance of online communities in terms of other phenomena as well. The potential of online communities to connect a large number of people around shared interests, activities and goals may hold many benefits, but also risks, particularly within problematic phenomena such as youth gambling. Through mechanisms of anonymity, social identification and social influence, online communities can be a significant influence in terms of attitudes and behavior, particularly for young people who use social media extensively. Since social media platforms are constantly developing and new types of online communities emerge, research is needed to understand emerging group processes within the communities, and communities' significance in their users' everyday life. This would also help us understand how online communities' favorable aspects, such as socio-emotional support and sense of belonging, could be utilized in a harm-reductive manner among individuals suffering from loneliness or engaging in problematic behaviors such as excessive gambling.

4.1. Limitations

Notwithstanding the strengths of the study, we acknowledge several limitations within it. First, this study was cross-sectional, so we could not examine any causal mechanisms. In future studies, it is necessary to study online gambling-community participation and the associated factors using longitudinal settings. Secondly, this study only focused on Finnish and U.S. adolescents and young adults; more research is needed to compare these results with those of other age groups and other cultural contexts. Third, the effect sizes were relatively low in Study 2, despite being statistically significant across the samples. Especially the pseudo coefficients of determination (R^2) demonstrate this. Finally, the use of the SOGS as a measure for excessive gambling has some limitations, as it was originally developed for clinical settings and is not fully synonymous with the DSM-V criteria for pathological gambling (Stinchfield, 2002). However, despite of its limitations, the SOGS is a widely used measure for problematic gambling in survey research and it showed good internal consistency and reliability within all our samples. Finally, this study examined only participation frequency in online gambling-communities. Future studies should examine participation activity in more depth, such as whether actively or passively participating in and contributing to these communities have differing associations, for example, in terms of problem gambling diagnosis or loneliness.

5. Conclusion

Online gambling-communities are particularly attractive for young individuals who experience gambling problems and for those who are generally interested in gambling. In this study, loneliness moderated the association between excessive gambling and daily online gambling-community participation in Finland; among problem gamblers, those who reported loneliness were most likely to participate in these online communities. However, this moderation was not found in the U.S. context, indicating the presence of cultural differences. Although some online gambling-communities can serve as an aid for problem gamblers, this study's results underlined the risks involved. More research is needed to improve the understanding of the group dynamics and processes of online gambling-communities, as well as to identify the potential benefits and risks of participating in these communities. In this paper, we offer a better understanding of the factors that motivate online gambling-community participation, and the results encourage further exploration of the phenomenon and its cultural differences, particularly in terms of perceived loneliness.

Appendix 1. English-Translated Vignettes and Manipulations Used in the Survey Experiment

Positive stance on gambling [experience-driven] [fact-driven]

[Me and many of my friends] [According to a recent report, 80% of the Finnish people] gamble. Gambling brings [me enjoyment] [enjoyment], and it [has brought significant benefits to me and my family's well-being] [brings significant benefits to the society and people's well-being]. Behind the following link, you can read more [about Finnish people's experiences] [research findings] on gambling.

Negative stance on gambling [experience-driven] [fact-driven]

[Me and many of my friends] [According to a recent report, over 120,000 Finnish people] suffer from gambling problems. Gambling causes [me problems] [problems], and it [has caused significant damage for me and my family's well-being] [causes significant damage for the society and people's well-being]. Behind the following link, you can read more [about Finnish people's experiences] [research findings] on gambling.

References

Ali, K., Farrer, L., Gulliver, A., & Griffiths, K. M. (2015). Online peer-to-peer support for young people with mental health problems: A systematic review. *JMIR Mental Health, 2*(2), e19.

Allami, Y., Vitaro, F., Brendgen, M., Carbonneau, R., & Tremblay, R. E. (2018). Identifying at-risk profiles and protective factors for problem gambling: A longitudinal study across adolescence and early adulthood. *Psychology of Addictive Behaviors, 32*(3), 373–382.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Atzmüller, C., & Steiner, P. M. (2010). Experimental vignette studies in survey research. *Methodology, 6*(3), 128–138.

Barak, A., Boniel-Nissim, M., & Suler, J. (2008). Fostering empowerment in online support groups. *Computers in Human Behavior, 24*(5), 1867–1883.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497.

Baym, N. K. (2000). *Tune in, log on: Soaps, fandom, and online community*, *Vol. 3*. Thousand Oaks: Sage.

Bergh, R., Akrami, N., Sidanius, J., & Sibley, C. G. (2016). Is group membership necessary for understanding generalized prejudice? A re-evaluation of why prejudices are interrelated. *Journal of Personality and Social Psychology, 111*(3), 367–395.

Bian, M., & Leung, L. (2015). Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital. *Social Science Computer Review, 33*(1), 61–79.

Blaszczynski, A., & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction, 97*(5), 487–499.

Botterill, E., Gill, P. R., McLaren, S., & Gomez, R. (2016). Marital status and problem gambling among Australian older adults: The mediating role of loneliness. *Journal of Gambling Studies, 32*(3), 1027–1038.

Boyd, D. (2014). *It's complicated: The social lives of networked teens.* Yale University Press.
Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication, 13*(1), 210–230.
Bynner, J., & Parsons, S. (2002). Social exclusion and the transition from school to work: The case of young people not in education, employment, or training (NEET). *Journal of Vocational Behavior, 60*, 289–309.
Cacioppo, S., Grippo, A. J., London, S., Goossens, L., & Cacioppo, J. T. (2015). Loneliness: Clinical import and interventions. *Perspectives on Psychological Science, 10*(2), 238–249.
Calado, F., Alexandre, J., & Griffiths, M. D. (2017). Prevalence of adolescent problem gambling: A systematic review of recent research. *Journal of Gambling Studies, 33*(2), 397–424.
Canale, N., Griffiths, M. D., Vieno, A., Siciliano, V., & Molinaro, S. (2016a). Impact of Internet gambling on problem gambling among adolescents in Italy: Findings from a large-scale nationally representative survey. *Computers in Human Behavior, 57*, 99–106.
Canale, N., Vieno, A., Griffiths, M. D., Marino, C., Chieco, F., Disperati, F.,., & Santinello, M. (2016b). The efficacy of a web-based gambling intervention program for high school students: A preliminary randomized study. *Computers in Human Behavior, 55*, 946–954.
Canale, N., Vieno, A., Lenzi, M., Griffiths, M. D., Borraccino, A., Lazzeri, G.,., & Santinello, M. (2017). Income inequality and adolescent gambling severity: Findings from a large-scale Italian representative survey. *Frontiers in Psychology, 8*, 1318.
Castrén, S., Basnet, S., Salonen, A. H., Pankakoski, M., Ronkainen, J. E., Alho, H., et al. (2013). Factors associated with disordered gambling in Finland. *Substance Abuse Treatment, Prevention, and Policy, 8*(1), 24.
Centola, D., & van de Rijt, A. (2015). Choosing your network: Social preferences in an online health community. *Social Science & Medicine, 125*, 19–31.
Chung, J. E. (2013). Social interaction in online support groups: Preference for online social interaction over offline social interaction. *Computers in Human Behavior, 29*(4), 1408–1414.
Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310–357.
Csipke, E., & Horne, O. (2007). Pro-eating disorder websites: Users' opinions. *European Eating Disorders Review, 15*(3), 196–206.
Currie, C., Zanotti, C., Morgan, A., Currie, D., De Looze, M., Roberts, C.,., & Barnekow, V. (2009). *Social determinants of health and well-being among young people. Health behaviour in school-aged children (HBSC) study: International report from the 2009/2010*271.
Custers, K. (2015). The urgent matter of online pro-eating disorder content and children: Clinical practice. *European Journal of Pediatrics, 174*(4), 429–433.
Daine, K., Hawton, K., Singaravelu, V., Stewart, A., Simkin, S., & Montgomery, P. (2013). The power of the web: A systematic review of studies of the influence of the internet on self-harm and suicide in young people. *PLoS One, 8*(10), e77555.
Demir, Y., & Kutlu, M. (2016). The relationship between loneliness and depression: Mediation role of Internet addiction. *Educational Process: International Journal, 5*(2), 97–105.
DiTommaso, E., & Spinner, B. (1997). Social and emotional loneliness: A re-examination of Weiss' typology of loneliness. *Personality and Individual Differences, 22*(3), 417–427.
Edgren, R., Castrén, S., Mäkelä, M., Pörtfors, P., Alho, H., & Salonen, A. H. (2016). Reliability of instruments measuring at-risk and problem gambling among young individuals: A systematic review covering years 2009–2015. *Journal of Adolescent Health, 58*(6), 600–615.
Elgar, F. J., Canale, N., Wohl, M. J., Lenzi, M., & Vieno, A. (2018). Relative deprivation and disordered gambling in youths. *Journal of Epidemiology & Community Health, 72*(7), 589–594.
Flanagin, A. J., Hocevar, K. P., & Samahito, S. N. (2014). Connecting with the user-generated Web: How group identification impacts online information sharing and evaluation. *Information, Communication & Society, 17*(6), 683–694.
Furlong, A. (2006). Not a very NEET solution representing problematic labour market transitions among early school-leavers. *Work, Employment & Society, 20*, 553–569.
Gainsbury, S., & Blaszczynski, A. (2011). Online self-guided interventions for the treatment of problem gambling. *International Gambling Studies, 11*(3), 289–308.
Gainsbury, S., Hing, N., & Suhonen, N. (2014). Professional help-seeking for gambling problems: Awareness, barriers and motivators for treatment. *Journal of Gambling Studies, 30*(2), 503–519.
Goodie, A. S., MacKillop, J., Miller, J. D., Fortune, E. E., Maples, J., Lance, C. E., & Campbell, W. K. (2013). Evaluating the South Oaks Gambling Screen with DSM-IV and DSM-V criteria: Results from a diverse community sample of gamblers. *Assessment, 20*(5), 523–531.
Hardie, E., & Tee, M. Y. (2007). Excessive Internet use: The role of personality, loneliness and social support networks in Internet addiction. *Australian Journal of Emerging Technologies and Society, 5*(1), 34–47.
Hardoon, K. K., Gupta, R., & Derevensky, J. L. (2004). Psychosocial variables associated with adolescent gambling. *Psychology of Addictive Behaviors, 18*(2), 170–179.
Heinrich, L. M., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical Psychology Review, 26*(6), 695–718.
Herrero, J., Urueña, A., Torres, A., & Hidalgo, A. (2017). Socially connected but still isolated: Smartphone addiction decreases social support over time. *Social Science Computer Review*. https://doi.org/10.1177/0894439317742611 Advance online publication.
Hing, N., Russell, A., Tolchard, B., & Nower, L. (2016). Risk factors for gambling problems: An analysis by gender. *Journal of Gambling Studies, 32*(2), 511–534.
Hocevar, K. P., Flanagin, A. J., & Metzger, M. J. (2014). Social media self-efficacy and information evaluation online. *Computers in Human Behavior, 39*, 254–262.
Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science, 10*(2), 227–237.
Hood, M., Creed, P. A., & Mills, B. J. (2017). *Loneliness and online friendships in emerging adults. Personality and Individual Differences.* Advance online publicationhttps://doi.org/10.1016/j.paid.2017.03.045.
Huang, G. C., Unger, J. B., Soto, D., Fujimoto, K., Pentz, M. A., Jordan-Marsh, M., et al. (2014). Peer influences: The impact of online and offline friendship networks on adolescent smoking and alcohol use. *Journal of Adolescent Health, 54*(5), 508–514.
Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging, 26*(6), 655–672.
Kaakinen, M., Keipi, T., Räsänen, P., & Oksanen, A. (2018). Cybercrime victimization and subjective well-being: An examination of the buffering effect hypothesis among adolescents and young adults. *Cyberpsychology, Behavior, and Social Networking, 21*(2), 129–137.
Kääriäinen, J., & Lehtonen, H. (2006). The variety of social capital in welfare state regimes–a comparative study of 21 countries. *European Societies, 8*(1), 27–57.
Keipi, T., Näsi, M., Oksanen, A., & Räsänen, P. (2017). *Online hate and harmful content: Cross-national perspectives.* Abingdon & New York: Routledge.
Khazaal, Y., Chatton, A., Achab, S., Monney, G., Thorens, G., Dufour, M., ... Rothen, S. (2017). Internet gamblers differ on social variables: A latent class analysis. *Journal of Gambling Studies, 33*(3), 881–897.
Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLoS One, 8*(8), e69841.
Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health, 14*(3), 311.
Kuss, D. J., Griffiths, M., Karila, L., & Billieux, J. (2014). Internet addiction: A systematic review of epidemiological research for the last decade. *Current Pharmaceutical Design, 20*(25), 4026–4052.
Lea, M., Spears, R., & de Groot, D. (2001). Knowing me, knowing you: Anonymity effects on social identity processes within groups. *Personality and Social Psychology Bulletin, 27*(5), 526–537.
Lee, C. Y. S., & Goldstein, S. E. (2016). Loneliness, stress, and social support in young adulthood: Does the source of support matter? *Journal of Youth and Adolescence, 45*(3), 568–580.
Lehdonvirta, V., & Räsänen, P. (2011). How do young people identify with online and offline peer groups? A comparison between UK, Spain and Japan. *Journal of Youth Studies, 14*(1), 91–108.
Lesieur, H. R., & Blume, S. B. (1987). the South Oaks gambling screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*(9), 1184–1188.
Masi, C. M., Chen, H. Y., Hawkley, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review, 15*(3), 219–266.
Matthews, T., Danese, A., Wertz, J., Odgers, C. L., Ambler, A., Moffitt, T. E., et al. (2016). Social isolation, loneliness and depression in young adulthood: A behavioural genetic analysis. *Social Psychiatry and Psychiatric Epidemiology, 51*(3), 339–348.
McKenna, K. Y., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the Internet for personality and social psychology. *Personality and Social Psychology Review, 4*(1), 57–75.
McQuade, A., & Gill, P. (2012). The role of loneliness and self-control in predicting problem gambling behaviour. *Gambling Research: Journal of the National Association for Gambling Studies (Australia), 24*(1), 18.
Meerkerk, G. J., Van Den Eijnden, R. J., Vermulst, A. A., & Garretsen, H. F. (2009). The compulsive Internet use scale (CIUS): Some psychometric properties. *CyberPsychology and Behavior, 12*(1), 1–6.
Mikal, J. P., Rice, R. E., Kent, R. G., & Uchino, B. N. (2016). 100 million strong: A case study of group identification and deindividuation on Imgur.com. *New Media & Society, 18*(11), 2485–2506.
Minkkinen, J., Oksanen, A., Näsi, M., Keipi, T., Kaakinen, M., & Räsänen, P. (2015). Does social belonging to primary groups protect young people from the effects of pro-suicide sites? *Crisis, 37*(1), 31–41.
Mudry, T. E., & Strong, T. (2013). Doing recovery online. *Qualitative Health Research, 23*(3), 313–325.
Näsi, M., Räsänen, P., Oksanen, A., Hawdon, J., Keipi, T., & Holkeri, E. (2014). Association between online harassment and exposure to harmful online content: A cross-national comparison between the United States and Finland. *Computers in Human Behavior, 41*, 137–145.
Oh, H. J., Ozkaya, E., & LaRose, R. (2014). How does online social networking enhance life satisfaction? The relationships among online supportive interaction, affect, perceived social support, sense of community, and life satisfaction. *Computers in Human Behavior, 30*, 69–78.
Oksanen, A., Garcia, D., Sirola, A., Näsi, M., Kaakinen, M., Keipi, T., et al. (2015). Pro-anorexia and anti-pro-anorexia videos on YouTube: Sentiment analysis of user responses. *Journal of Medical Internet Research, 17*(11), e256.
Oksanen, A., Savolainen, I., Sirola, A., & Kaakinen, M. (2018). Problem gambling and psychological distress: A cross-national perspective on the mediating effect of consumer debt and debt problems among emerging adults. *Harm Reduction Journal, 15*(1), 45.
Orford, J. (2001). *Excessive appetites: A psychological view of addictions.* New York, NY: Wiley & Sons.
O'Leary, K., & Carroll, C. (2013). The online poker sub-culture: Dialogues, interactions and networks. *Journal of Gambling Studies, 29*(4), 613–630.
Parke, A., & Griffiths, M. (2011). Poker gambling virtual communities: The use of computer-mediated communication to develop cognitive poker gambling skills. *International Journal of Cyber Behavior, Psychology and Learning, 1*(2), 31–44.

Patil, P., Peng, R. D., & Leek, J. T. (2016). What should researchers expect when they replicate studies? A statistical view of replicability in psychological science. *Perspectives on Psychological Science, 11*(4), 539–544.
Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In S. Duck, & R. Gilmour (Eds.). *Personal relationships in disorder* (pp. 31–56). London, England: Academic Press.
Petry, N. M., Blanco, C., Stinchfield, R., & Volberg, R. (2013). An empirical evaluation of proposed changes for gambling diagnosis in the *DSM-5*. *Addiction, 108*(3), 575–581.
Petry, N. M., & Weiss, L. (2009). Social support is associated with gambling treatment outcomes in pathological gamblers. *American Journal on Addictions, 18*(5), 402–408.
Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior, 62*, 155–167.
Postmes, T., Spears, R., Sakhel, K., & De Groot, D. (2001). Social influence in computer-mediated communication: The effects of anonymity on group behavior. *Personality and Social Psychology Bulletin, 27*(10), 1243–1254.
Preece, J. (2000). *Online communities: Designing usability and supporting sociability.* John Wiley & Sons, Inc.
Qualter, P., Vanhalst, J., Harris, R., Van Roekel, E., Lodder, G., Bangee, M., ... Verhagen, M. (2015). Loneliness across the life span. *Perspectives on Psychological Science, 10*(2), 250–264.
Räsänen, T., Lintonen, T., Tolvanen, A., & Konu, A. (2016). The role of social support in the association between gambling, poor health and health risk-taking. *Scandinavian Journal of Public Health, 44*(6), 593–598.
Rheingold, H. (1993). *The virtual community: Finding connection in a computerized world.* Addison-Wesley Longman Publishing Co., Inc.
Rice, S. M., Goodall, J., Hetrick, S. E., Parker, A. G., Gilbertson, T., Amminger, G. P., ... Alvarez-Jimenez, M. (2014). Online and social networking interventions for the treatment of depression in young people: A systematic review. *Journal of Medical Internet Research, 16*(9), e206.
Russell, D., Cutrona, C. E., Rose, J., & Yurko, K. (1984). Social and emotional loneliness: An examination of Weiss's typology of loneliness. *Journal of Personality and Social Psychology, 46*(6), 1313–1321.
Sallinen-Kuparinen, A., McCroskey, J. C., & Richmond, V. P. (1991). Willingness to communicate, communication apprehension, introversion, and self-reported communication competence: Finnish and American comparisons. *Communication Research Reports, 8*(1), 55–64.
Salonen, A., & Raisamo, S. (2015). *Suomalaisten rahapelaaminen 2015: Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla [Finnish gambling 2015: Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15–74] (Report No. 16/2015)*Helsinki, Finland: National Institute for Health and Welfare (THL).
Saunders, J. B., Degenhardt, L., & Farrell, M. (2017). Excessive gambling and gaming: Addictive disorders? *The Lancet Psychiatry, 4*(6), 433–435.
Savolainen, I., Sirola, A., Kaakinen, M., & Oksanen, A. (2018). Peer group identification as determinant of youth behavior and the role of perceived social support in problem gambling. *Journal of Gambling Studies*. https://doi.org/10.1007/s10899-018-9813-8 Advance online publication.
Shin, S. Y., Van Der Heide, B., Beyea, D., Dai, Y. N., & Prchal, B. (2017). Investigating moderating roles of goals, reviewer similarity, and self-disclosure on the effect of argument quality of online consumer reviews on attitude formation. *Computers in Human Behavior, 76*, 218–226.
Sirola, A., Kaakinen, M., & Oksanen, A. (2018). Excessive gambling and online gambling communities. *Journal of Gambling Studies, 34*(4), 1313–1325.
Sleczka, P., Braun, B., Piontek, D., Bühringer, G., & Kraus, L. (2015). *DSM-5* criteria for gambling disorder: Underlying structure and applicability to specific groups of gamblers. *Journal of Behavioral Addictions, 4*(4), 226–235.
Song, H., Zmyslinski-Seelig, A., Kim, J., Drent, A., Victor, A., Omori, K., et al. (2014). Does Facebook make you lonely? A meta-analysis. *Computers in Human Behavior, 36*, 446–452.
Stickley, A., Koyanagi, A., Koposov, R., Schwab-Stone, M., & Ruchkin, V. (2014). Loneliness and health risk behaviours among Russian and U.S. Adolescents: A cross-sectional study. *BMC Public Health, 14*(1), 366.
Stinchfield, R. (2002). Reliability, validity, and classification accuracy of the South Oaks Gambling Screen (SOGS). *Addictive Behaviors, 27*(1), 1–19.
Syed-Abdul, S., Fernandez-Luque, L., Jian, W. S., Li, Y. C., Crain, S., Hsu, M. H., & Liou, D. M. (2013). Misleading health-related information promoted through video-based social media: Anorexia on YouTube. *Journal of Medical Internet Research, 15*(2), e30.
Turel, O., & Osatuyi, B. (2017). A peer-influence perspective on compulsive social networking site use: Trait mindfulness as a double-edged sword. *Computers in Human Behavior, 77*, 47–53.
Turja, T., Oksanen, A., Kaakinen, M., Sirola, A., Kaltiala-Heino, R., & Räsänen, P. (2017). Proeating disorder websites and subjective well-being: A four-country study on young people. *International Journal of Eating Disorders, 50*(1), 50–57.
Van Baarsen, B., Snijders, T. A., Smit, J. H., & Van Duijn, M. A. (2001). Lonely but not alone: Emotional isolation and social isolation as two distinct dimensions of loneliness in older people. *Educational and Psychological Measurement, 61*(1), 119–135.
Walther, J. B., DeAndrea, D., Kim, J., & Anthony, J. C. (2010). The influence of online comments on perceptions of antimarijuana public service announcements on YouTube. *Human Communication Research, 36*(4), 469–492.
Walther, J. B., & Jang, J. W. (2012). Communication processes in participatory websites. *Journal of Computer-Mediated Communication, 18*(1), 2–15.
Wang, J. L., Jackson, L. A., Wang, H. Z., & Gaskin, J. (2015). Predicting social networking site (SNS) use: Personality, attitudes, motivation and internet self-efficacy. *Personality and Individual Differences, 80*, 119–124.
Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation.* Cambridge, MA: Massachusetts Institute of Technology Press.
Westerwick, A., Johnson, B. K., & Knobloch-Westerwick, S. (2017). Change your ways: Fostering health attitudes toward change through selective exposure to online health messages. *Health Communication, 32*(5), 639–649.
Wood, R. T., & Wood, S. A. (2009). An evaluation of two United Kingdom online support forums designed to help people with gambling issues. *Journal of Gambling Issues,* (23), 5–30.
Yao, M. Z., & Zhong, Z. J. (2014). Loneliness, social contacts and internet addiction: A cross-lagged panel study. *Computers in Human Behavior, 30*, 164–170.
Zhou, T. (2011). Understanding online community user participation: A social influence perspective. *Internet Research, 21*(1), 67–81.
Zywica, J., & Danowski, J. (2008). The faces of Facebookers: Investigating social enhancement and social compensation hypotheses: Predicting Facebook™ and offline popularity from sociability and self-esteem, and mapping the meanings of popularity with semantic networks. *Journal of Computer-Mediated Communication, 14*(1), 1–34.