

editorial/éditorial

Introducing our new Editor-in-Chief and a Special Issue on Problem Video Gaming and Technology Use

Journal of Gambling Issues editorial team

This year marks the 20th anniversary of the day that a group of problem gambling researchers and clinicians, including Wayne Skinner, Tony Toneatto, Nina Littman-Sharp, Robert Murray, Nigel Turner, Andrew Johnson, and Phil Lange, came together to create an online journal on gambling related issues, *The Electronic Journal of Gambling Issues: eGambling*. After much planning, debate, and administrative issues, the first issue was published in March 2000 - although the name was subsequently changed to the *Journal of Gambling Issues (JGI)* in 2004 to reflect the normalization of electronic publishing. Over those 20 years this journal has published scores of papers on diverse topics within the field of gambling studies. The *JGI* was, in fact, the first entirely electronic academic journal of its type in the world. In addition, it has been an open access journal since its inception. Another principal difference between our journal and others is that it operates as a means for both scientific publications and knowledge exchange.

This year has seen a number of changes to the *JGI*. First, with gratitude and deep appreciation, we say goodbye to our outgoing editor-in-chief, Dr. Sherry Stewart, a Tier 1 Canada Research Chair in Addictions and Mental Health, professor in the Departments of Psychiatry, Psychology and Neuroscience, and Community Health and Epidemiology at Dalhousie University, and a Fellow in the Royal Society of Canada. Sherry's committed stewardship over the last decade was exceptionally important for the consolidation and growth of the journal. Her rigorous standards set a high bar, pushing the *JGI* to mature into an important Canadian and international forum for gambling research and scholarship. Under her leadership, the journal steadily increased its publication of original research papers and literature reviews, instituted the opinion piece and commentary format that highlighted compelling debates in the field, extended scholarship to include French-language submissions, and steered us towards implementing the Online First platform, which makes manuscripts quickly available to readers prior to issue release. Further, Sherry advanced special issues and sections, including gambling in older adults, and the *JGI* Scholar's Award for Research Excellence, which encouraged new researchers in the field to publish in the *JGI*.

Second, we announce that a new editor, Dr. Nigel E. Turner, has come on board to guide this journal through the coming year. Nigel has been conducting research on gambling and other addictions since 1995. He is a quantitative expert who has developed crucial assessment tools (Turner, Littman-Sharp, Toneatto, Liu, & Ferenzy, 2013),

conducted thorough epidemiological studies of gambling problems (Room, Turner, & Ialomiteanu, 1999), studied risk factors for problem gambling (Turner, Jain, Spence, & Zangeneh, 2008; Turner, Littman-Sharp, & Zangeneh, 2006; Turner et al., 2019), investigated gambling in the correctional population (Turner, Preston, Saunders, McAvoy, & Jain, 2009), instigated prevention programs (Turner, Macdonald, & Somerset, 2008), evaluated treatment programs (Chen, Jindani, Perry, & Turner, 2014), and created meaningful and sophisticated computer simulations to study both gambling games (Turner & Horbay, 2004; Turner, 2011) and gambling strategies (Turner & Fritz, 2001).

A third change is to introduce three new associate editors. Elizabeth (Liz) Kyonka, Ph.D. (University of New England, Australia), is a behaviour analyst and experimental psychologist. Liz uses laboratory slot-machine analog experiments with nonhumans (e.g., Kyonka, Rice & Ward, 2017; Rice & Kyonka, 2017), and a variety of behaviour-analytic approaches with humans (e.g., Fox & Kyonka, 2017; Kyonka & Schutte, 2018) to study the structural characteristics of probabilistic learning. Farah Jindani, Ph.D., RSW is interested in the integration of evidence based practice and research (Boughton, Jindani & Turner, 2017; Jindani, Turner & Khalsa, 2015). She has worked as a clinician in the field of addictions (problem gambling) and mental health for 15 years. Her research expertise includes qualitative research, trauma informed interventions, problem gambling, addictions/mental health and evidence informed knowledge exchange (Kelly et al., 2018; Turner et al., 2018). Jing Shi, Ph.D. is currently a fellow at the Centre of Addiction and Mental Health in Toronto, Ontario, and an assistant professor at McMaster University (adjunct) in Hamilton, Ontario. Her main research interests in behavioral addictions include the development of clinical tools for gaming disorder, tools which use effective qualitative methods for understanding both gamers and gamblers (Shi, Renwick, Turner, & Kirsh, 2019), and understanding the factors associated with problem gaming (Shi, Boak, Mann, & Turner, 2019). We extend our warm and deep welcome to Liz, Farrah Jing!

A final change is in the focus of the journal. For the past 20 years we have maintained a specific focus on gambling issues. However, with the emerging convergence of gambling with *gaming*, a broadening need has emerged to understand the latter as well. As such, in addition to welcoming studies of gambling problems, we will now also consider and publish papers focused on video gaming, technology overuse, and the examination of the links between gambling and gaming. To introduce this new and broader focus, we are organizing a special issue, one that will focus on video gaming and technology over use. Manuscripts will be published online prior to issue release.

A special expression of gratitude to all those researchers who have submitted papers over the years and to all those persons who have read and continue to read our journal ... because without both the writers and the readers this publication would not be possible.

Présentation du nouveau rédacteur-en-chef et numéro spécial sur la pratique excessive des jeux vidéo et l'usage de la technologie

Équipe de rédaction du *Journal of Gambling Issues*

Nous soulignons cette année le 20^e anniversaire du jour où un groupe de chercheurs et de cliniciens, dont Wayne Skinner, Tony Toneatto, Nina Littman-Sharp, Robert Murray, Nigel Turner, Andrew Johnson et Phil Lange, s'est réuni dans le but de fonder une revue en ligne consacrée au problème du jeu pathologique: *The Electronic Journal of Gambling Issues: eGambling*. Au terme de nombreuses séances de planification, de débats et de démarches administratives, son premier numéro voyait le jour en mars 2000. En 2004, le titre de la revue prit celui de *Journal of Gambling Issues (JGI)*, une décision reflétant la normalisation de l'édition électronique. Depuis 20 ans, *JGI* a publié une foule d'articles sur des sujets variés intéressant le domaine des études sur le jeu. Il s'agit en fait de la toute première revue scientifique électronique de ce genre à avoir vu le jour dans le monde. Ajoutons qu'elle est offerte en libre accès depuis les tout débuts. Autre élément important qui la distingue d'autres revues : elle sert à la fois à publier des articles scientifiques et à échanger des connaissances.

De nombreux changements sont survenus à *JGI* au cours de l'année. Tout d'abord, nous adressons des adieux empreints de gratitude à notre rédactrice en chef sortante Sherry Stewart, titulaire d'une Chaire de recherche du Canada de niveau I en dépendances et santé mentale, professeure aux départements de psychiatrie, de psychologie, de neurosciences et de santé communautaire et épidémiologie à l'Université Dalhousie et membre de la Société royale du Canada. L'engagement avec lequel Sherry a tenu les rênes de la revue depuis dix ans aura eu une incidence exceptionnelle sur la consolidation et la croissance de celle-ci. Sherry a instauré des normes rigoureuses qui ont placé la barre très haut et amené *JGI* à devenir un forum canadien et international essentiel en matière de recherche et de connaissances scientifiques sur le jeu. Sous sa gouverne, la publication d'articles de recherche inédits et de revues de la littérature a progressivement augmenté; une rubrique consacrée aux lettres d'opinion et aux commentaires a été instituée qui met en lumière les débats passionnants qui animent notre domaine; nous avons commencé à accepter des articles rédigés en français et créé la plateforme *Online First*, qui met rapidement à la disposition du lectorat les manuscrits avant leur parution. Également, Sherry a piloté la publication de sections et de numéros spéciaux, dont un consacré au jeu chez les personnes âgées, et institué une bourse pour l'excellence en recherche qui vise à inciter les nouveaux venus dans notre discipline à publier le fruit de leurs recherches dans notre revue.

En second lieu, nous avons le plaisir d'annoncer que Nigel E. Turner prendra la barre à titre de rédacteur en chef afin de piloter les activités de *JGI* au cours de la prochaine année. Nigel mène des recherches sur le jeu pathologique et d'autres dépendances depuis 1995. Spécialiste de la recherche quantitative, il a mis au point des outils d'évaluation indispensables (Turner, Littman-Sharp, Toneatto, Liu et Ferenzy, 2013); dirigé des études épidémiologiques exhaustives sur les problèmes de jeu (Room, Turner et Ialomiteanu, 1999); analysé les facteurs de risque liés au jeu pathologique (Turner, Jain, Spence et Zangeneh, 2008; Turner, Littman-Sharp et Zangeneh, 2006; Turner et al., 2019); étudié le phénomène du jeu au sein de la population carcérale (Turner, Preston, Saunders, McAvoy et Jain, 2009); établi des programmes de prévention (Turner, Macdonald et Somerset, 2008); évalué des programmes de traitement (Chen, Jindani, Perry et Turner, 2014); et créé des simulations par ordinateur élaborées servant à étudier tant les jeux de hasard (Turner et Horbay, 2004; Turner, 2011) que les stratégies de jeu (Turner et Fritz, 2001).

Trois nouvelles rédactrices en chef associées se joignent également à l'équipe. La première, Elizabeth (Liz) Kyonka, Ph. D. (University of New England, Australia), est analyste du comportement et spécialiste en psychologie expérimentale. Liz mène des expériences analogiques en laboratoire sur des machines à sous avec des sujets non humains (par. ex. Kyonka, Rice et Ward, 2017; Rice et Kyonka, 2017) et recourt à diverses approches en analyse du comportement de sujets humains (par. ex. Fox et Kyonka, 2017; Kyonka et Schutte, 2018) pour étudier les caractéristiques structurelles de l'apprentissage probabiliste. La seconde, Farah Jindani, Ph. D., TSI, s'intéresse à l'intégration de la recherche et de la pratique fondée sur les données probantes (Boughton, Jindani et Turner, 2017; Jindani, Turner et Khalsa, 2015). Elle travaille depuis 15 ans comme clinicienne dans les domaines de la santé mentale et de la dépendance (jeu pathologique). Ses champs d'expertise comprennent la recherche qualitative, les interventions sensibles au traumatisme, le jeu pathologique, la santé mentale et les dépendances et l'échange de connaissances éclairées par les données probantes (Kelly et al., 2018; Turner et al., 2018). La troisième, Jing Shi, Ph. D., est postdoctorante au Centre de toxicomanie et de santé mentale à Toronto (Ontario) et professeure auxiliaire à l'Université McMaster à Hamilton (Ontario). Ses recherches sur les dépendances comportementales concernent principalement la conception d'outils cliniques destinés au traitement du jeu pathologique, à l'aide de méthodes qualitatives efficaces servant à étudier tant les joueurs de jeux vidéo que ceux de jeux de hasard (Shi, Renwick, Turner et Kirsh, 2019 et à analyser les facteurs associés au jeu pathologique (Shi, Boak, Mann et Turner, 2019). Nous leur souhaitons chaleureusement la bienvenue à toutes les trois!

Le dernier changement apporté à *JGI* concerne son orientation. Depuis 20 ans, nous avons limité notre champ d'études aux jeux de hasard. Étant donné la convergence de plus en plus grande entre jeux de hasard et *jeux vidéo*, le besoin s'est toutefois fait sentir d'élargir notre réflexion à ce dernier phénomène. Aussi allons-nous dorénavant, en plus d'accueillir des articles sur le jeu pathologique, étudier et publier des manuscrits sur la pratique des jeux vidéo, la surutilisation de la technologie

et l'analyse des liens entre ces deux formes de jeu. Pour souligner cette évolution, nous allons préparer un numéro spécial consacré à ces thèmes. Les manuscrits seront publiés en ligne avant le lancement officiel.

Nous tenons à remercier tout spécialement les chercheurs et chercheuses qui nous ont soumis des articles au fil des ans, ainsi que toutes les personnes qui ont consulté *JGI* par le passé et continuent de nous lire... car son lectorat et ses auteurs, notre revue ne pourrait tout simplement pas exister.

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Learning Poker in Different Communities of Practice: A Qualitative Analysis of Poker Players' Learning Processes and the Norms in Different Learning Communities

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Abstract

Several studies have focused on some of the skill elements needed to become a successful poker player, but few have described the poker players' learning processes. No studies have used a learning theory to analyse poker players' variety of learning methods or analysed whether the competitive and deceptive nature of the poker game have an impact on the players' learning outcome. This article examines 15 poker players' learning processes and how the players enter different learning communities of practice, arguing that different communities have different norms. In a friendly community of practice, the players were generous in helping each other and revealed secrets so that the group could grow together. In the competitive community of practice, the players were more cautious, and misleading information was common. Online poker, as well as new technology, has made several new artefacts (learning tools) available for poker players, and their main contribution is to reveal information that was previously unavailable. Because poker is a game of information, it greatly affects the players' learning potential.

Keywords: poker, poker learning, poker skills, community of practice, qualitative study, young players

Résumé

Plusieurs études ont mis l'accent sur certaines compétences nécessaires pour devenir un joueur de poker performant, mais peu ont décrit les processus d'apprentissage suivis par les joueurs de poker. Aucune étude n'a utilisé de théorie de l'apprentissage pour analyser la diversité des méthodes d'apprentissage des joueurs de poker ni pour déterminer si la nature compétitive et illusoire du jeu de poker a une incidence sur les résultats d'apprentissage des joueurs. Cet article examine les processus d'apprentissage de 15 joueurs de poker et leur entrée dans différentes communautés de pratiques d'apprentissage. On y explique que différentes communautés possèdent différentes normes. Dans une communauté de pratique conviviale, les joueurs s'entraident et

révèlent des secrets afin que le groupe puisse grandir ensemble. Dans une communauté de pratique compétitive, les joueurs sont sur leur garde, et les informations trompeuses sont monnaie courante. Le poker en ligne ainsi que les nouvelles technologies ont mis plusieurs nouveaux outils d'apprentissage à la disposition des joueurs de poker. Leur principale contribution est de révéler des informations qui, auparavant, n'étaient pas disponibles. Étant donné que le poker est un jeu d'information, le potentiel d'apprentissage des joueurs en est grandement affecté.

Introduction

Among the different forms of gambling, poker is in a league of its own because of its skill elements (Bjerg, 2011; Parke, Griffiths, & Parke, 2005). Several studies have focused on some of the skill elements needed to become a successful poker player (Biolcati, Passini, & Griffiths, 2015; Bjerg, 2010; Dedonno & Detterman, 2008; Hardy, 2006; Parke et al., 2005; Palomäki, Laakasuo, & Salmela 2013b; Shead, Hodgins, & Scharf, 2008; St. Germain & Tenebaum, 2011), but only a few have focused on poker players' learning processes (Hayano, 1982; O'Leary & Carroll, 2013). So far, no studies have used a learning theory to analyse the variety of poker players' learning methods or discussed whether the competitive and deceptive nature of the poker game has an impact on the players' learning outcome. Because the vast majority of the research literature considers poker to be a game with a significant skill element (Biolcati et al., 2015; Bjerg, 2010; Jouhki, 2015; Leonard & Williams, 2015; Palomäki et al., 2013b; St. Germain & Tenebaum, 2011; see Meyer, Von Meduna, Brosowski, & Hayer, 2013, for an opposing view), this implies that these skills can be learned and further developed. Instead of determining how large the skill element is, or how it can be measured, I aimed here to be process oriented and to use a learning theory to study the players' described learning processes and their reflections about learning. In this study, poker was analysed as a community of practice, and four young professional poker players, eight young amateur players, and three "old-timers" were interviewed. The goal was to understand the players' learning processes and the learning methods they used to become better poker players.

This article discusses three research questions:

- How do the players describe their own learning process?
- What learning artefacts (learning tools) do they describe as the most rewarding?
- Does the competitive and deceptive nature of the poker game have impacts on the players' learning outcome?

Poker History

Live poker in different forms has been played since the 52-card deck was invented around 1840 (Hayano, 1982), but online poker is less than 20 years old (Arkin et al., 1999). However, online poker may have had a significant effect on poker learning

(Moreau, Chabrol, & Chauchard, 2016; Siler, 2010). O’Leary and Carroll (2013) state that online poker and the poker forums have revolutionized the game when it comes to learning, poker language, strategies, and discussing mathematical concepts concerning poker. They further allege that academic work concerning poker has failed to recognize how much online poker has affected live poker.

The period between 2003 and 2010 is referred to as “the poker boom” because of the growth of global Internet poker revenue from US\$365 million to approximately US \$2.4 billion in 2006 (Monaghan, 2008) and an estimated US\$4.99 billion in 2010 (Cook, 2016). There was also a massive increase in live poker playing (Mihaylova, Kairouz, & Nadeau, 2013; Shead, Derevensky, Fong, & Gupta, 2012). In 1999, the television show *Late Night Poker* used cameras inside poker tables (hole cameras) to display the players’ cards (Davy, 2015). This gave television viewers access to the experts’ perspectives and thought processes in a way they had never had before, which influenced poker discussions and learning possibilities for the viewers. The poker boom led to a blossoming poker economy and the possibility for many inexperienced players who would not have entered a casino or poker club to try the game for small stakes, or even “play money,” in the comfort of their own home. The number of players who were eager to risk their own money also grew, which led to rapid growth in the liquidity of player pools. There was much discussion and cooperation between experienced players on the poker forums about how the inexperienced players could be effectively defeated. In live poker, a player usually plays approximately 20 to 30 hands¹ per hour, compared with 80–100 hands on a single table of online poker (Barrault, Untas, & Varescon, 2014). These numbers do not include “fast fold poker,” in which players are moved to a new table and get a new hand as soon as they fold their hand (see Williams, 2019). Online, it is also common to play several tables at the same time (multi-tabling), which is not possible in live poker (Barrault et al., 2014). Studies have reported that as many as eight (McCormack & Griffiths, 2012) to 24 tables are played simultaneously (Hopley, Dempsey, & Nicki, 2010; Palomäki, Laakasuo, & Salmela, 2014). From these numbers, an online poker player may play 50 to 120 times more hands per hour than an offline player does. Playing several tables at the same time contributes to less statistical variance and increases the ability to target multiple weaker players simultaneously and thus increases the opportunity to maximize the profit (Barrault et al., 2014; McCormack & Griffiths, 2012; Palomäki et al., 2014). The speed helps the players gain experience from different poker scenarios quickly because they have played a large number of hands in a short period (McCormack & Griffiths, 2012).

Studies on Poker Learning

Research is generally lacking on both professional poker players and learning (Biolcati et al., 2015; McCormack & Griffiths, 2012; Moreau et al., 2016; Recher &

¹A hand in poker starts with all players receiving their cards from the dealer and ends with the winning player(s) collecting the pot. The speed of the poker game is measured by the number of hands played per hour

Griffiths, 2012), with a few exceptions. The earliest and probably most detailed study was Hayano's ethnography (1982). He completed his doctoral dissertation in anthropology in 1972 and then tried his luck as a poker player in California. He became committed to his fieldwork: "I felt the desire to give up my job as a university professor in order to spend more time in the cardroom" (1982, p. 148). After 5 years of intense playing, he began visiting the cardroom less frequently and started publishing his findings. This was approximately 20 years before the beginning of online poker. Hayano's pioneering study on poker players and the game's subculture is therefore valuable for understanding the changes in poker over the years. First and foremost, players learned from playing a lot (repetition); however, they also studied away from the poker table, for example, by working on poker math, such as "pot odds."² There were not many strategic discussions among players, partly because they were opponents and did not have the same *learning tools* as players have today. In live poker, unlike online poker, the players do not get any *hand histories*. A hand history is an electronic record of an online poker hand; it shows all the details of the hands that have been played. Remembering every detail of a poker hand might be difficult, especially for an inexperienced player. In online poker, it is possible to look at hand histories or even use a poker tracking program³ to systematize the hand histories into a database for statistical analysis. This makes it easier for players and their *learning partners* to have a meaningful discussion.

There are both similarities and differences between Hayano's (1977, 1982) description of the poker world and the descriptions of more recent authors (Bjerg 2010, 2011; Bouju, Grall-Bronnec, Quistrebert-Davanne, Hardouin, & Venisse, 2013; Laakasuo, Palomäki, & Salmela, 2016; McCormack & Griffiths, 2012; Palomäki et al., 2013b; Radburn & Horsley, 2011; Recher & Griffiths, 2012; Vines & Linders, 2016;). Hayano's informants preferred Five-Card Draw California style, a game of significantly less open information and skill than the most common poker variants played today. Texas Hold'em is usually the focus in more recent studies and is played by the vast majority of players online. In all the recent studies and in Hayano's (1977, 1982) study, the professional players were eager to highlight the element of skill, the importance of staying mentally sharp and avoiding tilt,⁴ and the need to continually make thoughtful decisions.

²Pot odds are calculated when a player makes a bet (or raise). The amount in the pot after a potential call, divided on the opponent's bet, is the pot odds. If a player bets 100 and the pot contains 300 before the bet (and 500 after a potential call), then the pot odds are $500:100 = 5$ (or 4 to 1). If a player estimates that he or she has more than a 20% chance of winning the pot by continuing, then the correct play is to call or raise.

³A poker tracking program stores a player's hand histories in a database and allows the player to get statistics on all the hands he or she has saved, such as the percentage of hands played in the big blind and how much money he or she has won or lost when dealt a pair of aces. It also gives the player information about opponents and whether their play is conservative (tight) or reckless (loose). For details, see Pokerlistings (2018).

⁴"To tilt" can be defined as being emotional (typically being angry) and playing more aggressively and less rationally than normal. Players typically tilt after situations in which they lost the hand even though they were the statistical favourite (known as a bad beat) or if they were offended by other players (Moreau et al., 2016; Palomäki et al., 2014).

Another significant difference between Hayano's and more recent findings is that the poker population is younger in the more recent studies and they emphasize continual learning to a much higher degree (Bouju et al., 2013; McCormack & Griffiths, 2012; Recher & Griffiths, 2012). Poker has become more of a teamwork endeavour in which players cooperate to increase their skills and understanding to have an edge against other players (O'Leary & Carroll, 2013). O'Leary and Carroll (2013) conclude that a completely new online poker ecosystem has evolved since online poker started. It consists of online poker sites, poker forums, player reporting and tracking sites, and popular magazine and news, all of which facilitate learning for users. The most popular poker forum (twoplustwo.com) had 320,000 members who discussed strategy and different approaches to poker (p. 6). O'Leary and Carroll (2013) found that collaboration and cooperation was expected in an environment that they described as highly hierarchical. The most experienced players, who typically played high limits, were highly acknowledged by the other members, whereas new members were promptly put in their place. The discussions on strategies and hand histories allow the players to see how other players reflect and to learn what should be emphasized when playing. Along with detailed statistics from poker tracking programs, the players get a good foundation for meaningful discussions. It is interesting that collaboration and cooperation are so strong in a game that is highly individualistic and competitive (O'Leary & Carroll, 2013). However, none of these authors discuss the variety of learning methods, describe how the competitive and deceptive nature of the poker game influences learning, or analyse poker as a community of practice.

In addition to the learning resources discussed by O'Leary and Carroll (2013), there has been a growing industry of poker coaching sites, where players pay money to obtain access to videos of professional players or poker experts who answer questions and show hands while discussing strategy. It is also possible to buy personal coaching and individual feedback from a professional player or an expert (Palomäki, Laakasuo, & Salmela, 2013a). The Internet, videos, and hand histories make it easy to give players and their learning partners the same information.

A Competitive Game of Deception

To analyse the players' learning processes, we need to understand how the learning environment might differ from other learning environments. In poker, being deceptive and misleading may be part of the game strategy. To understand how this may affect the learning environment, we need to understand how these strategies are used.

According to Newall (2011), there are two main philosophies in poker strategy: an exploitive strategy and a game theory optimal (GTO) strategy. The exploitive strategy, the first and older of the two, aims to reveal the opponents' strategies and make counter strategies. The second strategy, GTO, aims to develop strategies that cannot be countered by an exploitive opponent. The exploitive tradition criticizes the GTO players for being mechanical and unable to exploit poor players as much as

necessary (Newall, 2011, pp. 6–20). In perfect information games⁵ such as chess, an exploitive strategy usually makes little sense and the winner is therefore likely to be the player with the most GTO strategy. Computers that use artificial intelligence are generally considered better than humans in these games. In imperfect information games, such as poker, the deception becomes more important and artificial intelligence struggles to find strategies that beat the best human players (Billings, Davidson, Schaeffer, & Szafron, 2002; Bowling, Burch, Johanson, & Tammelin, 2015; Hsu, Campbell, & Hoane, 1995; Koller & Pfeffer, 1995; Rubin & Watson, 2011). Poker players argue that the beauty of poker is the deliberate successful bluff because players win not because of which cards they possess, but how they play their cards.

Because poker is a competition against other players, it is profitable to trick the opponents into making mistakes. A direct attempt to annoy, upset, or intimidate other players is commonly referred to as *needling* in the literature (Abarbanel & Bernhard, 2012; Browne, 1989; Moreau et al., 2016; Wolkomir, 2012). Such attempts may be accepted and even encouraged in the poker game, even though it can make the game appear hostile and unpleasant for some of the players (Zurcher, 1970). Browne (1989, p.15) describes how successful players allure losing players with “red carpet treatment” to get them to stay in the game. The most successful poker players are likely to be those who, to a larger degree than their opponents, disclose their opponents’ strategies, conceal their own strategies, and manipulate their behaviour (Leonard & Williams, 2015; Siler, 2010). Although upsetting others is not a formally learned game strategy, it may greatly affect the learning environment and therefore necessitate source criticism to a much larger extent than in other learning settings. When having a discussion with opponents or receiving advice from them, it is essential to discover whether the opponent is genuine or, in Goffman’s (1978) words, putting on a performance. If we return to the chess example, it is unlikely that a player in a chess club receives intentional bad advice from other members; however, it is highly likely that a poker player receives bad advice.

Theoretical Framework

To analyse the players’ descriptions of their learning processes, I used Lave and Wenger’s (1991) theories on situated learning and learning in a community of practice. Their aim was to bridge the socio-cultural and cognitive learning perspective (Billett, 1996). Lave and Wenger (1991) emphasize participation and collaboration in learning and argue that all learning is situated in (created in and belongs to) a social and cultural practice. Because the learning is situated, it is problematic to take learning from one context (such as a poker game) and transfer it to another context (such as daily life). To develop context-specific knowledge, individuals need learning tools (artefacts). The way individuals learn is mediated (affected) by the artefacts they use,

⁵A game is defined as a perfect information game if each player is able to see all the events that have previously occurred in the game (Koller & Pfeffer, 1995). In poker, each player’s personal cards are hidden and therefore none of the players has perfect information (Newall, 2011).

including language, books, and computers. Therefore, changing the artefacts that individuals use while learning will lead to a different understanding. Knowledge does not exist in a vacuum, nor is it created in one: It is always mediated (negotiated) by the cultural and historical context in which it is situated (Dysthe, 1999). A mediator could be a teacher or a more experienced peer. Through interaction with others, individuals obtain the intellectual tools needed to understand and process their impressions and develop knowledge (Bråten, 2002). Because learning is described as heavily contextual, it is best understood in the specific learning environment (the community of practice). Every practice community needs to recruit new members to prevent the learning environment and the collected knowledge from dying out. Lave and Wenger (1991) describe the process that occurs when newcomers strive to become experienced members of a community of practice as *legitimate peripheral participation* (LPP). The word *legitimate* implies that the learner's task is necessary and important; the word *peripheral* implies that the learner starts with a small contribution until he or she has gained more experience, and the word *participation* emphasizes the social process in which the learning occurs. In this process, the newcomer starts by observing more experienced others and by making small contributions through simple tasks (peripheral participation). The aim for the newcomers is to understand the importance of their contribution, obtain acceptance from the more experienced members of the group, and change their self-understanding (or identity) in a way that incorporates the values of the practice community in order to become a more central participant, in other words, to feel like a "real" poker player.

Wenger (2000) further developed the term and described three modes of fitting into a social learning system: *engagement*, *imagination*, and *alignment*. Engagement is the process of cooperating with other members of the practice community and discussing, collaborating, or producing artefacts. Imagination is a more reflective and distanced process that involves the learners' self-image and seeing the bigger picture. It involves being able to undertake complicated trains of thought and understand how different topics are related, thus understanding some of the old-timers' reflections for action that would otherwise seem strange. Alignment involves ensuring that local activities are sufficiently aligned with the community, or subtracting general ideas into specific tasks. An example of alignment is studying a recipe from a cookbook and changing the way one makes a certain dish in order to better fit a cooking tradition. Among these three modes, engagement is considered the most social because it always involves interaction with others, and imagination is considered the most individual because the learner needs time to reflect on previous activities and to mentally prepare for future scenarios. The learner needs to balance these three modes in order to develop skills. Within the communities of practice, there is a repertoire of learning resources and the most competent members are able to take full advantage of a large "learning toolbox." There are boundaries between different learning systems. However, they are usually rather fluid and may be caused by the participant's level of knowledge rather than intentional exclusion: "By participating in these communities, we define with each other what constitutes competence in a given context: being a reliable doctor, a gifted photographer, a popular student, or an astute poker player" (Wenger, 2000, p. 229).

In order to align Wenger's (2000) theories to the informants' learning processes, I used the term "engagement" herein for playing poker or collaborating for learning purposes. The term "imagination" is used as the process of reflecting about the poker game when playing, or more general reflection about poker strategy and game theory; and the term "alignment" is used as the process of mediating general theoretical concepts into specific game situations.

For this article, Lave and Wenger's (1991) theories are used in an attempt to identify some of the learning artefacts in poker and to describe the informants' LPP and how they seek a peripheral or more central position in different learning systems. Furthermore, these theories are used to analyse whether the collaboration in informants' learning can be understood as a community of practice and whether the competitive and deceptive nature of the poker game affects these learning communities or if there are boundaries towards other communities of practice.

Method

Participants

The data set for this study has also been used in two previous published studies (Talberg, 2017; Talberg, 2018). Four current or former young adult professional poker players, eight amateur young adult poker players, and three old-timers were interviewed by using an exploratory qualitative interview study. The informants each had a pseudonym that represented the first letter of their category: The former professionals a "P", the amateurs an "A," and the old-timers an "O." The term old-timer is used to differentiate them from inexperienced newcomers and emphasizes their identity as honourable experienced practitioners with a central position in the poker environment (see Lave & Wenger, 1991, p. 68). The old-timers are part of large network of players; combined, they have experience playing professionally before the poker boom, operating illegal poker clubs, and having discussions with most, if not all, of the famous Norwegian players. The three old-timers were between 35 and 50 years; their exact age is being withheld to ensure anonymity. The young players were categorized as professionals if they had had poker as their only income for over a year and earned an overall profit of more than US\$100,000 from playing poker. If they did not meet these criteria, they were categorized as amateurs. The 12 young poker players were between 20 and 30 years with an average age of 25.5. All participants had played the poker variant Texas Hold'em online and live for several years; the majority had more experience from playing online poker. A few had changed from Texas Hold'em to other poker variants (mostly Omaha). They were recruited by direct contact (all of the old-timers and one of the poker professionals), by advertisement during the first legal poker tournament in Norway with a cash prize (2015), through a Norwegian poker forum on the Internet, or by snowball sampling. All participants were male, and all of the interviews were conducted in Norwegian. Excerpts from the transcripts have been translated from Norwegian by the author.

Data Collection

The study was conducted after approval was gained from the Norwegian Centre for Research Data, which enforces ethical guidelines. The participants received an information sheet prior to the interview and were told that they were free to withdraw at any time. Either written informed consent (face-to-face interview) or verbal consent (phone interviews) was given. All informants consented to an audio recording of the interview, and they were invited to read through the transcriptions after the interview and to make comments. Three of the informants wished to read the transcription, but none had any comments. No attempts were made to control the accuracy of the informants' personal stories, and no psychometric testing or diagnostic gambling tests were conducted.

The first interview took place in October 2015 and the last in July 2016. Six interviews were conducted over the telephone and nine were conducted face to face. Even though the possibility cannot be excluded, no findings indicated any systematic differences in responses on the basis of the interview location. The interviews lasted a total of 30.3 hr. The shortest interview was 52 min and the longest was 203 min.

The interview was semi-directive, the interview guide consisting of 12 themes concerning the interviewees': (1) introduction to poker, (2) preferred stakes format and frequency, (3) learning process and strategies, (4) potential problems related to playing, (5) online poker experience, (6) live poker experience, (7) intra-game experience, (8) poker community, (9) combination of poker with life outside, (10) future poker expectations, (11) definitions of poker-related concepts, and (12) closing remarks. Questions about learning were not limited to the third theme. Within Themes 1, 6, 7, and 8, the players described themselves as participants and how they contributed in the poker community, and within Theme 10 (future expectations), the informants were asked what they would have to do to improve as players. The aim was to get the informants to talk spontaneously and to naturally cover as many of the aspects as possible rather than allowing the conversation to be determined by the order of the interview questions. All of the interviews were conducted and transcribed verbatim by the author. The informants did not receive any compensation for participating in the study. The program HyperTRANSCRIBE (version 1.6) was used for transcribing and the program HyperRESEARCH (version 3.7.3) for analysing the data.

Data Analysis

The aim of this study was to understand and analyse the players' learning process, experience with different artefacts, and learning communities. The transcripts were analysed by using thematic analysis, "a method for identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 79). The goal is to systematically capture what is important about the data and to detect the patterned response. Coding is a process in which one moves back and forth between the data corpus and extracts from the data. Developing themes can be determined

either inductively (developing themes from the texts) or deductively (creating themes on the basis of theoretical knowledge in the research field). A theme or code captures parts that are relevant to the research questions. Aspers (2009) argues that theory is needed to analyse the participants' narratives, as, without theory, one is just performing storytelling. Thematic analysis fits well into critical realism, which acknowledges that the informants' stories represent presentations of themselves and how they create meaning from their experiences (Braun & Clarke, 2006). To analyse the players' learning processes, I actively used the theoretical framework of the article; however, the players' stories were also used to challenge and modify the theory to avoid forcing the stories into fitting our presumptions. The themes of the article were tentative throughout the process of collecting data, analysing, and writing.

Themes Used in This Article

For this article, four major themes and 10 sub-themes were developed. The major themes consist of three different steps in a learning pyramid, see figure 1. The sub-themes consist of 10 different forms of learning. In the second step of the learning pyramid, two different learning communities of practice display how learning is affected by the atmosphere, which may be described as either friendly or competitive.

Step 1. The first step involves progressing from an infrequent gambler to a dedicated student of poker (major theme). The first threshold towards becoming a good player is to understand the element of skill involved in the game, to understand

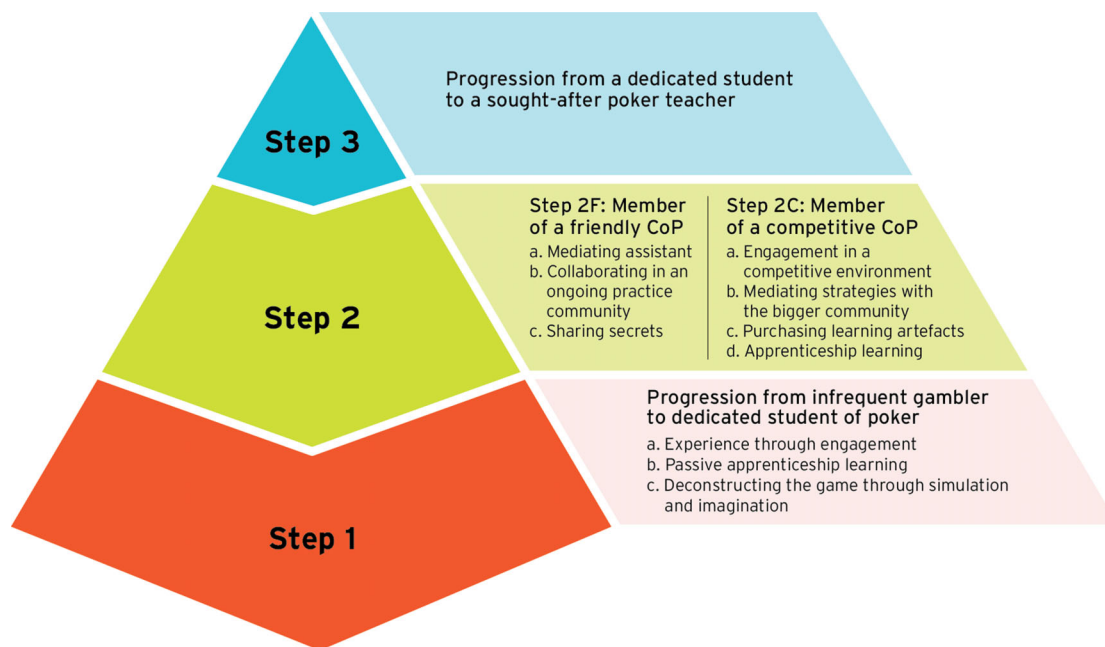


Figure 1. The poker player's learning pyramid. The major themes are written in bold font and constitute the three steps of the ladder, with two different dimensions shown in Step 2 (CoP = community of practice).

the rationale behind some of the rules, and to want to study the game. The three sub-themes (1A: experience through engagement, 1B: passive apprenticeship learning, and 1C: deconstructing the game through stimulation and imagination) are based on Wenger's (2000) three modes of belonging, which are elaborated on in the theoretical framework. These four themes were all conducted deductively. Experience through engagement (1A) is the level of the player's involvement in the activity, in other words, their volume of playing. It is not equal to playing time because it is possible to play several tables simultaneously online and thereby increase the volume and gain experience fast. Passive apprenticeship learning (1B) is the process of learning from observing more experienced members of the community. This can be done by observing leading authorities in the field through television, reading books, watching learning videos, or streaming. It is defined as passive because it does not involve interaction with the more experienced players. Deconstructing the game through simulation and imagination (1C) is the process of "after work" and preparation between playing sessions. It may involve using software to make statistical analyses of previous hands or simulations of future hands. All themes in Step 1 are primarily based on an individual process, whereas all themes in Steps 2 and 3 involve interaction with others.

Step 2F. This step, being a member of a friendly community of practice (2F: major theme), was constructed deductively and based on Lave and Wenger's (1991) learning theory. The three sub-themes (2FA: mediating assistant, 2FB: collaborating in an ongoing practice community, and 2FC: sharing secrets) could be understood as three different types of learning artefacts or learning methods and were constructed inductively on the basis of the informant's stories. Mediating assistant (2FA) involves playing online poker while discussing strategy with a more experienced peer. Collaborating in an ongoing practice community (2FB) is defined as taking part in an ongoing study group or continually discussing poker-related topics with a group of friends. Sharing secrets (2FC) is choosing to reveal hidden information in order to help the group reflect, although it may affect the player's short-term results.

Step 2C. This step, being a member of a competitive community of practice (2C: major theme), is a modification of the classic community of practice theory and caused by the competitive and deceptive nature of the poker game. The theme can therefore be considered as inductively driven. Mediating strategies with the bigger community (2CB) was the only one of the four sub-themes that was conducted deductively. The other three (2CA: engagement in a competitive environment, 2CC: purchasing learning artefacts, and 2CD: apprenticeship learning) were constructed inductively. Engagement in a competitive environment (2CC) involves discussing strategy and information with opponents while playing. Although this may be rewarding, some of the information can be intentionally misleading and source criticism is therefore needed. Mediating strategies (2CB) with the bigger community is defined as discussing hands with strangers outside the table. This typically takes place in online poker forums. Purchasing learning artefacts (2CC) involves buying a package of videos intended for a specific playing format. Apprenticeship learning (2CD) is purchasing guidance from a more experienced peer. All four sub-themes

require either giving money to the learning partner or considering the learning partner's true intentions. This is unique to social learning systems, which are usually less deceptive and competitive.

Step 3. The last major theme, progression from a dedicated student of poker to a sought-after poker teacher (inductively), involves not only being able to develop strategies for oneself, but also to be paid to participate in less experienced others' learning processes.

Results

Step 1: Progression from Infrequent Gambler to a Dedicated Student of Poker

All careers have a starting point, and the players' first impressions, and early motivation, can tell us something about why they regard poker as fascinating and what made them become dedicated players. Even though all of the informants reported that they had played poker at some point in their early childhood, for most of them, this was not a significant factor towards becoming a dedicated student of poker. The word "student" implies that they are interested in and willing to invest in learning and that they consider poker to be a skill that they can improve. The investment could be time, money, or concentration. Some of the informants described a change in mentality as they transitioned from playing for fun or just gambling to playing in order to learn.

Generally, almost all of the informants described their introduction to poker as a highly social process. The two exceptions were Alfred and Otto, who discovered poker themselves after reading about it on the Internet and started playing for moderate amounts or for play money on poker sites. Oscar and Oliver were introduced to live poker after participating in a leisure activity. Alex, Peter, Austin, and Andy had friends who played live poker; and Arthur, Aaron, and Patrick were introduced to online poker by friends. The two last informants, Andrew and Pierre, were introduced to live poker from older family members (brothers or cousins). All of them had experience with card playing and described the first phase as exciting, even though it took some time to understand the skills of the game. Several of the informants admitted that they considered some of the rules⁶ to be excessively rigid in the beginning, but after understanding more of the game, they found themselves advocating some of the same rules later on. This illustrates how they incorporated some of the rationale behind the game and changed their identity towards becoming a "real" poker player.

⁶There are many rules in poker that might surprise a newcomer. Here are four such examples: When a player makes a bet or raise, all chips must be pushed into the pot in one motion (to avoid string betting); if a player uses only one chip, it is considered a call and not a raise unless the player verbally states "raise" (one-chip rule); a player is not allowed to fold his or her cards before it is the player's action; and chips are not allowed to be thrown into the pot (splash). For details, see Pokernews (n.d.).

In a classic community of practice, the learner starts with only peripheral participation. In poker, the players often described starting to play as a full participant right away; however, the stakes involved were moderate and the more experienced players had higher social status. The difference between playing high-stakes poker and playing poker against friends with a moderate stake is similar to playing sports as a professional athlete compared with playing sports in the backyard. Because it is possible to play with play money or to wager less than US\$1 when playing, poker offers an opportunity to practice as a full participant without taking financial risk. The poker players considered this as practice more than “playing for real,” in other words, a sort of peripheral participation.

The first crucial threshold towards becoming a dedicated student of poker was to understand some of the game theory and the skills involved. Patrick illustrated this process well: He was not particularly interested in poker, but several of his friends were active participants in the local poker community and insisted that he join them. After a while, he became interested when he noticed that a young girl consistently won against all the adults. He realized that there was “more to it” and asked her for some advice and learning resources.

The closest to classic LPP is described by Pierre’s introduction to online poker playing. He used to watch his older brother play poker online as often as he was allowed and only participated himself if his brother needed to use the restroom.

Peripheral versus central participation can also be understood as how often a player plays poker; how long a poker session usually lasts; and, if it is online, how many tables the player plays at the same time. When trying new learning artefacts, it was common to start as a peripheral participant and if the artefacts felt valuable, to gradually become a more central and active user.

Experience Through Engagement (1a). The most fundamental way of learning to become a better poker player is by playing poker, in other words, by participating. Online playing goes a lot faster than live playing, and it is possible to play several tables simultaneously. Even for a player who prefers live poker, playing online may be an effective way of gaining more experience fast.

All of the informants had spent a lot of time playing poker online, and most of them used to play at several tables simultaneously. It was most common to play at three to five tables simultaneously; however, some had occasionally played at as many as 20 tables at the same time. Pierre (27 years) was by far the most experienced after having played well over 10 million hands. If he had played the same number of hands live, it would have taken him 45.6 years of non-stop playing. This shows how much faster online poker is than live poker. Even though the professional players reported spending more hours playing poker than did the amateurs, the percentage of time spent playing compared with studying the game was lower among the professionals. In other words, the professionals also spent time on many poker-related activities other than just playing poker.

Passive Apprenticeship Learning (1b). Many of the informants enjoyed watching poker on television, especially early in their career. During the television programs, the rules and some basic strategies were explained, and it was easy to take the experts' perspective when watching their cards and to understand their decision process while being guided by the commentators. These programs offered the informants' an opportunity to take the different players' perspectives and imagine how they would have played the hand themselves. The hole cameras are a modern artefact that may work as an important learning tool for the players.

The thing about watching videos and stuff as well, it provides a lot of learning though. Watch how the best ones played. (Peter)

It is also a way of developing and maintaining interest in poker. Many have used sites such as YouTube and PokerTube to learn the rules of the game and which strategies to apply, or to follow the largest tournaments as a sport. A slightly more active process includes reading interviews, articles, or books written by professional players.

When it came to reading books, there seemed to be a significant difference in terms of age. The old-timers read a lot of books early in their career, but the younger informants (even the professionals) were not as interested in reading. Several of the informants argued that books only get you so far. Oscar (>40 years) had read parts of at least 100 books and took an academic approach to developing his poker skills. Oliver (>35 years) downloaded 80 books to master the game, but after a bit of reading, he no longer thought this method was optimal:

When I had come about halfway in it, I realized that I was getting to a point where those books were, if not obsolete, then at least outdated. To publish a book takes quite a long time. And after the poker boom in which we got the hole cameras, you got the commentators, you got odds calculations on the screen.... the poker evolution has occurred a lot faster. So when Doyle Brunson wrote *Super System* in the early 1970s it was revolutionary... But after the poker boom in the mid-2000s, there were so many assistive devices and so many hands being played, being recorded and analysed. (Oliver)

Reading others' ideas and poker theories enables reflection on one's own strategies and thoughts, which might be valuable for novice players. However, poker is a game where strategies are continually evolving, and adjusting to others' strategies is as important as developing the best strategies because no matter what an opponent does, if revealed, it might be exploited with counter strategies. Therefore, the ability to adjust becomes crucial, and books may become quickly outdated. Several of the amateurs stressed that watching experts play, although it was fun, had a limited learning outcome when playing against novice players because the experts' tactics were so advanced that it was hard to align the strategies to the amateur's regular poker games. Both reading poker experts' books and watching poker experts play is considered passive apprenticeship learning because the player does not interact with the expert. All of the informants had, to some degree, used these two learning

artefacts, although none of the informants had spent a significant amount of time on them for learning purposes in the last year. The single most dividing artefact between the amateurs and the professionals was using statistical tools.

Deconstructing the Game Through Simulation and Imagination (1c). In online poker, the players receive hand histories that can be systematized into a database in order to statistically analyse themselves and their opponents. The informants used this information to analyse previous poker sessions (after work) and make a plan for future poker sessions (preparations). In after work, counterfactual reasoning was common: “What would have happened if I did something else?” Oscar described this as one of the most important methods to improve his skill:

Yes, for me it is important in order to pay attention to what I’m doing. So I can watch it afterwards and go back and see: here it went wrong and what happened here? That is almost what’s most important. (Oscar)

Pierre also emphasized the value of analysing how he had played. Playing several tables simultaneously leaves little time for decision making. Therefore, when Pierre was in doubt, he marked the hand so that he could spend more time analysing it after the game had ended.

In Hold’em Manager [a poker tracking program], every time I have a hand that I’m kind of unsure about, there is this nice feature that you can click on the hand up to the left and then it will be stored in Hold’em Manager. So after each day that I play, I try to store every hand that I’m uncertain about and then I often review them afterwards. (Pierre)

Saving poker hands to analyse later and setting aside time for a continuous critical reflection of one’s own strategies and results demands a high level of imagination. Dedicating time to preparation and after work is one important difference between the professionals’ and amateurs’ approaches in this study. The amateurs spent little or no time on preparation and after work. Several of the amateurs reported that they had saved and shared hand histories to show friends how they were lucky or unlucky or made a huge loss or profit in a specific pot. This was, however, a result-oriented approach, unlike the professionals who had a more holistic and process-oriented approach in which they studied a number of specific hands in specific positions to analyse whether adjusting their own strategies was profitable. Even though Pierre was among the players who spent the most time on playing, he was by far the informant who spent the most time studying the game.

Author: Time distribution. How much time do you spend on playing versus studying poker?

Pierre: Maybe 80%:20% [80% playing] I guess. It used to be maybe 70%:30% before.

An even more imaginary process is to prepare for scenarios that might occur in the future. When making preparations, the aim is to come up with a game plan that

prepares the player for likely scenarios. It involves going through the poker database and evaluating how one has played different cards from different positions, searching for opponents' weaknesses, and finding more profitable strategies. Simulating hands, trying out different approaches, and working with ranges⁷ is also essential in this learning method. Working with ranges involves finding all the likely holdings that an opponent may have in any given game situation and finding the optimal strategy against this range. Compared with watching television poker and reading books, preparation is a more active and self-regulated learning method.

According to Paul (30 years), preparation was the key to being successful. He claimed that he did not look stressed while he played because he had spent so much time going through possible scenarios:

You make it look very easy because no one watches when you do all that preliminary work. When you watch live poker, you see someone that is in full control and that gives the illusion that it is easy. But it's not. It's a damn lot harder than you might think. (Paul)

Paul argued that if he realized he was unsure of what to do, this was an indication that he had not prepared enough. Occasionally checking hand histories while playing online could be seen as peripheral participation, whereas systematically analysing previous sessions and adjusting game plans to future sessions is central participation in this learning artefact.

In the next section, we examine how collaborating with others affected the players' learning process. Poker is highly competitive; nevertheless, the informants described a lot of fruitful cooperation with other players.

Cooperation with friends was described as being quite different from cooperation with strangers. The two settings could be understood as two different communities of practice with different norms. Whereas cooperating with friends was described as a friendly community of practice, cooperating with strangers was described as a more competitive or even hostile community and could require cost-benefit analyses. Because this significantly affects the players' learning, both need to be examined as two different dimensions within the second learning step. I have named the friendly community of practice Step 2F and the competitive community of practice Step 2C.

Step 2F: Member of a Friendly Community of Practice

Being part of a friendly community of practice where members played poker together, challenging each other and discussing tactics, was described as a pleasant

⁷A range is the number of likely hands that an opponent might have. If an opponent makes a raise in a given situation, one might suspect that his range is "AK," or a pair that is higher than tens (a pair of aces, kings, queens, jacks, or an ace and a king). When putting someone on ranges instead of guessing the exact hand, it makes it possible to calculate the odds against likely holdings and therefore it is more likely that one will make good estimates.

and effective way to develop skills. Several informants described an unwritten rule within the community: The money involved should not be so significant that it threatened the friendship. Three methods were identified in a friendly community of practice: learning from a mediating assistant, collaborating in an ongoing practice community, and sharing secrets.

Mediating Assistant (2Fa). The learning method described by the informants as the most rewarding was to observe or to be observed by a slightly better player while playing online and discussing hands with them. The mediating assistant helps the player align general poker theories into the current specific situations that occur in the game. This can include finding sufficient counter strategies against a specific player, considering crucial aspects of specific poker scenarios, or finding improvements in the players' playing style. The assistant is defined as a mediator because the assistant meditates (shapes) the way that the player reflects. One way of helping the player reflect was to ask good questions of the player. This might make an inexperienced player more successful than he or she would have been if playing alone. Online poker offers a unique opportunity to collaborate in this way because both players can see the cards on the computer screen and discuss the game without revealing their strategies to their opponents. This could be done either by sitting next to each other or by using programs such as TeamViewer or Skype. Peter saw a huge change in his poker results after using this method. He had played a lot of poker online and even though he occasionally multiplied his bank roll, he always ended up losing it all eventually. He discussed his problems with some more successful friends, and they asked if they could watch him play online:

They watched me play and they quickly understood what the problem was. I played too many hands...I was a decent player, like technically speaking, but when you play 50% of the hands⁸ and stuff, it becomes a bit difficult. Plus, I used to sit and watch them a lot. So it really went both ways. Not that I used to comment on them so much at the beginning, but I actually observed what they did to win. It was no worse than to simply fold some of the hands you initially wanted to play, then you would usually win against these guys in those days. (Peter)

After making a small but significant adjustment in his strategy, Peter went from being a losing player to becoming a winning player. He even became better than his initial "teachers" and was able to return the favour. The way Peter described how he watched the others play without "commenting so much in the beginning" can be understood as an LPP where he gradually became a full member and even a mediating assistant for the others after he became more successful than his initial teachers.

⁸The percentage of hands a poker player plays defines whether he is loose (reckless) or tight (cautious). Playing more than 30% of the hands against five players or more is generally considered reckless because the player will often run into opponents with better hands (see Cardschat, n.d.).

Oscar had professional teaching experience and therefore he had more of a systematic approach when he decided that he should teach a few friends to become better players. He took a central position in the learning environment:

Back then I had my own recipe which I knew would work. Perhaps it wasn't necessarily the best recipe, but I knew exactly what to do in [a particular poker variant withheld to ensure anonymity] and was able to convey it...I told them this and then they played on their own at home and I got to see hand histories, and we also had sessions where we sat together and watched a couple of hands that I had picked out which were not good. It was pretty exciting and a bit fun. (Oscar)

Patrick (28 years) frequently read on a Norwegian poker forum about players who had moved to other countries to play poker or who worked for gambling companies. He was struggling with his bachelor thesis and more or less spontaneously decided to leave Norway to get to know these players. He learned a lot from several of the other players, but one of them stood out as the most significant:

This German is probably the person that has been most important for my poker learning curve. Because before that time I had learned everything by sitting alone pondering and reading threads and stuff on the Internet, and watching videos on the Internet. I had read a few books, too, but those books were limited in terms of learning outcomes. ... He played the same stakes that I did... We talked poker basically non-stop and discussed different hand strategies and what to do. And told each other everything we came across of useful information and things like that and in that sense, we became better and better together. (Patrick)

The way that Patrick describes his initial learning could be understood as a cognitive process; he was gradually developing a higher level of reflection after reading books, playing, using poker forums, and watching videos. To take his skills to the next level, he needed social interaction and a more active learning approach. He did not merely observe and adopt others' strategies, but also got feedback from others regarding his own strategies.

Andrew (23 years) also emphasized that working together with a mediating assistant was the most rewarding way to develop skills and maintain interest.

I made a great buddy in Trondheim who is, he is better than me though, but he and I spent a lot of time together and played together, and it was a lot of fun. And to be able to talk to people about poker and strategies is very fun, I think, and it keeps you motivated. (Andrew)

Some of the informants reported that they lacked close friends who were equally dedicated to poker and that this reduced their learning opportunities.

Collaborating in an Ongoing Practice Community (2Fb). To collaborate in an ongoing practice community is to continually discuss results from poker sessions,

analyse hand histories together, and share learning resources with a group of friends. Generally, poker learning was described as a highly social process. After individual studying or playing with strangers, it was common to discuss new insights with poker buddies and get feedback and reflections on performances. The method includes a high level of alignment because it involves discussing how concepts and learning may be transferred to competing against strangers. This is how Patrick, Andrew, and Paul described their experience with this method:

We were dead serious. This was our job, and we were going to become the best in the world. Maybe not in the world, but we were to become as good as possible. (Patrick)

The reason why I feel I know how to play is because I've always played with people who have been at the same level as me. That makes you feel as if you know how to play even though you might not be that good. So I guess we've learned from each other. (Andrew)

Due to a few coincidences, I came in contact with a foreign poker community. Before I had just made my own strategies and read into it. But then I had an exponential development. (Paul)

To feel part of a “poker team” that supported its members and shared ideas was described as highly motivating. This indicates that they value the social interaction in learning. The last learning method within the friendly community of practice was to discuss strategy while playing against each other.

Sharing Secrets (2Fc). Andy (20 years) liked to discuss hands while playing with friends and he thought that disclosing his tactics and secrets was the best way to learn. In the poker club, he kept some secrets and “tells” to exploit later on, but with friends, it was different:

I want my buddies to improve and to help me get better. In that way, we grow together. It does not make any sense to take advantage of every mistake they make just to make a few bucks. (Andy)

As Andy stated, learning was more important than making a profit while playing with friends. However, when playing against strangers, it was the other way around. Almost all of the informants argued that who they won money from was important. It was better to beat a stranger than a friend, particularly if the amount of money involved was significant.

Drinking alcohol while playing with friends was reported to be a lot more common than when playing against strangers. This might imply a more relaxed and friendly competition. New players in the group got advice and explanations in order to become full members of the group.

Within the friendly community of practice, sharing is caring. The informants described the aim as being to grow as a group and have fun rather than to compete

against each other. When playing together, winning is a point of pride, but bragging about successful bluffs can lead to a higher level of understanding and self-reflection in the group. When showing a successful bluff, the player chooses a social reward, such as compliments from the other players, at the expense of the potentially high financial reward that concealing their gameplay might contribute to when bluffing in the future. Engaging in a competitive community of practice, on the other hand, is quite different and should therefore be analysed as another dimension within the second step of the learning pyramid.

Step 2C: Member of a Competitive Community of Practice

Poker is a deceptive and competitive game in which it is possible to learn from strangers; however, opponents may benefit from providing misleading advice. This affects the learning environment in ways not traditionally seen in learning communities. For the same reason, giving away too much information may be costly. When learning from or with strangers, deciding what to share and what to withhold were described as more complicated than in a classic community of practice. The informants were not unwilling to learn from or with strangers, but they wanted to be sure that they did not just help others without getting something in return, especially if their advice could reduce their profit. Four different learning methods were identified: learning through engagement in a competitive environment (2CA), learning from mediating strategies in the bigger community (poker forums; 2CB), purchasing learning artefacts (coaching videos; 2CC), and apprenticeship learning (purchasing personal coaching; 2CD).

Engagement in a Competitive Environment (2Ca). In Norway, live poker is strictly regulated,⁹ and there are no legal poker clubs or casinos that allow one to play with real money. However, it is not hard to find illegal poker clubs. Some of the clubs are non-profit clubs and the stakes at these clubs were generally described as moderate. Non-profit clubs were more common in the rural parts of Norway. Other clubs were described as professional; the organizer made money by providing the game, and the atmosphere was described as competitive. It was common to be nervous when visiting the poker clubs the first time (especially the more professional clubs) and several informants described some of the opponents as intimidating.

According to Otto (>40 years), some of the non-profit clubs had several hand discussions, which helped the players develop their skills.

Otto: ...the young ones played a lot online, but they still went down to the local club on Fridays and received good coaching there as well; also, they had the edge of playing 2 million hands online and learning the mathematics by heart.

Author: So they were almost like study groups?

⁹Cash games are not allowed in any form. Tournaments with a maximum of 10 players and a buy-in maximum of 1,000 NOK (approximately US\$125) are allowed. One annual national championship with a few different tournaments with a cash prize is allowed (Lottstift, 2018).

Otto: Yes! To some extent it is still like that. At the smaller clubs and the smaller places in Norway it still is. People are having those discussions... And if you discuss a lot and learn a lot, then some players travel and play more tournaments than others, and they bring back their experiences to the club. So it's really good internal training.

Even though Otto highlighted the learning opportunities at the poker clubs, many of the younger players admitted that they were careful giving away information and described the activity as very competitive.

Alex (21 years) loved playing at poker clubs, even though it was quite different from home games:

It is a great atmosphere and people are nice, but I am not there to make friends. I want to learn something, become a stronger player, and win money.
(Alex)

As Alex states, playing with strangers is more competitive than playing with friends. Several informants argued that if you help your friends improve, the group will grow together, but helping a stranger can help him or her beat you. However, being nice and revealing a little may keep a weaker player interested enough to continue playing and, one hopes, to lose money. It is also common to mislead and increase confusion and superstition. Because deception is part of the competition, source criticism becomes crucial.

Mediating Strategies in the Bigger Community (2Cb). Online poker forums were popular, especially after the poker boom (2003) and for several years afterwards. There is one Norwegian forum and there are many international forums, twoplustwo.com being the largest. In the forums, hand histories, television poker, and general poker strategies are often discussed and the player mediates which theoretical considerations are valuable to enlighten different playing scenarios. It is also a place to find poker clubs or to make new friends. Almost all of the interviewees had used the forums to some extent, but the popularity of these forums has decreased significantly in the last few years. Some of the informants argued that players today are not willing to share information to the same extent as the informants were in previous studies.

Early in his career, Pierre found discussing the game with other players on Internet forums helpful because the best players were generous in giving advice, but now he thought many players were more cautious in terms of revealing their secrets. He claimed that the best players were no longer contributing to the forums, and, consequently, the value of the content had declined:

I spent a lot of time at the TwoPlusTwo forum. ... I used to be in there a lot to read and ask stupid questions, post stupid hand histories, and often received answers and learned a lot. You got the ones that played at the highest limits to

give you answers ... But people have become so cautious now, there is no one playing above 3–6¹⁰ who bothers to provide answers to anything. ... Before, there was much more openness about strategies among the best. (Pierre)

Patrick argued that poker forums were more helpful early in his career and because the average player was now more experienced than was the case right after the poker boom, the traffic on the poker forums had declined:

When you have reached a certain level, then it is as if a poker forum can only help you become so good, it has its limitations. And many reached those limitations at the same time in the poker community. (Patrick)

Even though most of the informants did not contribute to the poker forums by writing and producing artefacts, many of them still went there to read what others wrote. Pierre and Oscar used it to conduct research on their opponents and to take advantage of popular misunderstandings. Some of the younger informants said they were afraid to look stupid and therefore hesitated before commenting and asking questions. This shows how the amateurs chose a more peripheral position in the learning environment.

Even though several of the informants described the experts as being more cautious about losing their edge (domination) compared with the case shortly after the poker boom, the experts were still willing to teach the amateurs as long as they got something in return. Some of the learning from strangers has therefore gone from free to being paid for. This can be done via coaching videos on pay sites or personal coaching.

Purchasing Learning Artefacts (2Cc). Coaching videos can be defined as videos that are meant for instructional use, an artefact that the players may purchase online. Typically, an expert discusses crucial topics or strategy and displays analysis of poker hands to illustrate points. Most of the videos are on pay sites. The player typically purchases a package (course) of videos that are intended to cover a defined poker format (such as shorthanded, medium stakes, Texas Hold'em cash game).

Arthur (26 years) had bought several packages of coaching videos and thought of them as a good investment. Patrick also especially used videos if he was struggling and needed inspiration:

If I went through a hard time online, I used to watch coaching videos. And that was enough to spark the interest again. ... How can you play that hand better in the future and extrapolate it to other things? And then you started to think poker and then suddenly you started to play again. (Patrick)

¹⁰3–6 refers to the small and big blind (forced bets). When playing \$3–6 no limit (or pot limit), the minimum buy-in is typically \$300 and the maximum is \$600.

Pierre also found time to watch coaching videos, even when he was playing 60 to 70 hours a week:

Yes, I've been using a lot of poker videos.... When I played like 10 to 12 hours a day, I always used to, when I went to bed, to watch 2 to 3 videos. So I have actually watched videos all the time. ... But I don't watch everything. I only watch the players I respect, so it's not that many. (Pierre)

As Pierre states, although it is not hard to find learning artefacts such as coaching videos, it is important to find the videos that are right for oneself. In order to decide, one must evaluate the creators' competence and whether the topics discussed are relevant. To benefit from the artefact, players must be able to align the transfer of the concepts discussed with their own strategies.

Apprenticeship Learning (2Cd). Some highly respected players offer personal coaching that can be understood as a form of active apprenticeship learning. The most common way to do this is by the coach watching the customers' poker database (collection of hand histories) to find improvements (often referred to as leaks). This method has much in common with learning from a mediating assistant; however, it is a more asymmetrical relationship, and the apprentice has to pay the expert. Compared with the situation in passive apprenticeship learning, the player influences the topics and becomes the centre of focus. In addition, the expert (coach) is responsible for the alignment from general game theory to the specific player's playing style. Arthur described buying personal coaching as one of the most important things he had done to develop his poker skills. He found a poker coach on a poker forum and had six sessions with him. This is how he described the process:

I sent him hand histories from two "deep runs"¹¹ I had that week. ... He was very to the point. He went through the history and commented on my entire tournament and what he would have done differently and fixed my leaks. (Arthur)

In apprenticeship learning, the expert is responsible for the alignment from general poker theories and poker understanding to the specific apprentice playing style. Because different players have different playing styles, the concepts must be aligned to be useful. This requires a high level of imaginary ability.

Step 3: Progression From Dedicated Student of Poker to Sought-after Poker-Teacher

The highest step in the learning pyramid is to receive money to assist strangers in their learning processes. Similar to the way that an academic undergraduate student must pass one threshold before giving valuable advice on other students' papers and pass another threshold before being paid to lecture less experienced students, some poker players also went from students to teachers in the poker environment. Teaching others could be done by creating coaching videos or by individual guidance.

¹¹To "run deep" in a tournament means to outlast most of the players (get close to winning).

Both Patrick and Pierre had made coaching videos themselves. Producing learning artefacts for other players shows confidence in the players' own capacity and shows that they identify themselves as poker experts.

Paul's experience with individual guidance marks the difference between being a mediating assistant and providing apprenticeship learning, as well as the different norms in a friendly community of practice (free of charge) and a competitive community of practice (paid). He said he had helped a couple of friends free of charge, but charged strangers and acquaintances.

Author: How do you go about coaching someone?

Paul: I used to look through hand histories ... and watch him play, make notes, and look at possible errors. ... The majority of those you coach have a good idea of what poker is, but it's that little notch that keeps them from becoming as good as needed. So it's a fine-tuning. And also I think what many pay for is self-confidence because when you are coaching someone, then you have to be good at telling them when they are doing things right too.

Author: Ok, so then you have met them physically as well and sat beside them while they have played online?

Paul: That I have also done but mostly through Skype and TeamViewer. Now coaching is more about doing something about their database, like Poker-Tracker. And you can make a lot of difference with coaching, like seeing that in that spot you lose, so you have to eliminate this from this and that range for instance.

Author: And the ones that have coached, you have gone about it in the same manner?

Paul: Yes. I've been very lucky with the ones I have met, though. Regarding the coaching and stuff, then I feel I've learned a lot there. So it's clear that today poker isn't a one-man sport. All the best ones, at least that I have met, it is almost a team. You must almost be a team to make it work because it is so damn complex.

Here, Paul emphasized the importance of social learning and learning with others (in a community of practice) to discuss strategy and develop skills. In Paul's experience, players who pay for personal coaching were generally highly dedicated and skilled. To coach others is also valuable for the coach, as explaining may lead to questions that the coach had not thought about before. Pierre was the informant who had spent the most time on this activity. For the last 2.5 years, he had been coaching two players three times a week.

Author: Yes, how do you go about teaching those two?

Pierre: We use Skype a lot and then we go a lot through hands together... Though it's often that I simply sit and watch when they play. Occasionally, they

travel to XXX [where he lives] and then they sit and play five days in a row. And I just sit behind them, watching and asking questions.

Discussion

In this article, I analysed 15 poker players' learning processes towards becoming better poker players, described the learning artefacts they use, and discussed how the competitive and deceptive nature of the game affects the learning environment. To understand the way their careers have evolved, we must start at the beginning of their learning process.

From Gambler to Student to Teacher

The vast majority of the informants described the start of their poker career as a highly social process. In the beginning, it was common to play infrequently and to barely understand the element of skill involved. This is supported by earlier studies on young players' introduction to gambling (Kristiansen, Trabjerg, & Reith, 2015; Reith & Dobbie, 2011; Trabjerg, Johannesen, & Kristiansen, 2014). It was common to play for moderate amounts. The most experienced players had a leading position in organizing the game. Occasionally playing online for moderate amounts at just one table can be understood as peripheral participation in the poker community, whereas frequent multi-tabling on high-stakes tables may be described as central participation. The first threshold towards becoming a better player was to become a dedicated student of poker who had a desire to develop skills.

The main difference between the professionals and amateurs in this study was their dedication to learning. The professionals generally used a larger variety of learning artefacts and had a more active approach towards their own learning process. They were also better at imagination and alignment. When introduced to new learning resources, it was common for them to start as a peripheral participant. Most of the informants had experience reading the online poker forums; however, the threshold for contributing to writing about poker was high. Therefore, several of the amateurs maintained a position solely as observers. The amateurs prioritized engagement (playing), whereas the professionals also prioritized more imaginative processes such as deconstructing the game through simulation and statistical artefacts. According to Lave and Wenger (1991), a participant needs acknowledgment from experienced members in order to incorporate the values of the practice community and to identify as a central member. The highest level of the learning pyramid was to become confident in selling learning artefacts and in successfully providing personal guidance to other players. Only a few of the most successful players in this study had provided personal coaching or produced coaching videos.

What Learning Artefact Was Described as the Most Rewarding?

O'Leary and Carroll (2013) have argued that online poker has revolutionized the game and that research has failed to acknowledge how much online poker has

affected live poker. This study elaborates on some of these claims, although the focus is primarily on the players' learning processes and how technology provides new learning opportunities. I argue that one of the main differences between poker today and that of 20 years ago is all the new artefacts available that contribute to shaping the learning. The main contribution of the artefacts is to give the learner more information than was available before the artefacts were created. The hole cameras used in poker programs on television are clear examples of this. In the preface of his book *Poker Faces*, Hayano (1982) wrote, "But poker, even at the highest competitive level, is not a spectator sport. The real action of poker is concealed" (p. x). Although Hayano's statements were accurate when he wrote the book, today many would object to those claims.

In 2003, Travel Channel's coverage of the *World Poker Tour* became the network's most viewed program, and ESPN's coverage of *World Series of Poker* in 2003 is claimed to be one of the reasons for the poker boom. The aims of these programs were to present poker as a sport and to give television viewers access to the players' decision processes (Schuck, 2010). This coverage shows the power of an artefact in providing previously concealed information.

Browne (1989) argued that the best way to learn poker is by learning from winners. However, he concluded that finding winners who were willing to teach was difficult. The Internet makes both finding experts and having discussions with learning partners a lot easier. Poker forums offer an opportunity to collaborate with strangers who you are not competing against on a regular basis and to purchase personal coaching, or coaching videos, from famous poker authorities. Hand histories are another artefact that provides valuable information for the players and their potential learning partner because they offer detailed and accurate information that could be difficult to remember if the hand had been played live. When using a poker tracker, this information is stored in a database that offers information suitable for statistical analysis and deconstruction of the strategies, which would have been more or less impossible to conduct without these programs (Siler, 2010). Trackers also simplify learning with a mediating assistant and apprenticeship learning (personal coaching). All of these learning tools are artefacts that shape the way that people learn and eventually shape how poker is played.

Another important aspect is speed. Playing online is much faster, which significantly increases the amount of practice or poker experience. The game is always available, and it is common to play several tables at the same time. There are also possible play formats that are highly unusual in a casino or poker club, such as playing against only one opponent. The importance of professional players playing several tables simultaneously, getting less variance, and attacking several weak players at the same time has been discussed by McCormack and Griffiths (2012) and Vines and Linders (2016). In describing card rooms before online poker, Hayano (1982) stated that he usually played with the same players every day and that meeting new and potentially inexperienced players was almost considered hitting a goldmine.

Online, many of the professionals play at tables with low stakes that would not be profitable unless it was possible to play at several tables at the same time.

Does the Competitive and Deceptive Nature of the Poker Game Affect the Players' Learning?

The competitiveness and deceptiveness of poker makes it a unique form of gambling (Binde, 2005; Bjerg, 2010; McCormack & Griffiths, 2012), and it can be argued that this has a clear impact on the players' learning processes. Situated learning theory is well suited to analysing learning among dedicated friends. However, when it comes to learning with strangers, classic community of practice theory has its limitations. The competitive community of practice is a modification of the learning theory that captures the unique learning environment in poker.

In a friendly community of practice, the players were generous with helping each other and sharing strategies and learning resources in the hope that the group could improve together. In a competitive community of practice, players were cautious about giving advice that could help their opponents beat them, especially if they did not get something in return. Information from other players could be intended to mislead and therefore required critical examination. However, if one was willing to pay for it, personal coaching or coaching videos were described as great learning resources. Wenger (2000) described the boundaries between learning systems as fluid. Therefore, these two learning communities are to be understood as archetypes because there may be a continuum in openness for learning purposes between different communities, and different members of the same community may have different intentions with their engagement in the group.

Conclusion

This explorative qualitative interview study offers a starting point for examining poker learning, which has yet to be researched in the poker literature. I argue that the level of skill needed to become a professional poker player differs significantly from that in other forms of gambling and that the learning environment in poker is different from most other learning environments. The deceptive and sometimes hostile atmosphere in poker games requires a high level of source criticism and reflection from the players who receive advice from other players. To analyse the players' learning process, we need a learning theory; in this study, Lave and Wenger's community of practice was used as a theoretical framework. However, to fully understand the unique learning atmosphere that sometimes exists in poker, it was necessary to modify the learning theory and include a competitive community of practice as another dimension, along with the friendly community of practice.

To become a dedicated student of poker, the players had to understand the element of skill involved and some of the rationale for the rules in the game. The first step was to study the game outside the poker table and start to systematically reflect while playing.

To take the learning process a step further, players needed to collaborate with others. This could be done both in a friendly and a competitive community of practice. The highest level of learning described by the learning pyramid was to sell learning artefacts and advice to other players. Monitoring other players' learning requires a different skill set than is required to control one's own learning.

Although poker has been played for more than 150 years, the learning possibilities have increased tremendously because of modern artefacts that provide reliable information that was not available prior to online poker (before 1999). With online poker, the money involved in the game both online and offline has increased significantly, making the game a tempting career choice for some players. It also offers a different route to understanding some of the skills involved in the game. This study may give new insights into how poker players work on strengthening their skills and why they are so eager to promote the element of skill in poker, which is continually reported in other qualitative studies. This may help explain why poker can be so time-consuming and how some players are able to continually succeed in the game. More research is needed to examine whether the players' learning processes from this study are transferable to other players. If the hypothesis in this study is correct, the new learning resources and the increase in the number of players working systematically on developing their skills should affect the skill level of the player pool and this may again affect the poker community in several ways. Further research is needed to determine whether this leads to a larger diversity in players' skill levels and how they may have been affected by the poker boom.

Limitations

This study has several limitations. The informants interviewed were generally young successful players from a country where live poker is strictly regulated, but were not representative of poker players in general. Players from other countries may have access to other learning artefacts and there are probably differences between learning communities. The interviews capture only the interviewees' presentations of themselves and may therefore be biased. This study focused only on learning of technical, strategic, and statistical poker skills and not the psychological, emotional, and economic challenges of poker such as avoiding tilt, bankroll management, the stigma related to poker as a profession, or gambling problems. In addition, the study design is not suitable for generalizations or causal explanations.

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Submitted July 12, 2017; accepted September 4, 2018. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: None declared.

Ethics approval: Norwegian Social Science Data Services Pnr (project number: 43118; date approved: 10.06.2015). [http://pvo.nsd.no/prosjekt/sok?q=43118 + &innmeldt_fra=&innmeldt_til=&institusjon=0&side=1](http://pvo.nsd.no/prosjekt/sok?q=43118+%&innmeldt_fra=&innmeldt_til=&institusjon=0&side=1)

Acknowledgements: The article is part of Niri Talberg’s PhD dissertation funded by and defended at the Department of Education, University of Oslo, 2018. The current article is the first of three papers that follow the same 15 poker players. The second and third papers are listed in the references as Talberg (2017) and Talberg (2018). The author would like to dedicate the trilogy to Joergen Talberg Bakervik.

Hey Big Spender: An Ecological Momentary Assessment of Sports and Race Betting Expenditure by Gambler Characteristics

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Abstract

A major obstacle to understanding how expenditure varies among people who gamble is the difficulty of obtaining accurate expenditure data from individual gamblers. To overcome the shortcomings of retrospective self-reports, this study used a prospective ecological momentary assessment (EMA) design to capture these data every 24 or 48 hours. It aimed to examine (a) demographic, psychological, behavioural, and contextual characteristics of high-spending sports and race bettors and (b) the relationship between betting outlay and problem gambling severity. A baseline survey was completed by 320 regular sports bettors and 402 regular race bettors, followed by 15 EMA surveys over 3 non-consecutive weeks. Higher spending bettors were more likely to be male, place more of their bets online, have higher disposable incomes, have commenced betting at a younger age, have more accounts with betting operators, and bet when affected by alcohol. The analyses confirmed the strong link between problem gambling severity and financial outlay on betting. Regular sports bettors who were experiencing gambling problems spent 4 times more than their non-problem gambling counterparts did, and those at moderate risk spent 3 times more. Regular race bettors who were experiencing gambling problems spent 3 times more than the non-problem gambling race bettors did, and those at moderate risk spent twice as much. These results suggest that regulatory and other initiatives that help bettors to limit or reduce their financial outlay on betting should be central to harm minimization efforts in order to reduce the growing number of bettors who experience gambling problems and harm.

Keywords: betting, wagering, expenditure, gambling, problem gambling, gambling harm

Résumé

Un des principaux obstacles à la compréhension de la variation des dépenses entre les joueurs est la difficulté d'obtenir des données précises sur les dépenses de la part de joueurs individuels. Pour pallier les faiblesses d'auto-évaluations rétrospectives, cette étude visait à utiliser un modèle d'évaluation écologique momentanée (EMA) prospective pour saisir ces données toutes les 24 ou 48 heures, afin d'examiner 1) les caractéristiques démographiques, psychologiques, comportementales et contextuelles de gros parieurs de course et de paris sportifs et 2) la relation entre les dépenses de paris et la gravité du jeu problématique. Une enquête initiale a été réalisée auprès de 320 parieurs sportifs et de 402 parieurs de course réguliers, suivie de 15 sondages EMA sur trois semaines non consécutives. Les plus gros parieurs étaient plus susceptibles de: placer davantage de paris en ligne, d'avoir un revenu disponible plus élevé, d'avoir commencé à parier à un plus jeune âge, d'avoir davantage de comptes auprès d'opérateurs de paris et de parier sous l'influence de l'alcool. Les analyses ont confirmé le lien étroit qui existe entre la gravité du jeu problématique et les dépenses financières consacrées aux paris. Les parieurs sportifs réguliers aux prises avec des problèmes de jeu dépensaient quatre fois plus et ceux à risque modéré, trois fois plus, que leurs homologues sans problème de jeu. Les parieurs de course réguliers aux prises avec des problèmes de jeu dépensaient trois fois plus et ceux à risque modéré, deux fois plus, que leurs homologues sans problème de jeu. Ces résultats laissent entrevoir que les initiatives réglementaires et autres initiatives qui aident les parieurs à limiter ou à réduire leurs dépenses en paris devraient être au cœur des efforts de minimisation des préjudices, afin de réduire le nombre croissant de parieurs ayant des problèmes de jeu et de préjudices.

Introduction

Wagering on racing and sporting events has grown rapidly in many jurisdictions, fuelled by enabling legislation, online and mobile accessibility, expanded betting opportunities, and prolific advertising (Hing, Russell, Rockloff, et al., 2018b; Lopez-Gonzalez & Griffiths, 2018; Sproston, Hanley, Brook, Hing, & Gainsbury, 2015). In Australia, for example, race betting expenditure increased by 6.9% and sports betting expenditure by 15.3% in 2016–2017 over the previous year, with average per capita wagering expenditure being \$175 for race betting and \$56 for sports betting (Queensland Government Statistician's Office, 2018). However, these population-level statistics are based on all Australian adults and do not reflect average expenditure per bettor, as only a minority of the population bets on races and sports. These statistics also do not illuminate how expenditure might vary among bettors in different gambler risk groups and with varying demographic, income, and other characteristics.

A more detailed understanding of wagering expenditure by different types of bettors can be useful for several reasons. It can illuminate the relative contribution to industry revenue and government taxes made by vulnerable people in order to assess whether government policies and industry practices are socially responsible (Williams & Wood, 2004; Wood & Williams, 2007). Knowledge of the relationship between expenditure and problem gambling risk can inform systems used to detect problematic gambling from the online betting data of individual betting account holders (Chagas & Gomes, 2017; Gainsbury, 2011; PWC & Responsible Gambling Council, 2017). It may also assist in determining low-risk betting limits, such as those developed for total gambling expenditure (Currie, Hodgins, Wang, El-Guebaly, & Wynne, 2008; Currie, Hodgins, Wang, El-Guebaly, Wynne, & Miller, 2008; Currie, Miller, Hodgins, & Wang, 2009; Dowling et al., 2018) and for limit-setting defaults and options in pre-commitment systems (Auer & Griffiths, 2013; Griffiths, Wood, & Parke, 2009; Ladouceur, Blaszczynski, & Lalande, 2012). Further, identifying the characteristics of high-spending bettors, particularly those who are also experiencing gambling problems, can inform appropriate consumer messaging aimed at moderating expenditure. This is important, given that financial impacts are usually the first and most severe type of gambling harm experienced, typically leading to a cascade of detrimental consequences to mental and physical health, relationships, work, and study (Browne et al., 2016). In fact, financial hardship may be the common denominator underpinning all other harms associated with problem gambling (Blaszczynski et al., 2017). From a public health perspective, government policy and industry practices should be aligned with encouraging adherence to a level of expenditure that does not unduly increase the risk of gambling problems and harms.

However, several challenges must be faced to gain an accurate picture of variations in wagering expenditure among gamblers with different characteristics. One major obstacle is the difficulty of obtaining accurate expenditure data about individual gamblers. Prevalence studies rely on self-reports, but gambling expenditure estimates are known to be unreliable, having poor alignment with aggregate gambling industry revenues when compared with the same jurisdiction and time period (Volberg, Gerstein, Christiansen, & Baldridge, 2001; Williams & Wood, 2004). Self-reported expenditure has been significantly below revenues in some studies and significantly above revenues in others (Williams & Wood, 2004).

One reason for this mismatch relates to how accurately and consistently respondents interpret gambling expenditure questions. Blaszczynski, Dumlao, and Lange (1997) found that only two-thirds or less of a sample of 181 undergraduate students accurately calculated the amount spent on gambling in five case vignettes. In a replication study, half of the respondents calculated net expenditure and half calculated turnover when asked how much money the person in a vignette had spent gambling (Blaszczynski, Ladouceur, Goulet & Savard, 2006). Even when one group was instructed on how to calculate net expenditure and another group on how to calculate turnover, 30% did not follow these instructions in calculating their estimates. The researchers concluded that self-reported gambling expenditure estimates have questionable validity.

A further challenge is the absence of a gold standard measure of gambling expenditure. Wood and Williams (2007) found that that even slight variations in the wording of questions result in substantial differences in self-reported estimates. Of the 12 formats they tested, the question that produced estimates that most closely aligned with actual revenues was, “Roughly how much money do you spend on [specific gambling activity] in a typical month?,” where totals from each activity were collected and then summed. Even providing more detailed instructions, such as clarifying that “spend” means “how much you are ahead or behind, or your net win or loss,” did not yield greater accuracy.

Braverman, Tom, and Shaffer (2014) compared expenditure estimates collected data from 2,259 online gambling account holders with their actual expenditure as tracked by the operator. Approximately half of these participants underestimated their expenditure and 23%–48% overestimated it. Those who reported gambling problems had less accurate estimates, but were no more likely to underestimate expenditure than were those without problems. Similarly, in comparing online gambling data and self-reported gambling expenditure in the same individuals ($N = 1,335$), Auer and Griffiths (2017) noted that estimation bias increased with gambling losses. Estimation biases also increase with the length of the recall period (Auer & Griffiths, 2017; Braverman et al., 2014). Gambling expenditure estimates tend to be lower when collected retrospectively than via prospective daily records, such records being found to accurately reflect industry revenues (Blaszczynski, Ladouceur, Goulet & Savard, 2008; Williams & Wood, 2004). Social desirability bias may also influence self-reports because of the sensitivity of expenditure data. Although gambling prevalence studies are typically conducted by phone or face to face, requiring interaction with an interviewer, online and written surveys allow more privacy and anonymity, which should contribute to greater accuracy (Williams & Wood, 2004).

Expenditure data recorded by online operators, or in venues via player cards, are exempt from human recall biases, but are not readily available to researchers because they require cooperation of the operator for access. Even if available, these data cannot be correlated with other information about bettors, such as problem gambling severity, and do not account for gambling expenditure through other operators or modes of access. Thus, many studies still rely on self-report data.

The preceding review highlights several ways to optimize the accuracy of gambling expenditure estimates. Careful wording should ensure that expenditure questions are as unambiguous as possible to avoid confusion between expenditure and turnover. More accurate data are obtained when the expenditure on each gambling activity is asked separately. The recall period should be as short as possible. A private and anonymous data collection method is needed to minimize social desirability bias. The current study aimed to incorporate these considerations into a design that potentially minimizes ambiguity (by asking about betting outlay rather than expenditure) and recall bias (through its ecological momentary assessment [EMA] design) in order to examine (a) demographic, psychological, behavioural, and

contextual characteristics of high-spending sports and race bettors and (b) the relationship between betting outlay and problem gambling severity.

Several studies based on risk curve analysis have demonstrated a relationship between problem gambling severity and gambling expenditure, both for absolute and for relative (percentage of income) expenditure (Currie et al., 2006, 2008a, 2008b, 2009, 2012; Dowling et al., 2018). From a nationally representative Canadian survey ($N = 19,012$), we used receiver operating characteristic analysis to develop low-risk gambling expenditure limits of CAD500–1,000 and 1% of family income per annum (Currie et al., 2006). Exceeding the absolute expenditure limit increased the risk of gambling harm by a factor of 13.8% and by 10.5% for the relative limit. Later analyses of Canadian provincial survey data also supported the strong relationship between different levels of gambling harm (on the basis of the Problem Gambling Severity Index [PGSI]; Ferris & Wynne, 2001) and absolute and relative gambling expenditure (Currie et al., 2008b, 2009, 2012). Similar analyses based on some state population surveys in Australia developed absolute limits of AUD380–615 and relative limits of .83%–1.63% of gross personal income per year (Dowling et al., 2018). Most relevant to the current study, these limits were identified as AUD400 and .55%–.86% for sports betting and a relative limit of .55% for race betting, although the absolute limit for race betting was unclear. Expenditure in all of these studies was captured through retrospective self-reports of aggregate spend that involved a lengthy recall period.

Factors associated with higher betting expenditure have received little research attention, and so there is insufficient theoretical support to date to formulate specific research hypotheses. Instead, the current research is considered exploratory. However, studies that examine predictors of higher problem gambling severity among bettors can inform the current study because betting expenditure is strongly related to problem gambling severity. A survey of 639 Australian sports bettors found higher PGSI scores among those who were young, male, single, educated, a full-time employee or student; who had greater sports betting frequency and expenditure and bet more impulsively; and who had more exposure to normative influences from media advertising and significant others (Hing, Russell, Vitartas, & Lamont, 2016). Focusing only on online gambling, Hing, Russell, and Browne (2017) identified similar risk factors for problem or moderate-risk gambling among both race bettors and sports bettors: being male, younger, speaking a language other than English, and more frequent betting. Additional risk factors were higher psychological distress for sports bettors and illicit drug use while gambling among race bettors. Also using retrospective self-reports, Russell, Hing, Li, and Vitartas (2019) found that gambling expenditure, number of betting accounts, number of different types of promotions used, and impulsiveness predicted at-risk and problem gambling among 1,813 sports bettors. These previous findings informed the range of variables included in the current study as potential predictors of betting expenditure. In turn, we conceptualized betting expenditure as a determinant of problem gambling severity, in line with the causal direction that underpins research into low-risk gambling limits (discussed earlier). Accordingly, the current study extends previous research that

examined risk factors for problem gambling severity among bettors (Hing et al., 2016, 2017; Russell, Hing, Browne, & Rawat, 2018) by also examining predictors of betting expenditure as a determinant of gambling problems.

Method

Respondents

The study's participants comprised 320 sports bettors and 402 race bettors. Both samples were mostly male (92.5% sports bettors, 88.1% race bettors), aged 18–84 years for sports bettors ($M = 40.74$, $SD = 14.11$) and 18–74 years for race bettors ($M = 41.32$, $SD = 13.74$). Among sports bettors, 29.4% met the criteria for non-problem gambling on the PGSI (Ferris & Wynne, 2001), 25.4% for low-risk gambling, 29.4% for moderate-risk gambling, and 15.9% for problem gambling. Among the race bettors, these figures were 25.9%, 29.7%, 31.3%, and 13.1%, respectively.

Recruitment and Inclusion Criteria

We sent email invitations to respondents who had previously participated in our research and had consented to being re-contacted; an Australian-licensed wagering operator also sent email invitations to regular bettors among their account holders. The operator took no further part in the study and could not access the data.

Inclusion criteria were as follows: aged 18 years or older, bet on sports or races at least fortnightly, lived in Australia, consented to participate, provided us with their contact details (for invitations to the EMA surveys, see below), and had an Internet-connected smartphone to complete the surveys. Respondents were compensated (via electronic shopping vouchers) with \$10 for completing the baseline survey and up to \$100 for completing the EMA surveys, depending on how many they completed. Response rates for each EMA varied from 50% to 76%. For each of the 15 EMA surveys, between 50% and 70% of respondents completed the survey. Approximately one-third completed all 15 EMAs, and the majority completed 10 or more EMAs. Approximately one-quarter of the sample did not complete any EMAs and were excluded. Respondents who were excluded did not differ from those who were included in terms of gender or PGSI (largest chi-square = 1.93, $p = .586$), and no difference was observed in age for sports bettors, although excluded race bettors were significantly younger than were those who were included, $F(1, 400) = 24.92$, $p < .001$. Race bettors and sports bettors were recruited in two separate waves, several months apart, so that the EMA surveys could be conducted during peak racing and sports betting seasons.

Procedure

Respondents initially completed a baseline survey, which commenced with an informed consent preamble. If respondents consented and were eligible, they were asked for their mobile phone number. Respondents were then sent invitations to

short online EMA surveys via text message. Five EMA surveys were administered each week (Monday, Wednesday, Friday, Saturday, Sunday) for three non-consecutive weeks during 2017. We opted for five surveys each week, rather than seven, to reduce participant burden.

The EMA approach is an intensive longitudinal research methodology in which respondents report on their cognitions, behaviours, and contexts related to a particular type of experience as it occurs, or shortly afterwards, on multiple occasions (Bolger & Laurenceau, 2013; Csikszentmihalyi, 2014). A major reason for using EMA is to minimize the recall bias that is apparent in more global, retrospective self-reports that require participants to report on past behaviour and experiences over long time periods (Shiffman, Stone, & Hufford, 2008). EMA methodologies are particularly suited to assessing discrete episodic behaviours and have therefore been used in studies of cigarette smoking (Shiffman et al., 2002), binge eating (Haedt-Matt & Keel, 2011), alcohol use (Hussong, Hicks, Levy, & Curran, 2001; Litt, Cooney, & Morse, 2000), drug use (Freedman, Lester, McNamara, Milby, & Schumacher, 2006; Hopper et al., 2006), and gambling (Russell et al., 2018). As discussed earlier, aggregate gambling expenditure captured through prospective methods has been found to accurately reflect actual industry revenues (Blaszczynski et al., 2008; Williams & Wood, 2004), and so data collection via EMA was considered appropriate for this study.

Measures

Baseline survey

Demographics. Demographic information included gender, main language spoken at home, highest educational level, work status (recoded into employed or unemployed), income, and disposable income (income and disposable income both measured in income brackets).

Problem gambling severity. Problem gambling severity was measured with the PGSI (Ferris & Wynne, 2001), which contains nine questions with response options from “never” (0) to “almost always” (3). Scores were summed and original cutoffs were used: 0 = non-problem gambler, 1–2 = low-risk gambler, 3–7 = moderate-risk gambler, 8–27 = problem gambler. Cronbach’s alphas were .92 (sports bettors) and .93 (race bettors).

Impulsiveness. Impulsiveness was measured with the Barratt Impulsiveness Scale (Steinberg, Sharp, Stanford, & Tharp, 2013), an eight-item scale with response options from “rarely/never” (1) to “almost always/always” (4). Mean scores are computed. Cronbach’s alphas were .83 (sports bettors) and .80 (race bettors).

Psychological distress. The Kessler 6 measure (Kessler et al., 2002) asks about symptoms of nervousness, hopelessness, restlessness, depression, worthlessness, and effort. Response options are “none of the time” (0) to “all of the time” (4) and scores are summed. Cronbach’s alpha was .91 for both samples.

Alcohol misuse. The Alcohol Use Disorders Identification Test–Consumption (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) measures alcohol consumption, including identification of hazardous or harmful drinking, and alcohol dependence. The first question asked for the frequency of drinking alcohol in the past year on a scale from “never” (0) to “4 or more times a week” (4). Respondents who drank alcohol in the past year were then asked for the number of alcoholic drinks consumed on a “typical day” when drinking (scored as 0 for none to two drinks; up to 4 for 10 or more drinks). Lastly, drinkers were asked “How often do you have six or more drinks on one occasion?” for the past year on a scale from “never” (0) to “daily or almost daily” (4). Scores were summed for a raw score out of 12.

Betting behaviour variables. Respondents were asked the age at which they started betting on sports or races regularly and the number of betting accounts.

EMA surveys. Each EMA survey asked, “How much money did you place on [sports or race] bets in the [24 or 48] hours prior to 5pm today?” We opted to ask for the amount placed on bets instead of net expenditure for several reasons. Asking the amount placed is far less likely to be misinterpreted and much simpler to calculate. Placing each bet is a discrete activity, involving completion of a betting slip that identifies the amount placed. Compared to the calculations required for continuous forms of gambling, such as gaming machines, it is relatively easy to identify and keep track of financial outlay on betting that does not involve the potential confusion of considering both outlay and return in calculating net expenditure. Accordingly, asking the amount placed was expected to circumvent the estimation issues described in the vignette work by Blaszczynski et al. (2006), which asked about the amount spent. In addition, outlay was asked only for sports betting or race betting, thus optimizing accuracy over surveys that ask for aggregate expenditure over all gambling activities (Williams & Wood, 2004). By administering the EMA surveys on 5 days of each survey week, we aimed to minimize the length of the recall period, which has been found to reduce estimation bias (Auer & Griffiths, 2017; Braverman et al., 2014). The surveys were administered online, rather than in person, to allow for privacy and anonymity, which Williams and Wood (2004) found contributed to greater accuracy.

Because outlay does not take into account any wins, it does not equate to net expenditure. However, outlay does reflect the amount of money that the bettor is prepared to risk on each bet. This is particularly important from a harm minimization perspective because bettors may place numerous bets before any results are known and therefore make betting decisions without knowing whether these previous bets have won or lost. This distinction is reflected in bet limiting functions on operator websites that provide options for limiting financial outlay on bets, such as deposit limits, play limits, and bet limits (Wood & Griffiths, 2010). Financial outlay over these EMA surveys was summed to calculate a weekly amount because key predictors in the models were asked only in the Sunday surveys in order to keep the EMA surveys short. Those who missed one or more EMA surveys each week (6–15 respondents) were asked in the Sunday survey for their weekly outlay, and this was used for these respondents in the analyses.

Sunday survey. A survey administered each Sunday asked about financial outlay on betting for the past 24 or 48 hours, and several questions asked about the respondent's betting during the past week:

Gambling behaviour variables. These variables comprised the proportion of bets placed on impulse and via different modes (smartphone, computer or tablet, telephone call, or land-based venue) with responses summing to 100%.

Contextual variables. These variables comprised the proportion of bets placed when alone, with family/friends/colleagues, or with acquaintances (responses summing to 100%); how frequently the respondents were affected by alcohol and by drugs when betting ("never" to "almost always"); and the location where they placed most of their bets. Most respondents placed most of their bets at home, with other options (e.g., work/university/school, licensed venue) receiving few responses each. This variable was recoded into "home" versus "other."

Data Analysis

Because respondents completed multiple EMA surveys, repeatedly capturing betting outlay, we analysed weekly outlay by using linear mixed effects models (using lmer in the lme4 package in R), with an anonymous respondent identifier as a random factor. Because betting outlay was skewed, we took the natural logarithm of outlay (+ 1) for these analyses. All variables were scaled prior to analysis. We considered transforming outlay to be a proportion of income, but this would introduce imprecision because income was captured in brackets. We thus explored bivariate analyses that predicted (log) betting outlay with and without controlling for income. Controlling for income made no difference to the bivariate results in terms of statistical significance, nor did our treatment of income (either categorical or continuous). We therefore opted to report the more parsimonious bivariate analyses without controlling for income.

Significant variables from these bivariate analyses were then considered for inclusion in a multivariate model. Collinearity issues were observed for modes of access for race bettors, and we thus excluded those with the lowest coefficients. Income and disposable income did not display tolerance issues, but we removed income for parsimony. The PGSI score was initially considered as a predictor in these analyses, but because it was highly correlated with outlay, few other variables remained significant in multivariate models. We therefore removed PGSI as a potential predictor and further justify this exclusion because gambling problems and harms are generally considered to be a consequence of high betting outlay, rather than a cause (Browne et al., 2016; Currie et al., 2006, 2008a, 2008b, 2009, 2012; Dowling et al., 2018). The relationship between outlay and PGSI was still of interest, however, and so we also conducted regressions between (log + 1) betting outlay and (log + 1) PGSI score. For these analyses, betting outlay was summed across the 3 weeks and regular linear regression was used because the dependent variable (PGSI) was not a repeated

measure. Analyses were conducted separately for sports and race bettors. An alpha of .05 was used throughout.

Results

Factors Associated with Risking More Money on Betting

Table 1 shows bivariate and multivariate analyses that predict the amount risked on sports and race betting.

Sports bettors. The bivariate analyses showed that higher spending sports bettors were significantly more likely to be older, male, have a higher income and a higher disposable income, have started betting at a younger age, have more betting accounts, and be affected by alcohol when gambling. They were less likely to place bets via smartphone. The multivariate model showed similar results when we controlled for all other variables in the model. Only age was no longer significant.

Race bettors. The bivariate results for race bettors were similar to those for sports bettors. Higher spending race bettors were significantly more likely to be older, male, have a higher income and a higher disposable income, have started betting at a younger age, and have more betting accounts. Unlike the sports bettors, they were significantly less likely to bet on impulse, by smartphone, or in land-based venues, but more likely to bet via computer or tablet. The multivariate analyses indicated that higher spending race bettors were more likely to be male, have a higher disposable income, have more betting accounts, and bet via computer or tablet.

Given the high proportion of males in both samples (which reflects these populations), we explored the multivariate models without gender as a predictor. All significant predictors in the original models remained significant. Additional significant predictors were being older (sports bettors) and first betting at a younger age (race bettors).

Relationship between Amount Risked on Betting and Problem Gambling Severity

As explained earlier, we conceptualized problem gambling severity as a consequence of betting outlay. We considered this relationship in two ways. First, we predicted ($\log + 1$) the PGSI score by betting outlay (total across the 3 weeks). For both samples, higher expenditure predicted higher PGSI scores: sports bettors, $F(1, 277) = 10.80$, $p = .001$, $\beta = .194$; race bettors, $F(1, 329) = 17.88$, $p < .001$, $\beta = .227$.

Median outlays over the 3 weeks were then computed for each PGSI group (Table 2). Because outliers were likely to dominate the results, we winsorized weekly values above \$10,000 to just \$10,000. We summed these winsorized amounts over the 3 weeks, and divided them by 3 to calculate a weekly average by PGSI group (Table 2). The problem gambling groups risked nearly 4 times more on sports betting and over 3 times more on race betting than did their non-problem gambling counterparts.

Table 1
Bivariate and Multivariate Linear Mixed-Effects Models Predicting (log + 1) Weekly Betting Outlay (Standardized Coefficients)

Independent variables	Sports bettors		Race bettors	
	Bivariate	Multivariate	Bivariate	Multivariate
Fixed effects				
Demographics				
Age (in years)	0.204*** (0.055)	0.095 (0.049)	0.254*** (0.052)	0.050 (0.044)
Gender (reference = male)	-0.184*** (0.056)	-0.104* (0.045)	-0.267*** (0.050)	-0.122** (0.044)
Main language spoken at home (reference = other than English)	-0.030 (0.052)		0.040 (0.055)	
Education	0.051 (0.058)		0.097 (0.051)	
Work status (reference = unemployed)	-0.081 (0.054)		0.004 (0.052)	
Income	0.111* (0.055)	^	0.185*** (0.052)	^
Disposable income	0.218*** (0.054)	0.153*** (0.046)	0.311*** (0.048)	0.239*** (0.039)
Psychological and comorbidity				
Impulsiveness (BIS Brief)	-0.061 (0.057)		-0.037 (0.052)	
Psychological distress (Kessler 6)	0.057 (0.055)		-0.058 (0.051)	
Alcohol misuse (AUDIT-C)	-0.001 (0.056)		-0.004 (0.052)	
Sports/race betting behaviour				
Age when started betting	-0.151** (0.056)	-0.116* (0.047)	-0.201*** (0.050)	-0.068 (0.042)
Number of accounts with different operators	0.242*** (0.055)	0.217*** (0.046)	0.388*** (0.044)	0.228*** (0.038)
Percentage of bets placed on impulse	-0.013 (0.021)		-0.059* (0.026)	-0.017 (0.025)
Mode – smartphone @	-0.079** (0.030)	-0.076* (0.030)	-0.065* (0.029)	^
Mode – computer or tablet	0.052 (0.030)		0.135*** (0.031)	0.086*** (0.031)
Mode – telephone call	0.052 (0.028)		-0.003 (0.023)	
Mode – land-based venue	0.023 (0.023)		-0.067** (0.025)	^
Contextual				
Alone	0.016 (0.021)		0.006 (0.023)	
With friends, family, colleagues	-0.017 (0.021)		-0.005 (0.023)	
With acquaintances	0.001 (0.015)		-0.001 (0.022)	
Betting when affected by alcohol	0.056** (0.021)	0.055** (0.021)	0.025 (0.024)	

Table 1 Continued.

Independent variables	Sports bettors		Race bettors	
	Bivariate	Multivariate	Bivariate	Multivariate
Betting when affected by drugs	0.039	(0.025)	0.009	(0.028)
Location for most bets (elsewhere vs. home)	-0.022	(0.018)	0.026	(0.021)
Constant		0.116** (0.045)		0.062 (0.040)
Random effect		0.468		0.358
Observations		630		732
Log likelihood		-449.92		-598.90
Akaike information criterion		919.847		1,217.795
Bayesian information criterion		964.305		1,263.752

Note. ^ indicates excluded because of multicollinearity issues. @ log taken for race betting multivariate only. All fixed effects variables scaled prior to analysis. BIS Brief = Barratt Impulsiveness Scale-Brief; AUDIT-C = Alcohol Use Disorders Identification Test-Consumption.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Median Weekly Betting Outlay by PGSI Group for Sports and Race Bettors in AU\$

PGSI group	Regular sports bettors		Regular race bettors	
	Median outlay	Ratio of NPGs	Median outlay	Ratio of NPGs
Non-problem gamblers	70.50	1.00	109.67	1.00
Low-risk gamblers	116.67	1.65	195.00	1.78
Moderate-risk gamblers	217.50	3.09	211.67	1.93
Problem gamblers	276.67	3.92	353.33	3.22

Note. Weekly values above \$10,000 expenditure were winsorized to \$10,000. Weekly expenditure was then summed over the 3 weeks and divided by 3 to calculate a weekly estimate. PGSI = Problem Gambling Severity Index; NPGs = non-problem gamblers.

Although the results are winsorized, the figures presented in Table 2 are median values and thus are not altered by this procedure.

Discussion

This study used a two-step process to analyse factors associated with greater financial outlay on betting and its relationship with problem gambling severity. A strength of the study was the use of spend data with high expected accuracy. We minimized recall bias by collecting betting outlay every 24 or 48 hours, as short recall periods are known to greatly enhance accuracy (Auer & Griffiths, 2017; Blaszczynski et al., 2008; Williams & Wood, 2004). We attempted to reduce social desirability bias by using a private medium (smartphone survey) to enhance anonymity, as participants recorded data without needing to engage with anyone else (Williams & Wood, 2004). Our surveys focused solely on sports or race betting, as more accurate expenditure is estimated when gambling activities are asked about individually (Wood & Williams, 2007). We greatly simplified the expenditure question by asking the amount placed on bets as a reflection of the money that bettors are prepared to risk.

Betting outlay strongly predicted the PGSI score, as expected from previous studies (Currie et al., 2006, 2008a, 2008b, 2009, 2012; Dowling et al., 2018). Sports bettors who were experiencing problem gambling spent 4 times more than their non-problem gambling counterparts did, and those at moderate risk spent three times more. Race bettors who were experiencing problem gambling spent 3 times more than the non-problem gambling race bettors did, and those at moderate risk spent twice as much. These results suggest that initiatives to help bettors moderate their spending should be a major focus of harm minimization efforts among the 41% of at-least monthly bettors in Australia who experience one or more gambling problems (Armstrong & Carroll, 2017a, 2017b). Responsible gambling efforts should not just aim to encourage informed consent (Blaszczynski, Ladouceur, & Shaffer, 2004), but should also aim for gambling to be controlled, affordable, and free from harm (Hing, Russell, & Hronis, 2018a). Financial losses are a major contributor to gambling harm and typically catalyse additional harms (Blaszczynski et al., 2017; Browne et al., 2016). Reducing gambling losses would therefore reduce gambling-related harms across

numerous domains, as well as in aggregate across the population of people who bet and affect others.

In this study, non-problem gamblers contained their median betting outlay to \$23–\$37 per week, compared with \$92–\$118 per week for those in the problem gambling group. These average financial outlays might inform limit-setting defaults and options in pre-commitment systems (which are typically based on outlay rather than net expenditure) and in operator systems to detect at-risk and problem gambling (Auer & Griffiths, 2013; Gainsbury, 2011; Griffiths, Wood, & Parke, 2009; PWC & Responsible Gambling Council, 2017). They could also inform consumer advice on appropriate self-limits for betting. Consumer education on moderating betting expenditure is best directed at those who bet online and includes bettors with higher disposable incomes. Bettors could also be warned against the consequences of commencing gambling at a young age, having accounts with multiple operators, and betting when affected by alcohol, with these behaviours also predicting higher betting outlay.

Banning the use of operator credit (now banned in Australia) and personal credit cards for betting are promising measures to help bettors limit their spend, given that both practices are linked to impaired control over betting expenditure that results in large financial losses. For example, Australian financial counselling agencies have revealed staggering losses and financial ruin that results from betting by using operator-provided credit (Financial Counselling Australia [FCA], 2015). This credit provision occurred in the absence of assessing the capacity to repay without experiencing financial hardship and was exempt from credit regulations because no interest is charged. In addition to prohibiting operator credit, the FCA (2015) recommended several measures for policy makers to consider to help prevent devastating financial losses from betting. These measures include requiring customers to set maximum bet amounts when opening betting accounts; banning advertising links between payday lenders and betting sites; requiring operators to regularly issue paper statements showing losses, wins, and totals; and a national self-exclusion register. The ability of customers to use their own credit cards for online betting has also been criticized for magnifying financial losses, as this again provides gamblers with the ability to gamble with money they do not have and to accumulate large debts (Department of Broadband, Communication and the Digital Economy, 2013). These reasons underpin the banning of credit betting in other forms of gambling. Financial institutions could also enable customers to exert more control by setting daily or weekly limits on debit and credit card payments to betting operators. Financial inducements to bet, such as bonus bets, stake-back offers, and cash-out early incentives, have also been found to increase betting expenditure (Hing et al., 2018b). Actual amounts placed increased from an average of \$33 per day when no inducements were seen to \$67–\$78 when five or more types of inducements were seen. Tighter restrictions on financial inducements may therefore assist bettors to contain their betting expenditure.

Data linking betting expenditure to gambling problems further support a need for regulation to reduce gambling-related harm. Self-reported data from a nationally representative sample of at-least monthly Australian bettors indicate that 23% of

sports betting expenditure comes from the small number of bettors with severe problem gambling, 23% from those at moderate risk, and 15% from those at low risk (Armstrong & Carroll, 2017b). This represents over 60% of expenditure being derived from gamblers who are experiencing some level of gambling problems. These figures are 15%, 26%, and 19%, respectively, for race bettors (Armstrong & Carroll, 2017a), again totalling 60% of expenditure. Although with the current study we cannot independently confirm these figures, given the convenience sampling, we also found substantially elevated betting expenditure as problem gambling severity increased. This supports Armstrong and Carroll's findings (2017a, 2017b) that a large proportion of industry revenues and gambling taxes is derived from people who are experiencing gambling problems. This reliance on vulnerable gamblers undermines the stated industry and government commitment to responsible gambling, which aims to minimize gambling harm.

This study was limited to a convenience sample of at-least fortnightly bettors, with more involved gamblers more likely to either overestimate or underestimate their expenditure (Auer & Griffiths, 2017; Braverman et al., 2014). However, the short recall period arising from prospective measures recorded every 24 or 48 hours and the focus on financial outlay should have helped to minimize any bias, although these expenditure estimates could not be independently validated. The study also measured betting outlay, rather than net expenditure, for the reasons explained earlier. Whether the net expenditure of bettors who are experiencing problem gambling is also 3 to 4 times higher than that of non-problem gamblers cannot be ascertained from this study. The study was also limited by collecting betting spend over only 3 weeks. Although these weeks did not feature signature sporting or racing events (e.g., football grand finals), they may not be representative of all betting weeks. The burden on participants of completing regular surveys necessitated restricting the number of surveys, which we considered a reasonable trade-off for expecting more accurate financial data. As not all respondents completed all surveys, there are limitations in terms of the generalizability of the data; however, the analytical technique used somewhat reduces these concerns.

Conclusion

This study has confirmed the strong link between problem gambling severity and financial outlay on betting by using prospective spend data that should be more accurate than the retrospective data that most previous studies have used. This result suggests that regulatory and other initiatives that help bettors limit or reduce their financial outlay on betting should be central to harm minimization efforts. The study also identified specific characteristics of high-spending bettors, which can inform how these efforts are tailored and targeted. These bettors are more likely to bet online, have higher disposable incomes, have commenced betting at a younger age, have more betting accounts, and bet when affected by alcohol. Tackling gambling problems and harms among sports and race bettors is critical in Australia (and elsewhere), given that gambling help services report growing numbers of clients who present with betting-related problems (Hunt, 2017) and that nearly one-quarter of at-least monthly

sports bettors and race bettors experience moderate to severe gambling problems (Armstrong & Carroll, 2017a, 2017b).

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Submitted March 26, 2019; accepted July 25, 2019. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: None declared.

Ethics approval: Central Queensland University Human Research Ethics Committee approved the research project “The effects of wagering marketing on vulnerable adults” (H1606-178) on December 22, 2016.

Acknowledgements: This study was funded by the Victorian Responsible Gambling Foundation.

Reflections on Poverty, Homelessness, and Problem Gambling: Discoveries from a World Café

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Abstract

Problem gambling is a hidden public health concern, especially among people who experience poverty and homelessness, with studies from North America showing a combined prevalence of lifetime problem and pathological gambling ranging from 29.8% to 58.2%. Service providers in the non-addiction sectors (e.g., housing and primary health care) have not traditionally screened their clients for problem gambling behaviours or concerns. In an effort to build multi-sector awareness and stimulate discussion about problem gambling, poverty, and homelessness, we invited practitioners from the social, health, and human services community and people with lived experience to join a knowledge translation and mobilization event in which we used the World Café method. The purpose of this paper is to summarize the knowledge generated about problem gambling, poverty, and homelessness from the perspectives of the World Café participants. We identified themes that align with quality of care espoused by the World Health Organization, Health Quality Ontario, and the Organisation for Economic Co-operation and Development. These themes include delivering care that is highly accessible to clients who are experiencing poverty in a one-stop shop that is timely and efficient, patient centred and equitable with respect to gender and sexual orientation, culturally sensitive, and trauma informed and that provides a therapeutic alliance and safe space to enhance well-being. Participants identified the need for a plain-language, accessible definition of problem gambling and the need to create awareness of the harm associated with problem gambling in targeted messages that engage clients, policy makers, and the general public.

Keywords: problem gambling, World Café, knowledge translation, quality of care, health and social services, community engagement

Résumé

Le jeu problématique est un problème de santé publique caché, en particulier chez les personnes en situation de pauvreté et d'itinérance, avec une prévalence combinée du jeu problématique et du jeu pathologique au cours de la vie allant de 29,8 à 58,2%, selon des études réalisées en Amérique du Nord. Les fournisseurs de services dans les secteurs non liés à la toxicomanie (p. ex., le logement et les soins de santé primaires) n'ont pas toujours soumis leurs clients à un dépistage de comportements ou de problèmes liés au jeu. Dans le but de sensibiliser les différents secteurs et de stimuler la discussion sur la dépendance au jeu, la pauvreté et l'itinérance, nous avons invité des praticiens de la communauté des services sociaux, de la santé et communautaires et des personnes ayant une vécue cette expérience à se joindre à un événement d'application des connaissances et de mobilisation, en nous fondant sur la méthode « World Café ». Le but de cet article est de résumer les connaissances générées sur le jeu problématique, la pauvreté et l'itinérance, du point de vue des participants au World Café. Nous avons relevé des thèmes correspondant à la qualité des soins préconisés par l'Organisation mondiale de la santé, Qualité des services de santé Ontario et l'Organisation de coopération et de développement économiques. Ces thèmes incluent la fourniture de soins 1) grandement accessibles pour les clients en situation de pauvreté, dans un guichet unique rapide et efficace 2) centrés sur le patient et équitables en ce qui concerne le genre et l'orientation sexuelle; 3) adaptés à la culture; 4) sensibles aux traumatismes; 5) offerts en alliance thérapeutique et 6) prodigués dans un espace sécuritaire pour améliorer le bien-être. Les participants ont relevé la nécessité de formuler une définition de la dépendance au jeu en termes simples et accessibles, ainsi que la nécessité de sensibiliser le public au préjudice associé au jeu problématique dans des messages ciblés qui engagent les clients, les décideurs et le grand public.

Introduction

Both problem gambling (Korn, 2000; Korn & Shaffer, 1999) and homelessness (Begin, Casavant, Chenier, & Dupuis, 1999; Echenberg & Jensen, 2008; Hwang, 2001; Rogers, Button, & Hume, 2005) are serious public health concerns. Several studies in the United Kingdom, the United States, and Canada have documented an association between problem gambling and homelessness (Crane et al., 2005; Gattis & Cunningham-Williams, 2011; Holdsworth, Tiyce, & Hing, 2012; Sharman, Dreyer, Clark, & Bowden-Jones, 2016). Research indicates that the combined prevalence of lifetime problem and pathological gambling ranges from 29.8% to 58.2% among people who are experiencing homelessness or using a community service (Lepage, Ladouceur, & Jacques, 2000; Matheson, Devotta, Wendaferew, & Pedersen, 2014; Nower, Eyrych-Garg, Pollio, & North, 2015). Studies also indicate that some subpopulations of those who are experiencing homelessness are at greater risk of developing problem gambling,

such as veterans (Edens & Rosenheck, 2012), men (Matheson et al., 2014), and newly homeless adults aged 50 years and older (Crane et al., 2005).

The relationship between problem gambling and homelessness is complex. Studies find that multiple concerns associated with poverty, such as unemployment, bankruptcy, unaffordable rent, and eviction, contribute to the relationship between problem gambling and homelessness (Antonetti & Horn, 2001; Crane et al., 2005; Holdsworth et al., 2012; Williams, Rehm, & Stevens, 2011). Problem gambling is also associated with a variety of psychiatric conditions in persons who experience homelessness. In an analysis of survey data from 275 predominately African American individuals who were experiencing homelessness, Nower et al. (2015) found that problem gambling was associated with an increased risk of meeting diagnostic criteria for psychiatric disorders and substance dependency (see also Ferentzy, Skinner, & Matheson, 2013). The associations between problem gambling, mental health, poverty, and substance abuse illustrate the need to engage with diverse social and health service agencies to design interventions and services that are effective for persons who are experiencing homelessness and problem gambling (Guilcher et al., 2016).

Early speculation on the direction of the relationship between problem gambling and homelessness indicates bi-directionality (Sharman et al., 2016). An analysis of quantitative data with 72 persons who were experiencing homelessness in the United Kingdom indicates that problem gambling predominantly leads to homelessness. However, the authors note that some gambling behaviours develop after individuals become homeless (Sharman et al., 2016). Exploratory qualitative studies also found that problem gambling contributes to homelessness. For example, in their analysis of qualitative interviews with 18 homelessness service providers and 17 of their clients in Australia, Holdsworth et al. (2012) noted that gambling negatively affects financial security, relationships, and support networks.

Services for problem gambling screening, prevention, and treatment are scarce and prospective clients may be unfamiliar with gambling-focused services and/or dissatisfied with those that are available (Evans & Delfabbro, 2005; Guilcher et al., 2016; Hamilton-Wright et al., 2016; Pulford et al., 2009; Scull & Woolcock, 2005). Crane et al. (2005) identified a prevalence rate of 15% for problem gambling in newly homeless older adults in the United States, England, and Australia; however, the authors noted that few adults accessed support for gambling. A recent qualitative study that explored service access for men who experience problem and pathological gambling called for an expansion of services to address problem gambling. Specifically, researchers argued that there is a need for integrated services that address concurrent social and health needs such as housing, mental health, substance use, and poverty (Guilcher et al., 2016). Nower et al. (2015) recommended that agencies who serve people who are experiencing homelessness screen for problem gambling; however, this requires that agencies be equipped to provide access to population-appropriate services. Persons who experience homelessness are highly stigmatized and less likely to seek help for problem gambling behaviours or for associated

financial, relationship, and health problems (Baxter, Salmon, Dufresne, Carasco-Lee, & Matheson, 2016; Holdsworth et al., 2012; Suurvali, Hodgins, Toneatto, & Cunningham, 2012).

This paper presents the findings from a unique community engagement event, the World Café, which gathered human, social, and health sector participants together to generate collective knowledge about problem gambling, poverty, and homelessness.

Gambling Services Considerations

Research on service delivery and service needs for problem gambling is scarce, more so for people who are experiencing poverty and homelessness. In a recent qualitative study (Pickering, Spoelma, Dawczyk, Gainsbury, & Blaszczyński, 2019), service users ($n = 32$) provided their perspectives on recovery. They viewed it as a continuous process, one through which service users can develop insight into the psychological and environmental factors that promote gambling. This insight enhances people's sense of empowerment to overcome the addiction. The service users perceived that engagement in non-gambling activities, nurturing of social networks, stabilization of finances, and a concentrated focus on overall well-being were important aspects of recovery. An Australian study with clinicians and managers ($n = 41$) within the mental health service environment in Victoria identified barriers to gambling screening (Rodda, Manning, Dowling, Lee, & Lubman, 2018). These barriers included competing priorities, perceived importance of routine screening, lack of access to screening tools and resources, considerations of patient responsiveness, and the need for workforce training. Richard, Baghurst, Faragher, and Stotts (2017) reviewed the literature on the relation between sociocultural factors (e.g., race, ethnicity, culture) and gambling. They found little research in this area and much of it marked by inconsistent findings. The authors suggest that treatment approaches need to consider differences in net financial worth, cultural belief systems that enable gambling and negate help seeking because of perceptions of stigma, and acculturation. In a review by Zakiniaiez and Potenza (2018), the authors noted that the evidence on gender differences in gambling and help seeking is scant from the service delivery perspective. Some potential treatment considerations for gambling and substance misuse include gender differences in motivation to seek help and biological and sociocultural differences.

Priebe et al. (2012) spoke with 154 experts across 14 European countries from a variety of disciplines (physicians, allied health care providers, community service specialists, lawyers, and those with backgrounds in social science/policy). Using semi-structured interviews and case vignettes, the authors identified components of good practice in mental health services among socially marginalized groups, including outreach programs; integration, collaboration, and coordination of services to address the varied needs of these populations; and promotion of service awareness among potential service users and health care practitioners (also see Wiczorek & Dąbrowska, 2018). Aligned with these findings, Lewis, Black, and McMullen (2016) found that community service agencies are not equipped to address problem gambling. Training and improved provider cross-communication is necessary to enhance service coordination.

Wieczorek and Dąbrowska (2018) conducted qualitative interviews with 30 patients and 15 professionals in Poland. One focus of this research was to identify how people choose a gambling treatment facility. Findings indicated that choice was related to perceptions of ease of access (e.g., travel distance), quality and reputation of the clinic, assurances of anonymity, and patient knowledge of the treatment landscape. Factors that appeared to affect treatment included lack of availability of outpatient gambling treatment services, long wait lists, and groups that did not cater specifically to people who were experiencing a gambling disorder.

In an effort to mobilize knowledge from problem gambling research and stimulate discussion about connections between recovery services for problem gambling, poverty, and homelessness, we invited practitioners from the social, health, and human services community to join a World Café. The World Café is a specific type of knowledge translation and mobilization event that provides participants with a welcoming café-style environment (Brown and Isaacs, 2005). Participants engage in facilitated dialogue wherein conversations are constructed and reconstructed in order to move individual knowledge and experience toward collective knowledge and actionable solutions. This method allows participants to provide feedback and contribute their perspectives to research knowledge. The purpose of this paper is to summarize and mobilize the collective knowledge generated about problem gambling, poverty, and homelessness from the perspectives of the participants of the World Café.

Method

Ethics Statement

This study was part of a broader research grant that received ethics approval from the Research Ethics Board of St. Michael's Hospital. Participants of the World Café signed an audio and visual consent form as required by the St. Michael's Hospital Communications Department.

The World Café Method

The World Café (Brown et al., 2005) is modelled after appreciative inquiry, which emphasizes strength-based learning and mutual creativity, to move participants and facilitators as a collective group from discussions of questions to solutions that can produce actionable change (Cooperrider, Whitney, & Stavros, 2008; Emlet & Moceris, 2012). The World Café offers participants an informal, safe, and intimate setting for the exchange of ideas with the purpose of blending diverse knowledge and experience into learning. World Cafés are designed to move the conversations from the personal, to the collective and present moment, to the future (Brown et al., 2005).

The World Café aligns with the Knowledge Creation phase of the Knowledge to Action Framework wherein knowledge is tailored to create products, services, and tools that are useful for promoting change in a local context (Crane et al., 2005; Field, Booth, Ilott, & Gerrish, 2014). The World Café gathers participants into small

groups seated together at café tables. These groups are invited and encouraged to engage in progressive rounds of conversations that inform larger interconnected conversations (Fouché & Light, 2011). In this way, intimate café table conversations form the stepping stones to thoughts on collective action (Fouché & Light, 2011). As Brown et al. (2005) suggests, the setting and structure of the conversations within the World Café method promote a natural progression in conversation from discussions of individual experience to deeper discussions on the subject matter. The ultimate goal is to move knowledge toward actionable solutions.

Participant Recruitment

This research was conducted in partnership with the Good Shepherd Ministries (GSM), a non-profit organization that provides shelter, addiction, and mental health services to men in Toronto, Canada. The research team worked with GSM to compile a list of 50 contacts from community and government agencies within the Greater Toronto and Hamilton areas in Ontario, Canada. An email invitation was sent to each of these participants and 18 persons agreed to participate in the World Café. In total, 14 of the 18 persons attended the café event. In addition, the staff invited participants with lived experience of gambling and precarious housing to participate. Two participants with lived experience attended the World Café, for a total of 16 participants. Ten different organizations represented the housing and shelter sectors, social services, gambling support services, family and community medicine, municipal government, and public health. Two of the organizations had more than one representative in attendance. The other organizations ($n = 8$) had one representative each. Two days prior to the event, we placed a reminder call to the participants. The participants themselves included service providers, clinicians, clients, and policy makers. Participants received a lunch and a gift bag as a token of appreciation.

The World Café Design

The World Café was designed in accordance with seven principles (Brown & Isaacs, 2005). The creation of a welcoming, café-style environment is integral to facilitating meaningful conversations among participants. The research team arranged five tables with colourful tablecloths topped with white paper tablecloths. Participants were encouraged to use these white paper tablecloths to write about and sketch their conversations, thoughts, and reflections. At the start of the World Café, participants engaged in an icebreaker activity and were provided with meals, drinks, and snacks throughout the day.

The World Café began with a short introductory presentation that described findings from a qualitative study conducted at GSM. In the study, the team explored client experiences of gambling, homelessness, health, and service delivery (barriers/facilitators, intervention points; Guilcher et al., 2016; Hamilton-Wright et al., 2016). The participants were then engaged in two rounds of conversation for each of the three questions that were developed for the World Café. After the participants discussed a

question at one table, they were asked to travel to a new table to discuss the same question with different participants. The World Café facilitator (F.I.M.) asked that one person remain at each table to act as table host and share the essence of the previous conversation. Participants were asked to link ideas that they brought from their previous table conversations. At the end of each set of two rounds of conversation, all participants came together for what is referred to as a “harvest.” Brown et al. (2005) describe the harvest as a time for all participants to contemplate the essence of the small-table conversations through collective thinking. This process enables ideas and connections between ideas to become visible to participants and researchers.

The World Café method allows for the exchange of ideas, with collaboration and understanding at the heart of the exchange. From the table conversations to the group harvest, discussions were focused on sharing ideas for positive action. Participants were respectful of all points of view and demonstrated a clear understanding of the goal of the World Café, which is sharing personal perspectives to achieve collective action.

Participants with lived experience spoke openly about their experiences of homelessness and problem gambling, which deepened the conversations. Many service providers voiced that their own experiences in working with clients aligned with the perspectives shared by the two participants with lived experience. During the group harvest, there was recognition from all participants that the common themes derived from table conversations and group discussions were similar.

The research team and GSM staff co-developed the questions that were used for the World Café. These questions were based on the knowledge generated from a larger qualitative study, which found an unmet need for services for persons who concurrently experience problem gambling and homelessness (Guilcher et al., 2016; Hamilton-Wright et al., 2016). The questions (see Table 1) were designed to help the research

Table 1
Discovery World Café Questions

Conversation Round	Perspective
1. Personal, professional, organizational	What is the personal appeal of this research topic and its findings to you? What is important to you and your organization about the study and the findings of this study?
2. Collective and present moment	How are we, as a system and as individual organizations, responding to this issue at the moment?
3. Collective future	Envision a system that supports men with gambling addictions, mental health issues, and housing instability. What would it look like? What would it take to create the required change in relation to this issue? Or What is it that we could do individually and collectively that could make the most difference in the future of this challenge/issue?

team and our community partners to understand the current system responses for people who experience homelessness and poverty.

Data Collection: The World Café Event

The World Café was held in Toronto, Ontario, on November 24, 2014. Throughout all activities, the participants were encouraged by the facilitator to listen to one another and to collectively develop insights and look for themes in their conversations. The World Café method typically captures knowledge through tablecloth drawings or graphic recordings, which are collected during the table conversations and the harvest (Brown et al., 2005). The research team collected visual data from the tablecloths and seven scribes captured the table conversations. Table hosts and scribes were trained researchers, all versed in qualitative approaches to data collection and analysis. The lead researchers met with the table hosts to train them on the World Café approach and best practices in the collection of field notes and in facilitation. All handwritten notes were typed.

Analysis

The analysis focused exclusively on the scribed notes from table conversations and the group harvest, which were richer than the information captured on the tablecloths. We conducted thematic analysis by following the approach described by Aronson (1995) and Braun and Clarke (2006). Aronson (1995) suggested a pragmatic approach, which can be used to analyse direct quotes or paraphrased notes. First, analysts identify general patterns in the data. Each pattern is used to categorize the data. Patterns are then collapsed and synthesized into themes and subthemes from their similarities (Aronson, 1995; Braun & Clarke, 2006).

Four members of the research team (F.I.M., S.H.-W., J.W.-M., and E.H.W.) individually reviewed the data to identify recurrent patterns and collated it. The team members met prior to beginning the coding process and reviewed the patterns emerging. Then each team member reviewed the scribe notes and constructed initial codes. The team then met to review the proposed initial 13 codes and finalized these codes to provide a framework for later analysis. Collectively the research team reviewed, and categorized, the data into eight themes. Microsoft Excel was used to organize the data. As we did not audio-record the conversations, we used paraphrased examples of participants' thoughts, as recorded by the scribes, in the findings. To enhance methodological rigour (Flick, von Kardorff, & Steinke, 2004; Maxwell, 2002), we incorporated investigator triangulation, having several observers (scribes) taking notes with different participants and using both the scribed table and harvest notes for coding and analysis. We member checked the data (to verify the emergent themes) with a co-author on the paper who is a service provider and World Café participant. Finally, during coding and analysis, team members met several times to verify common themes.

Results

Define Problem Gambling Behaviours

Participants thought that the use of the term “problem gambling” presented a barrier to client engagement with services. Given that gambling has been normalized as a legal activity in Ontario, participants were concerned that clients and their family members may under-report problem gambling or not recognize the harms associated with gambling because of this normalization. They felt that using language that would be familiar to clients was important in order to remove barriers to care.

We really need to use street language because it's not going to work for them. The standard definition.

Clients with complex needs have to understand the complexity of their own issues. A street language that describes their behaviours and how it's disrupting their own lives.

Participants felt that health and social service staff could educate clients on harmful effects associated with problem gambling; this could help clients to self-identify potential harmful behaviours before they escalate into problems that are more serious. Participants suggested that service agencies adopt a “street” or “plain language” definition that reflects the harms associated with gambling rather than relying on a clinical definition.

Foster Therapeutic Relationships and Space

Participants felt it was important to have time to develop rapport with their clients. Rapport is necessary to build sustainable and trust-based relationships to enhance continuity of care. Participants noted that therapeutic spaces, with warm, inviting, and calming atmospheres, encouraged clients to access care and meaningfully engage with providers; such spaces also provided a setting where participants may feel comfortable talking about stigmatized behaviours, as described below from the scribe notes.

Services need to be more comfortable for people, especially for most people who are not used to an office setting, something to calm the mind.

Other features of therapeutic space that emerged from the data were acceptance of clients' spirituality and pets, as well as integrated music therapy. Client-centred care, in which each client develops a care plan with his or her providers, was identified as an important part of the therapeutic relationship that allowed clients to prioritize their health needs.

Improve System Supports for Client-Centred Care

There was a common belief among participants that clients who experience problem gambling could receive high-quality, client-centred care despite existent

systemic barriers. This idea was captured in the scribe notes during the table conversations.

I come from shelters, any type of issue comes up at the shelters, the population evolves over time, and the shelter workers have to gain more and more skills to respond to all of the needs.

Participants felt that unwelcoming practice settings and funding shortages within housing support services were detrimental to quality of care and accessibility of problem gambling services for clients who were experiencing poverty and homelessness. For example, job-related stress, burnout, and high staff turnover inhibited the foundation of long-term therapeutic relationships between providers and clients; such relationships promote service acquisition and adherence to care. There was a sense of frustration that excess administrative responsibilities (e.g., reporting and comprehensive intake assessments), amidst limited funding and human resources, impaired providers' ability to engage with and fully support clients.

Train Service Providers to Screen for Problem Gambling

Training was viewed as essential to high-quality provision of care for clients facing poverty, homeless, and gambling concerns. According to participants, training would encompass prevention, screening, treatment approaches, and knowledge of existing resources to support people with gambling concerns, as captured in the scribe notes below.

That's a good example because we have developed the capacity to help people with drug addictions and things like that, so we need to develop our capacity in terms of understanding what gambling is and how to conduct assessment of gambling, what are the resources that are out there. We see that it is a serious problem in the homeless population and if we don't address it, we miss an opportunity to address an important problem.

Clients with complex needs also need insight and awareness into their needs, more funds for staff to learn how to meet needs of complex patients, clients need a street language that describes the behaviour that they understand and how it affects their lives.

Scribes captured the participants' conversation on the value of training on screening for problem gambling among service providers in novel settings such as shelters, trusteeship programs, and medical settings.

...we have developed the capacity to help people with drug addictions, so we need to develop our capacity in terms of understanding what gambling is and how to conduct assessment of gambling. We see that it is a serious problem in the homeless population and if we don't address it, we miss an opportunity to address an important problem.

In our agencies, the training is critical but we don't really know what interventions we would do. The interventions are traditionally designed for the casino-going public.

Building capacity among service providers and agencies who frequently serve as the first point of contact for populations who are experiencing poverty could help to ensure that clients at risk of gambling-related harms are identified early. From the table conversation described below, this is especially important, as problem gambling is associated with poverty and homelessness.

Broaden the Service Delivery Model to Better Meet Client Needs

...they use a lot of technology in lots of other sectors but we use it in health care only to write notes a lot of the time. But there's so much more technology that can be used but some clients can't get five blocks to the hospital... if they are acutely ill, but you can link up with clients through a secure video conference system to bridge people instantaneously. Some people feel like it won't be as personalized but once every three or four sessions the counsellor could go out in person and make those connections. They are doing it in Vancouver and they are a few steps ahead because they have much more of an acute problem.

Participants felt that the current approach to service delivery did not meet client needs and did not provide service accessibility at key times. They stated that clients often experience urges to gamble in the evening and on weekends, well outside the service delivery hours of operation. The World Café participants suggested that services could be provided outside normal business hours, such as evenings (e.g., 7pm to 11pm) and weekends, when people may be more at risk of gambling.

Rethink Silos and Geographically Dispersed Service Delivery Models

It is difficult to address gambling concerns among people who are experiencing poverty and homelessness when services are delivered in silos. For example, clients who need housing along with treatment for problem gambling had difficulty gaining access to these services through a single agency, as articulated in the scribe note below.

Gambling needs to be addressed in a holistic way, as well just like mental health and addiction, because if we don't address all issues that people have, then they won't adequately address their gambling either.

These silos make it extremely difficult to offer integrated care for clients with concurrent health and social needs. When services are dispersed geographically, people who face homelessness and poverty may have insufficient money to travel to services, even to those that address basic needs (e.g., food, clothing). According to participants, travel costs to geographically dispersed service agencies may discourage

help seeking and create potentially insurmountable barriers and fatigue for people who face physical disability and mental health concerns. This concern was a collective concern of the participants and captured in the scribe notes below.

Having that team allows for a multiple point of entry into all sectors, so every door allows access to whatever the needs are.

In terms of developing capacity, the shelters are the gateway to help but transportation is a huge barrier, so sometimes agencies try to do everything in house so transportation doesn't become an issue. So, in order to partner, you would need a fund to get people into places and then there's capacity, you can send people out to deal with something and they could get distracted and drop off but if it's in house, you may not get people dropping out.

World Café participants said that mobile clinics may provide an opportunity to reach out to clients where they are, whether it be in shelters, in social housing, or on the street. Multidisciplinary clinics were discussed as a way to meet the diverse needs of clients (e.g., housing, chronic care, dental care, problem gambling). Online services offer another alternative to clients who cannot reach a physical service location. Online service spaces may provide a greater degree of anonymity and confidentiality, especially for those who fear the stigma that goes along with the label of "problem gambler," who experience social anxiety, or who may be wary of face-to-face interaction with providers.

Ensure Services Are Mindful of Trauma and Diverse Gender and Sexual Identities

According to the World Café participants, many people who engage in problematic gambling behaviours experienced early childhood trauma; thus services, regardless of focus (e.g., shelter, gambling), should be trauma informed and address gender and sexual identity, all of which play a role in whether people will seek services. For example, people identifying within LGBTQ2IA communities may differ in how they disclose their gambling and shelter concerns and how or if they seek help.

There was a discussion earlier about trauma being a factor, so you may need someone who focuses on trauma counselling, so having that multidisciplinary team is important.

Participants indicated that research that investigates the intersection of problem gambling, homelessness, sexual identity, and gender could identify specifics of service needs and patterns of help seeking, which in turn, could inform practice. Issues of trauma and the diversity of the population were discussed by the participants and captured as shown below in the scribe notes.

One of the agencies talked about the case workers and the responsibilities, and increasingly the requirement is that they are to know more and more about different things and then you have the gender differences, certain men and women would prefer to get information face-to-face so they can see the social cues and tone of voice because that's their preferred form of getting information,

so it's that piece in terms of information (instead of the web). And clients with complex needs need a lot of resources, so more resources for general counselling, more therapeutic/psychosocial kinds of work but we don't have the funding to go there...it's not just about gambling but it's also about risk-taking behaviour.

The World Café participants noted that it is important to recognize that there is an element of hope that is entwined with gambling. Participants felt that this was unique to problem gambling in comparison to other addictions. Hope, and its dissolution, was of concern to many participants and emerged in table conversations and in larger group discussion, as noted in the scribe note below.

I harken back to what someone mentioned this morning that gambling instils hope, so I don't know if the other agencies can speak to that, if it's a legitimate piece because in the homeless population it plays a role, so in order to motivate someone to set aside the gambling, so as a counsellor, you need to find what are the legitimate things that you can offer to the client that will substitute that hope for some other form of hope that's more concrete.

If gambling is a source of hope for those who desire to escape poverty and homelessness, service providers need to find innovative ways to encourage clients who are seeking pathways out of poverty to stop or reduce their harmful gambling behaviours and find other sources of hope.

Enhance Awareness of the Connection Between Problem Gambling, Poverty, and Homelessness

Participants suggested that there is a need to enhance awareness about the harms associated with problem gambling among clients, policy makers and the public and that creating awareness of the high prevalence of problem gambling and gambling-related harms among people facing poverty and homelessness is especially important. In the table conversations, participants suggested that client educational resources could address the risks and consequences of problem gambling and post them in novel settings such as shelters and places that provide drop-in services, as noted in the scribe notes below.

Prepare pamphlets for easy access to websites that provide information about the programs available and the support they provide.

Targeted advertising campaigns that use traditional and social media could enhance the public's awareness of problem gambling among those facing poverty and homelessness.

Prevention should be attacked the same way they got you – should be more in the media, pumping at you constantly [to counteract advertising that promotes a better life through gambling].

Advertising that counteracts media stories that glorify gambling, or that provide a more balanced assessment of gambling, are important to improve public awareness

about gambling-related harms that can lead to poverty and homelessness. Participants felt that the government was doing little (and may not be sufficiently informed) to create awareness of the harms associated with gambling or in counteracting advertising that encourages gambling, especially among youth and those who are experiencing homelessness. As captured by one of the scribes:

If people higher up in government (municipal, provincial) don't know about these issues, they need to be informed.

Discussion

In this paper, we discuss the use of the World Café as a knowledge translation and mobilization approach. We asked social and health service providers and people with lived experience to discuss their perspectives on problem gambling, poverty, and homelessness. Several themes emerged from our analysis that indicate the need to alter and add to current services to better reach and assist persons who experience poverty and homelessness with problem gambling.

The World Health Organization (WHO), the Organisation for Economic Co-operation and Development, and Health Quality Ontario define quality of care as effective, efficient, cost-effective, accessible, timely, patient-centred, responsive, equitable, and safe (Health Quality Ontario, 2017; Kelley & Hurst, 2006; WHO, 2006). The findings of our study reflect these quality domains. For the service providers and persons with lived experience who participated in the World Café, high quality of care emerges from therapeutic relationships and meets the clients where they are most comfortable. This is in line with the principle of patient centricity, responsiveness, and equity of care (Horvath, 2000). Accessible, timely, and efficient services—delivered within a one-stop-shop model to meet the multiple needs of low-income and homeless clients—are preferred, rather than a service delivery model that is based on silos. Integrated services could reduce the cost of accessing care, which would promote both system efficiency and service accessibility for clients who experience homelessness, poverty, and problem gambling. Integration of gender, sexuality, and trauma-informed care into gambling and other addiction services would provide increased patient centricity and responsiveness in care. Equity of care and patient-centred services align with the therapeutic relationship predicated on promoting safety.

Therapeutic relationships are important to client engagement and re-engagement (Karver, Handelsman, Fields, & Bickman, 2006; Lambert & Barley, 2001), especially among people who experience significant stigmatization and marginalization (Baxter et al., 2016; Holdsworth et al., 2012). Smith, Thomas, and Jackson (2004) explored a number of process variables believed to influence counselling outcomes for people who were experiencing problem gambling. They found that the therapeutic relationship was the strongest predictor of gambling problem resolution. Guilcher et al. (2016) explored service needs among men at a downtown Toronto shelter who also experienced gambling concerns. Men preferred client-centred services through which

they could be active contributors to decisions that affected their health and recovery from problem gambling. They also felt that treatment settings should be less clinical and more inviting and that integrated services would be more appropriate to address a variety of social and health needs, including problem gambling.

There are opportunities to develop community outreach programs that are person centred and to incorporate the principles of quality care to assist people who experience poverty, homelessness, and problem gambling. These programs could be modelled after pre-existing outreach programs, for example, programs developed to assist female sex workers with addictions recovery (Bowser, Ryan, Smith, & Lockett, 2008; Deering et al., 2011; Yahne, Miller, Irvin-Vitela, & Tonigan, 2002), elderly women struggling with alcohol addiction (Fredriksen, 1992), and youth who are homeless and/or struggling with addictions (Carmona, Slesnick, Guo, Murnan, & Brakenhoff, 2017; Hughes et al., 2013). Research suggests that recovery is enhanced when programs employ peer outreach workers and treatment is trauma informed with a lens on gender and sexual identity (Boughton & Falenchuk, 2007; Deering et al., 2011; Deren, Kang, Mino, & Guarino, 2012; Grant & Potenza, 2006; Latkin, 1998). This aligns with the recommendations from service providers and people with lived experience that emerged from the World Café. Future research should evaluate the efficacy of trauma-informed outreach programs, with a diverse gender and sexual identity lens, for persons who experience homelessness, poverty, and problem gambling.

Knowledge about populations who experience poverty and homelessness is still developing. Service delivery models often do not consider the context of poverty and homelessness in the care of people who are also experiencing problem gambling. Some of the findings of our paper align with previous research. Notably, integration and coordination of services is integral to ensure that people have easy access to services. Staff training will ensure an appropriate level of awareness of problem gambling in populations who are experiencing disadvantage, the integration of tools into practice, training on screening for problem gambling, cultural influences on problem gambling and treatment seeking, and recognition and training on the importance of a gender/sex-responsive approach to care (Lewis et al., 2016; Priebe et al., 2012; Wieczorek & Dąbrowska, 2018). Integration of services is especially important for those who lack financial security in order to minimize the need to travel to multiple service providers to meet the co-morbid health and social issues faced by people who are experiencing poverty and homelessness. As with previous research, we identified that long wait lists are deterrents to care (Wieczorek & Dąbrowska, 2018). From previous research, we know that recovery from problem gambling is enhanced when patients feel their own sense of empowerment (Pickering et al., 2019).

Our findings suggest that a street-level approach may be needed to enhance client care among people who are experiencing homelessness and poverty (e.g., defining problem gambling). The findings also suggest that trauma-informed care is integral to service provision, as many who experience poverty and homelessness along with addiction have histories of childhood sexual and physical abuse and neglect

(Hamilton-Wright et al., 2016; Holdsworth & Tiye, 2013; Holdsworth et al., 2012; Roberts et al., 2017). The latter finding suggests a need to foster therapeutic relationships and spaces especially for people who have experienced stigma related to gambling, homelessness, and poverty, spaces that embrace people's spirituality and are pet friendly. Being mindful of gender and sexual identity—and how these characteristics can affect gambling, treatment seeking, and recovery—is an important aspect of therapeutic relationships and spaces. Offering help outside traditional service hours (evenings/weekends) would ensure that clients have support when they most need it and when they are more likely to feel urges to gamble. Participants also indicated that education to counteract the pervasive advertising campaigns that promote gambling is essential to improve public knowledge of gambling harms. Education also has to reach clients of social service agencies to inform them about the harms of gambling and resources for care.

A major feature of gambling addiction is the expectation of hope to alleviate financial insecurity for those who are experiencing poverty and/or homelessness. Service providers expressed being in a dilemma when supporting these clients; for example, taking away a source of hope for a better life by encouraging clients to stop gambling could be detrimental to their well-being. Other researchers also expressed this message of hope (Holdsworth et al., 2012; Sharman & D'Ardenne, 2018; Tiye & Holdsworth, 2011), which has unique connotations for people living in poverty.

Strengths and Limitations

This research strongly benefitted from the participation of people with lived experience of poverty, homelessness, and problem gambling. Other participants represented a small number of service provider agencies from two urban cities in Ontario. Future research should engage more providers and people with lived experience from urban, suburban, and rural areas across Canada to augment what we discovered through the World Café. Despite the small number of participants in the current study, the findings suggest concrete ways to move forward to support service providers who do not traditionally provide care for people with problem gambling concerns.

Trained scribes sat at the café tables to take notes on the conversations between participants and to document the larger harvest discussions, in keeping with the design of the World Café. Researchers often audio tape more traditional qualitative methods such as focus groups. The World Café method encourages multiple intersecting conversations that culminate in the harvest, a discussion wherein the participants identify emergent themes from the conversations. In essence, the participants engage in knowledge synthesis together.

Conclusion

The project used a unique approach to co-create knowledge. To date only a few studies have used the World Café method to examine health and social issues

(Broom, Brady, Kecskes, & Kildea, 2013; Emlet & Moceris, 2011; Fouché & Light, 2011; Kellehear & O'Connor, 2008; Stöckigt, Teut, & Witt, 2013; Teut et al., 2013). This project produced a variety of actionable recommendations to improve service quality and care for persons who concurrently experience problem gambling and poverty and/or homelessness. These recommendations include the use of street language to define problem gambling for clients and creating environments that foster therapeutic relationships and space. To enhance system supports for client-centred care, participants suggested additional funding and support for service providers themselves to reduce work-related stress. Participants also felt that it is important to remove silos in the service system and to create models of service delivery that are more responsive to client needs (e.g., mobile units to go to the client). They also recommended that training on how to screen, treat, and refer for problem gambling is needed to ensure that clients can access gambling treatment through any service and that services are responsive to diverse populations such as those who face trauma or who express non-traditional gender and sexual identities. Encompassing all of these suggestions is the need to enhance awareness of the connection between problem gambling, poverty, and homelessness more generally in our society.

The findings of the study align with the definitions of quality care espoused by the WHO, the Organisation for Economic Co-operation and Development, and Health Quality Ontario and thus can inform service delivery and practice in the area of problem gambling, homelessness, and poverty. Future studies should continue to look for innovative solutions to provide accessible, targeted, high-quality care to this population.

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Submitted February 15, 2019; accepted August 9, 2019. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: None declared (all authors).

Ethics approval: Not required.

Acknowledgements: The MAP Centre for Urban Health Solutions is part of the Li Ka Shing Knowledge Institute of St. Michael's Hospital. This study was funded by the Ontario Problem Gambling Research Centre. S.J.T.G. is supported by the Canadian Institutes for Health Research (CIHR) Embedded Clinician Scientist Award in Transitions in Care (2016-2020). The views expressed in this publication are the views of the authors and do not necessarily reflect those of the funders.

This event would not have been possible without the enthusiasm and genuine interest of the World Café participants. We are indebted to them for sharing their thoughts on service needs and solutions. We thank each of our table scribes for their contribution: Anita Mohan, Rafeya Shami, Eden Hamilton Wright, Fiona Park, Julia Woodhall-Melnik, Sarah Hamilton-Wright, and Kimberly Devotta.

Powerless yet powerful: The duality of everyday life of partners of persons with gambling problems

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Abstract

This study explores how partners of persons with gambling problems experience the family's everyday life, focusing on family relations and parenting. Problem gambling creates a serious impact on household finances, social life and health, emotional and relational issues. Between 6 and 10 persons are directly affected by a person's gambling problems. Despite this, research exploring how daily life and relations in the family is affected is scarce. A qualitative method was used to acquire a deeper understanding of partners' experiences of everyday life, relations and parenting. In-depth interviews were carried out with nine female partners of problem gamblers. All nine women had been responsible for minor children. A thematic analysis was used to systemize the participants' experiences. The results determined how living with a partner with a gambling problem is a lonely project. Partners of problem gamblers take on a lot of responsibility for daily life activities, household finances and parenting but experience little support from their partner. A general lack of knowledge and recognition of gambling as a problem, increases the loneliness, shame and burden. Despite gambling having a tremendous impact on daily life and relations, families receive little support. Taking over responsibility and becoming the one in charge, can be understood as ways of reclaiming dignity and gaining power albeit within limits. This duality needs to be considered when providing support to families.

Keywords: problem gambling, parenting, family relations, everyday life, partners, qualitative study

Résumé

Cette étude explore la manière dont les partenaires de joueurs compulsifs vivent la vie de famille au quotidien, en mettant l'accent sur les relations familiales et la parentalité. Le jeu compulsif a de graves répercussions sur les finances du ménage,

la vie sociale et la santé, sans compter les problèmes émotionnels et relationnels qu'il occasionne. Entre six et dix personnes sont directement affectées par les problèmes de jeu d'une personne. Malgré cela, les recherches sont rares sur les effets sur la vie quotidienne et les relations au sein de la famille. On a utilisé une méthodologie qualitative pour mieux comprendre les expériences des partenaires dans la vie quotidienne, les relations et la parentalité. Des entretiens approfondis ont été menés avec neuf partenaires féminins de joueurs compulsifs. Toutes avaient à charge des enfants mineurs. On a utilisé une analyse thématique pour systématiser les expériences des participants. Les résultats montrent à quel point vivre avec un partenaire ayant un problème de jeu oblige à assumer seul les responsabilités. Les partenaires de joueurs problématiques endossent beaucoup de responsabilités pour les activités quotidiennes, les finances du ménage et la parentalité, et elles obtiennent peu de soutien de leur partenaire. Un manque général de connaissances et le fait de ne pas reconnaître le jeu comme un problème augmente la solitude, la honte et le fardeau. Bien que le jeu ait un impact considérable sur la vie quotidienne et les relations, les familles reçoivent peu de soutien. Assumer les tâches familiales et en être responsable peut être vu comme un moyen de regagner de la dignité et d'avoir le pouvoir, même dans certaines limites. Le soutien offert aux familles doit tenir compte de cette dualité.

Introduction

“You’re in this all alone. It’s like a roller coaster, all these ups and downs. But somehow, it makes you a little tougher, a little stronger.”

A participant in this qualitative Norwegian study provided that reflection. The person was describing how living with a partner struggling with problem gambling¹ affects daily life, relations, and parenting in families. Problem gambling is still commonly understood and treated at an individual level. However, the need to contextualize the understanding and treatment of problem gambling has been increasingly emphasized as the effects from gambling occur at individual, family and community level (Kourgiantakis, Saint-Jacques, & Joël, 2013; Langham et al., 2015).

It is estimated that problem gambling affects approximately 2.3% of a given population around the world (Kourgiantakis et al., 2013). In Norway, 2.3% of the population may be categorized as moderate risk gamblers and 0.9% as problem

¹The inclusion criteria in this study were that the participants either were or had been living with a person with gambling problems and had experiences with parenting in that situation. It was not a criterion that the partner or family had received treatment for the gambling problems, or that the partner had been diagnosed with gambling disorder. However, the severity of the descriptions and experiences shared by the participants in the study could easily fit with the term gambling disorder, even though this fact was not expressed in the inclusion criteria.

gamblers (Pallesen, Molde, Mentzoni, Hanss, & Morken, 2016). These two categories are not mutually exclusive, and the transition between them can be gradual (Pallesen et al., 2016). Men are more likely than women to have a gambling problem (Echeburúa, González-Ortega, de Corral, & Polo López, 2011; Pallesen et al., 2016; Wong, Zane, Saw, & Chan, 2013). Several studies estimate that between six and ten persons in a gambler's social network are directly affected by that person's problem gambling (Goodwin, Browne, Rockloff, & Rose, 2017; Kourgiantakis et al., 2013). In addition to posing a problem for the person who gambles, gambling problems can also yield major consequences for partners, children, and other close family member because they affect household finances and social life, and lead to legal, medical, emotional, relational, and existential issues (Borch, 2012). Financial problems commonly include immense credit card debt as well as formal, informal, and illegal loans. Together, these may be so large that they place families at risk to lose their housing (Downs & Woolrych, 2010; Shaw, Forbush, Schlinder, Rosenman, & Black, 2007). Among close relatives, partners of problem gamblers have been demonstrated to experience the greatest distress on a personal level (Hodgins, Shead, & Makarchuk, 2007) and show increased risk for depression, anxiety, and isolation (Shaw et al., 2007; Wenzel, Øren, & Bakken, 2008). Moreover, among these couples, there are increased risks of relational challenges, such as conflicts and alienation, and higher risk of divorce (Dowling, Suomi, Jackson, & Lavis, 2016; Shaw et al., 2007). Gambling problems and their financial consequences are often experienced as a breach of trust by partners of persons who gamble. As such, the gambling problem can be understood as jeopardizing a key factor in building and preserving close relationships in families (Buyukcan-Tetik, Finkenauer, Siersema, Vander Heyden, & Krabbendam, 2015). This loss of trust can lead to seemingly unresolvable conflicts, including verbal attacks and even violence (Downs & Woolrych, 2010; Strong & Samentband, 2014).

The relational challenges also considerably affect the children in these families; those children have been found to experience pervasive losses, such as loss of contact with family and relatives, loss of security, stability and trust, and material losses (Darbyshire, Oster & Carrig, 2001; Kourgiantakis et al., 2013; Kourgiantakis, Stark, Lobo & Tepperman, 2016). These children are also at risk for experiencing role conflicts, psychosocial problems, and developing their own gambling problems (Kourgiantakis et al., 2016; Shaw et al., 2007). Because all these serious consequences dominate and affect these families' everyday lives, the gambling problem has been described as these families' "centre of gravity" (Borch, 2012).

Even though problem gambling negatively affects the family members' everyday life and well-being, they are rarely included by health and social services in the treatment of the person's gambling problem, nor do they receive support for their own relational challenges or needs (Downs & Woolrych, 2010; Kourgiantakis et al., 2013; Strong & Samentband, 2014). This practice is not in accord with recent research that indicates that a more family-focused approach in services for problem gambling is desirable since family inclusion will increase the likelihood of successful treatment of

the gambling problem and also be essential for supporting family members' own needs (Kourgiantakis, Saint-Jacques, & Tremblay et al., 2017).

Despite the fact that problem gambling is serious and may create devastating consequences for the person who gambles and his or her close relationships, only limited previous research on its effects on the everyday lives of partners and families has taken place (Kourgiantakis et al., 2016; Kourgiantakis et al., 2017; Velleman, Cousins & Orford, 2015). Furthermore, although certain studies have focused on the relational consequences of problem gambling between individual family members, research exploring how problem gambling affects relations in the family constellation as a whole and everyday family life is still relatively scant (Kalischuk, 2010; Kourgiantakis et al., 2103).

This lack of family-oriented research also includes a dearth of studies that focus more explicitly on how problem gambling affects the parental role and parenting as a shared responsibility. Although certain studies have addressed how partners and children are affected by adult problem gambling in the family (Cunha & Relvas, 2015; Dickson-Swift, James, & Kippen, 2005; Holdsworth, Nuske, Tiyce, & Hing, 2013; Kourgiantakis et al., 2016), little research has addressed how parenting is experienced and enacted in these particular situations. More often, the parental role has been explored within research on parental mental health and-substance misuse, demonstrating that the problems faced by one parent, may negatively affect the parenting of both parents because of entwined and interdependent relational challenges (cf., Falkov, 2015; Falkov et al., 2016; Foster et al., 2016; Foster, Good-year, Grant, Weimand, & Nicholson, 2019). How partners of persons with gambling problems experience their parenting role is a current knowledge gap.

The aim of this study is to explore how partners of persons with gambling problems experience the family's everyday life, with a particular focus on family relations. To address this aim, we posted the following research questions. How do partners of problem gamblers describe and experience

1. everyday life in the family?
2. relations in the family?
3. parenting in an everyday life context?

Method

Participants and Design

This qualitative study had a descriptive, explorative, and interpretive design. The design was considered appropriate to acquire a deeper understanding of partners' experiences of everyday life, relations, and parenting in families with a partner struggling with gambling problems.

The majority of study participants were recruited through the Norwegian organization *Spillavhengighet Norge* ("Gambling Addiction Norway"), an independent organization

providing information and support to gamblers and caregivers. Certain participants were also recruited through *Blå Kors* (“Blue Cross”), a Norwegian non-governmental organization (NGO) providing prevention and treatment for different kinds of addiction problems and offering services to both gamblers and family caregivers. Inclusion criteria were that participants should have lived with a partner with gambling problems and have experiences with parenting in that situation. Altogether, nine partners volunteered to participate in the study and all of them were female. All the study participants’ partners were male. The participants had all been responsible for minor children when living with a partner with gambling problems. The age of their offspring at the time of the interview varied from infants to young adults. At the time of the interviews, seven of the partners were still living with the person who previously had or was still having gambling problems. One of the participants was a student, five were working, and three were either on long-term sick leave or receiving disability benefits.

Both the research questions and interview guide were developed in collaboration with two persons with lived experiences of being a partner of a problem gambler and having responsibility for minor children in that context. Data were generated using semi-structured in-depth interviews, which were conducted based on a thematic guide that focused on the experiences of everyday life, relations and parenting in the family. Open-ended questions were used to elicit first-person experiences. The same themes were addressed in all interviews, but the order of questions followed the order of the participants’ reflections. Participants were also given the opportunity to elaborate on subjects that they found important. The first author conducted all interviews. The interviews lasted for 60–90 minutes at a time and place that suited each participant. Most of the interviews were conducted in the home of the participant.

Analysis

We used a thematic analysis to obtain and systemize data on participants’ experiences of everyday life, relations, and parenting in their families. The aim of thematic analysis is to organize data into themes that are subject to further interpretation. Thematic analysis can be flexible concerning theoretical stance (Braun & Clarke, 2006). In this study, we applied a hermeneutic stance. This position implied a recognition that data analysis involves more than merely describing and representing “stable truths,” and situates the study within an understanding of truth and knowledge as being multifaceted and open to ongoing and multiple interpretations (Crotty, 1998). Consistent with this, the themes that were developed through the analysis involved an iterative process between descriptions and interpretations (Brinkmann & Kvale, 2015). The descriptions as expressed by the participants and the evolving themes of the analysis were understood, interpreted, and revised against the respective interview and the data set as a whole.

Although the subsequent description of the procedures of our data analysis follows a typical step-by-step outline, steps in qualitative analysis within a hermeneutic approach are overlapping and difficult to separate. The procedure is best described as a back and forth process between descriptive and interpretive dimensions of

analysis, designed to develop meaning and knowledge (Klevan, Davidson, Ruud, & Karlsson, 2016).

The interviews were transcribed verbatim. All three authors read the sets of data separately and searched for and took notes on possible meaning units and interpretations. Each author then labeled the meaning units using coding words (Braun & Clarke, 2006; Brinkmann & Kvale, 2015). The authors then met and discussed and arranged the coded meaning units into sub-themes, aiming to adhere as closely to the interview texts as was possible. We clustered the sub-themes and organized them into preliminary themes, through an iterative back and forth process between text and evolving themes. The interpretations of the text and development of themes underwent thorough discussion between the three authors. We reorganized the themes repeatedly before reaching agreement on them. Data were finally organized into three main themes.

Ethics

This study was initiated and financed by the Norwegian Directorate of Health. The study was assessed and approved by the Norwegian Social Science Data Services (NSD) (17-074). Written informed consent was required before participation. Data were made anonymous through the transcribing process, by moderating or removing details that could entail the risk of participants being identified (e.g., use of pseudonyms).

Results

Experiences of everyday life, relations, and parenting in the family appeared to be closely entwined and hence difficult to separate. For instance, the participants described their everyday life experiences through relations between the family members and vice versa. Therefore, the themes that we present in this section as the results of the study should be interpreted and understood in relation to each other. Although the themes are partly distinct from each other, they also overlap and comprise parts of a whole, where the different elements iteratively shape and are shaped by each other.

Through the analysis, we identified the following three main themes: (1) the lone problem, (2) the lone parent, and (3) the lone adult. Each of these main themes is further described and explored through sub-themes below.

The Lone Problem

This theme describes and explores how the partners of problem gamblers experienced the problem from their own perspective and the perspective of the society in which they were inscribed. The latter involved perspectives of society “in general” and, more specifically, among health and social service providers. Gambling appeared to be met with little knowledge among both laypersons and professionals and was

described as connected to shame and courtesy stigma. It was experienced by the participants as an invisible problem that few talked of or had knowledge about. As such, it was a “lone” problem at several levels, including a lack of an actual recognition of it as a problem, lack of possibilities for adequate help, and, ultimately, their experiences of the loneliness connected to the problem at an existential level. The theme is explored through the following two sub-themes: (1a) “the rock bottom problem” and (1b) “the quest for appropriate help.”

The Rock Bottom Problem. Among study participants, the feelings of shame and stigma connected to being associated with problem gambling was striking. Problem gambling was perceived as “rock bottom” among shameful activities by the participants. Anna shared her thoughts on the shame connected to gambling problems:

I feel this is a huge taboo. And very shameful. This is something I am very shameful of, on his behalf, that he has done this. It's the same thing with alcohol or with mental illness, but I think it is easier to say you have a mental illness than an alcohol problem or even worse, a gambling problem. (Anna)

Struggling with problem gambling was not only connected to shame and stigma for the gambler, but for the family as well. The participants described this feeling as a kind of “shame and stigma by association.” It appeared to be related to two issues; having a partner who was a gambler and choosing to stay with the partner despite the gambling problem. For example, Eva noted:

It's embarrassing, that he should gamble and lose all our money and that I am with him. (Eva)

Sandra shared her experiences:

And it's like I'm being blamed for... “How can you still be with him?” My parents say, “Well it's your choice. As long as you're happy.” But they don't really understand why I've let him get into my life again. (Sandra)

When they needed support in a demanding situation, the participants experienced little support from their partner. Because of the shame and courtesy stigma, many of the participants were reluctant to talk about their situation with friends and family, which further complicated the possibility of receiving support. Simultaneously, they found themselves unable to search for support elsewhere. The problem was experienced as solely their own.

The Quest for Appropriate Help. Many participants shared how they had experienced difficulties in obtaining professional help. This frustrated need included help for the person with the gambling problem, the family, and individual family members. Generally, there seemed to be a lack of knowledge among health professionals about problem gambling and possibilities for support of those affected. Several participants shared how they had struggled to obtain help for their partner,

their family, or themselves. Sandra had tried to contact various mental health and social services to obtain help for her husband and family, but received little support:

They didn't have a clue about where we could get any help. Not even our GP knew where we could turn for help. So, I ended up searching the Internet.
(Sandra)

If they were able to obtain help, it largely targeted the person with the gambling problem and the gambling itself. The family, specific family members, and their specific situations were rarely included. Thus, the help offered appeared to be insufficient given the complexity of the situation as experienced by the participant. Several issues required immediate support. For example, participants described how they could have used more support and guidance on how to deal with an extremely difficult financial situation because of the gambling. They also called for more support on how to handle damaged or at-risk relationships and delicate or fragile issues within the family. Several participants shared how they both needed and wanted guidance on challenges connected to their children's situation and their parenting role. These issues were prominent because of the partners' gambling problem. Elsa, a mother of four young children, shared the following experience:

When I think about it now, in retrospect, it just wasn't sufficient. It was as if the problems I shared with them [my social workers] ... I think maybe they didn't take me seriously. They said that; "just tell your children how things are." But the children's capacity to understand this is limited. (Elsa)

Although many participants had experienced inaccessible or insufficient help, certain of them also shared how they found useful help. Several of the participants highlighted how peer support had been particularly beneficial. This benefit was connected to a feeling of their troubles being recognized. Furthermore, obtaining specific advice on how to deal with practical challenges and meeting meet who had the same experiences was experienced as useful. Mariann, a young mother with an infant, told about her experiences of joining a peer support group. To her, the sense of no longer being the only person with this specific problem was a great relief.

It's like the only ones who know what they're talking about are those who have gone through it themselves. We can talk about things that are important to family carers. When I say something, the other women with husbands who gamble will nod. We nod to each other. As carers we have a different understanding and communication. (Mariann)

The Lone Adult

This theme describes and explores how participants often experienced being the sole adult in the family. This experience was related to feeling alone and lonesome in dealing with the practical, relational, and emotional aspects of the family's everyday life. They found themselves left alone with this responsibility with no one to turn to for support. Small and large decisions that are usually considered part of "adult life"

were experienced as being theirs alone. The theme is explored through three sub-themes: (2a) “the organizer of everyday life,” (2b) “in charge of finances,” and (2c) “not being able to share.”

The Organizer of Everyday Life. Living with a person with gambling problems affected every part of the families’ daily life. The participants described how they took on greater responsibility for organizing and overseeing daily chores and activities in the family, receiving little support from their partner in dealing with these issues. They described several reasons for this. In many cases, they felt that their partner lacked the capacity to deal with everyday activities because of how the gambling problem would negatively affect their overall coping abilities including mental health fitness. Elsa described her situation as follows:

The job I feel that I’ve done, I’ve been in this alone. There has been a lot... I’ve gone for months, hardly with any sleep. Because I’ve had to see to it that the kids are fine and that everything around here is all hunky dory so that no one can pick on me for anything. (Elsa)

Many of the participants stated that they felt they could not trust their partner with taking responsibility for daily chores in the family. As a result, they would often choose to take responsibility for everything themselves, rather than having to manage uncertainty over whether things would be done. This uncertainty was a kind of constant reminder of the inherent loneliness of their changed role. It was also described as something that became their normal approach toward the partner’s every action or word. Lisa shared how she had experienced difficulties with trusting her husband:

I can recall not trusting anything he said for a while... small things that were often related to our son. Like, if he had delivered him in the kindergarten in the morning, I could ask him questions like “Did you remember to bring a drinking bottle?” And he would say “Yes” and I would think that maybe he is lying. (Lisa)

Although the majority of the partners described a situation where they took on more responsibility for daily life chores than their partner did, certain of them also described how they could use their “in charge” position to decide what could be delegated and what could not. However, this change was not necessarily done with unequivocal pleasure; several of the women described how they missed the equality they had formerly experienced in their relationship. Placing oneself as the person “in charge” in the family involved a step away from equality and sharing the chores and activities of daily life that tend to make up family life. This “in charge” status was described as twofold: although it served as a constant reminder that the relationship they once had was changed, or even broken, it also implicitly inculcated a kind of freedom or power to the female partners. Sandra reflected:

He has to do more. It becomes a kind of his punishment, in a way. We have always had an equal relationship. We have distributed tasks fairly equally

between us. But I think I feel freer now to do my own things than he does. He feels that he has to ask for my permission. (Sandra)

In Charge of Finances. The economic consequences of the problem gambling were described by the participants as devastating. Many of the families were deeply in debt. Economic difficulties profoundly affected all aspects of their daily living conditions and participants described how they often had to economize severely to make ends meet. Thus, a crucial part of being in charge and retrieving control over the situation involved taking control of the family economics. All the participants described how in some way they had taken steps to gain control. Most of the participants had taken total control over bank loans, including mortgages, accounts, and credit cards. Louise shared how she was the one in charge:

I have taken the role as the boss. For instance, my husband does not have a clue about how many bills we get every month. I have full control of the economics; his salary goes straight into my account. He only gets pocket money. (Louise)

They also described how they had lost trust in their partner and how they had taken precautions to secure the family's finances. Sophie had experienced that her husband had misused her credit card several times. She was constantly alert:

How can I secure myself? I have changed my credit card many times so that he shouldn't have the card number for gambling. I changed the password to my account. All the time, you need to take action. (Sophie)

Taking control also involved constantly thinking about how to save money daily. Several of the participants described how they had learned to live on less money. They tried to live as normally as possible and to create a safe home environment, despite their financial difficulties. Astrid described how she had taken actions to save money and provide a decent life for her young daughter and the rest of the family:

I bought winter boots during summer, on sale, two sizes too big. Or I bought them in my home country, it's cheaper than here. And I bought a lot of dry food, so that we could use it during the winter. I did many things, so that we could be fine. (Astrid)

For the participants, forsaking material goods, activities, or going on holidays, was not necessarily seen as a great sacrifice on their own behalf. Their primary concern was attempting to safeguard so that their children could continue living as normally as possible. Several of the participants shared descriptions of how they prioritized their children's needs and how they took pride in striving to provide them with a "normal life." For example, Louise stated:

I haven't bought clothes, shoes, or that kind of things for myself, I think about my daughter first. Because I have said, this will not affect her. (Louise)

Although the participants described how they worked hard to regain control over their financial situation, it was the experience of many that the gambling debt yielded major changes in the family's standard of living. In certain cases, the family lost the home they owned and were forced to resettle in a smaller, rented home. It was described as painful to know that the poor financial situation was likely to not only affect the family currently, but also in the future. Elsa's family had for many years been at a constant risk of losing the home they owned. She described a feeling of sadness over how their financial situation was unlikely to improve:

Economics, definitely. That's the biggest problem and it's not something that's going to disappear over the next ten years or so. We have to keep paying for the rest of our lives. And that affects the children, and me of course. (Elsa)

However, despite this shift in economic status being a major change and challenge to the family, the participants explained how the alteration was a topic that could not really be talked about in the family. They felt that to carry on and cope with the situation bitterness or hard feelings connected to the financial situation must be set aside. Instead, the focus needed to be on maintaining daily life and supporting the partner in his recovery. Being supportive of his recovery meant there was no space where they could express or dwell with their own feelings.

Not Being Able to Share. Being the sole household member in charge of the family's practical and financial matters had consequences for the relationship and the couple. It could create a sense of distance and inequity between the two adults; they were no longer sharing the family responsibilities or contributing on equal terms. Anna described how she missed the former equity and sharing of responsibility in her relationship with her husband:

It's not okay at all; I would rather not be in that role. I just want a husband who takes responsibility and who has control and whom I can trust, without me having to control him all the time. (Anna)

This change of roles was a topic that also Sandra talked about:

It ruined something, it did. So yes, I think he felt that we kind of swapped roles in a way and that he felt, maybe less worthy. (Sandra)

Many of the participants talked about feeling alone in the relationship. This was due not only to taking over practical and financial issues in the family, but also from a sense that they could not burden their partner who was already dealing with the gambling problems. Lisa shared how she had found herself in a situation with an increased burden and challenges for the family, but also a reduced possibility of support from her husband:

You are very much alone. And the person who is your partner, who gambles... He has enough, dealing with his own business. You can't increase the burden.

Even if it is the consequences of what he is doing that is causing your troubles, even so, you can't push it over on him. Because he has enough, I think. (Lisa)

The Lone Parent

This final theme describes and explores how the participants experienced parenting while their partner struggled with gambling problems. They shared how parenting in these situations could be a particularly challenging and lonely task. This included feeling alone with the responsibility for the children daily and ensuring family unity. The theme is explored through two sub-themes: (3a) "present, but not really there" and (3b) "keeping the family together."

Present, but Not Really There. Participants reported that the everyday life in the family had to continue as usual. It was important to them that their children could live as normally and unaffected by the situation as was possible. This assurance was challenging, as their economic situation limited the possibilities for the children's participation in activities that their peers included in their daily lives, and in which the children were involved before the problem became insurmountable. The participants shared how they would expend tremendous effort to shield their children from the situation. Several of the participants had experienced challenges with having to deal with children's reactions and simultaneously not being able to expect much from their partner. They described the situation as being a single parent while also living in a relationship. Certain participants also shared how in addition to feeling alone in parenting their children, they also came to occupy a kind of parenting role for their partner. Elsa described her experiences:

I have felt that I have been both the mom and the dad and covered up for him, you know. Because he has not been present, physically and mentally. Now he is around all the time. He's always at home. He never goes out. He just stays home, but his capacity is really reduced. My parents have said, "You don't have three children, you have four. Because you look after your husband just as much." (Elsa)

Despite trying to shield their children, many of the participants perceived that the children knew "something" was wrong generally and held the specific notion of their mother being the only parent. Many participants shared stories of their children primarily turning to them for support and largely excluding their father. One of them was Eva who reflected on how the children had become more attached to her:

So, it has become this thing, they seem to have understood that I have the last word. They turn to me a lot, because when he has had his bad periods, he has been very absent-minded. So, I notice that they have become a bit of mommy-kids. Because I have been here all the time. He has baled. I have become the safe haven. It's a bit of a shame. They should have the same attachment to both of us. (Eva)

Although the participants described how they worked hard to protect their children from the situation and provide a safe haven, many perceived that their children

struggled. The children's difficulties could be manifested in a variety of ways; certain children suffered from stomach pains, others had trouble with sleeping or being left alone, and certain children showed signs of anger and frustration. Part of being the "main parent" also involved finding ways to deal with these issues. Elsa shared how the children had taken out their frustration on her because they sensed that their father would not be able to take it:

A lot of their frustration has been taken out on me, because they couldn't take it out on their father. What if he were to experience even more distress? And the thing with daddy was that he could bale. But they knew that I wouldn't leave, no place ever. (Elsa)

Keeping the Family Together. Most of the participants in this study were still living with their partner. Those who were not shared how they had given their former partner several chances before they ended the relationship. Trying to keep the family together proved quite difficult. Because the participants felt they could not expect much from their partner who was already fully occupied with his own problems, it was largely their responsibility to keep the family together. This situation also meant that they had to constantly evaluate if it was in the best interest of the children to do so for both the short and long-term, and to make decisions accordingly. Eva described how the decision to stay or leave was in certain ways a choice between two evils. Whichever alternative she chose, her children would suffer:

You see how your children suffer and you feel it yourself, how the situation is terrible. But still, it hasn't been painful enough to make me leave. To take the children and leave. I think, that for the children, that hasn't been an alternative; they want their father there, because he's the kindest person in the world, actually. When he's well. (Eva)

Making these assessments and decisions also involved deciding on limits and boundaries. Sophie asserted, "This is the last chance. We can't continue, if we were to lose the house. It has never been an option for me, not to be with him. But there is a limit."

Keeping together meant having to find ways to live with everything that had happened. For some, finding ways to deal with feelings of anger, bitterness, and mistrust toward their partner was also necessary. Another issue was that the participants had to cope with not only their own feelings of disappointment or anger, but also with the feelings of their children. In addition, they had to defend their choice of staying with their partner to their family and network. Louise stated:

And now I have no one I can talk to, because I don't want to burden my parents with this anymore. Because they get so angry. And then they also get a bit angry with me. (Louise)

The decision to stay, defending that choice, and finding ways to keep the family together was in many ways a solo project. However, embittered feelings toward the

partner were not a primary trend. More frequently, the participants would describe feelings of love and affection despite all that had happened. They were concerned with trying to understand and support their partner. Several of the participants pointedly made a distinction between the problem and the person. Focusing on the partner and father they knew “behind the problem” was an important motivator in continuing their struggle to keep the family together. The participants typically described how focusing on the family unity and what they considered to be in the best interest of the family over the long-term helped them to persevere. The significance of not giving up was emphasized. Mariann described how she had focused on how the family needed to face the challenges as a unit:

My thoughts were, ok we have a challenge. This challenge is going to affect the family and now we have to agree... that we're still on the same team and how we are going to handle this together. (Mariann)

Anna shared similar thoughts. To her, being a family meant keeping together also when the going got tough:

If you love someone, then you fight as well as you can, to make it all right. It's going to be fine. There have been ups and downs, but we have worked it out. Although it has been tough, it has, all the way. (Anna)

Discussion

This study has highlighted how problem gambling affects daily life, relations, and parenting in the families. Living with a partner struggling with problem gambling was commonly experienced as a “lone project” across several dimensions. Experiences of the “lone problem,” being the “lone parent,” and the “lone adult,” were related to how gambling was perceived by others as a nearly “non-existent” problem because of the lack of a common knowledge base, recognition, and access to adequate help and support. Despite being almost invisible and rarely recognized or acknowledged as an issue, the impact of problem gambling on the daily life in the families was tremendous. These impacts included those on practical issues of family life from short and long-term perspectives, and how this situation was entangled with emotional and relational consequences. The findings of this study show how living with a partner with gambling problems is connected to experiences of pervasive loss for the family in several areas of daily life. This determination is also consistent with previous studies exploring the experiences of family carers (Borch, 2012; Darbyshire et al., 2001; Holdsworth et al., 2013; Kourgiantakis et al., 2013; Kourgiantakis et al., 2016).

However, the findings of the current study provide further insight on how partners, despite experiences of loss and loneliness, mobilized their own strength and decisiveness on behalf of their partners, their children, and themselves. Their ability to maneuver was limited because of difficulties concerning several key areas of life: their own health, family economics, the relationship between parents and partners,

and social life. In addition, they were limited by the feelings of shame and stigma associated with the partner's gambling addiction. This situation was further reinforced by a general knowledge gap within society regarding problem gambling, and a particular lack of knowledge in social and health services about these families' situations. Such narrowed room to maneuver indicates powerlessness. However, our findings also showed that these female partners were powerful; *within* the limited frames mentioned, they were still able to take responsibility and control, and showed power and strength in their everyday life including foregoing their own needs and feelings of anger, shame, bitterness, mistrust, and violation to safeguard partners and children. It was nevertheless striking how the power they mobilized came with a cost; they had to tread carefully, considering that this way of life would be for the foreseeable future.

Living with a partner with gambling problems can be understood as involving duality in several aspect of life. In many ways, the partners and the families of problem gamblers may be viewed as being deprived of power. The gambling affects several aspects of the lives of the partners and families. As described, for instance, by Borch (2012), the gambling problem is often experienced as the center of gravity in the families, which is in line with the findings in our study; all aspects of family life were affected, not only in the present, but even more seriously for the future too.

Although a gambling problem extensively affects family life, the current study shows how the partners could go to great lengths to attempt to conceal this. The shame and stigma connected to problem gambling is vast and this study demonstrates how gambling is perceived as a "rock bottom problem" in this regard. The current study showed the duality of the participants' need to keep secret the gambling problem while simultaneously desiring that it be recognized and needing to share the challenges they faced with someone who could understand the complexity of the situation. The reasons for deciding not to talk about the gambling problem were twofold: the problem was connected to shame and stigma, and they also tried to maintain daily life without burdening their partner with more problems during his recovery process. This situation meant there was no place in the relationship for partners to acknowledge their own emotions, including feelings of anger, bitterness, and mistrust. The participants described the concealment of problems as the only way they could survive the situation. However, Johnson, Makinen, and Milikin (2001) showed that betrayal of trust result in relational distress and may cause serious damage to close relationships, which indicates that these couples should be offered support in dealing with emotional and relational distress.

The issue of being open with children was also raised in our study. According to the participants, their children were often not fully aware of the situation, although they believed the children sensed that there was "something" wrong. This set of circumstances posed a dilemma for the participants of whether (and how) to talk about the situation with their children. A study on mental or physical parental illness or substance abuse showed that parents' perception, when compared to children's self-assessments, underestimated their children's strains related to the situation, and

overestimated their quality of life (Ruud et al., 2015). This discovery revealed a need for supporting openness in these families. Such honesty seems essential since our findings determined that from the participants' perspective, certain of the children suffered from physical and emotional health issues like stomach pains and sleep disturbances. This finding was consistent with study results on children as relatives in the fields of mental health and substance abuse (Bröning et al., 2012; Siegenthaler, Munder, & Egger, 2012; Sieh, Meijer, Oort, Visser-Meily, & Van der Leij, 2010).

The need for recognition and sharing concerned not only the gambling problem itself, but also the effort expended, and strain experienced by participants in maintaining their daily life and family. Previous studies have indicated that partners of persons with gambling problems take on new roles and responsibilities regarding financial issues (Dickson-Swift et al., 2005; Kourgiantakis et al., 2013; Valentine & Hughes, 2010). Financial difficulties were described by Hodgins and colleagues (2007) as a source of distress in spouses. This finding was also a clear one in the current study, demonstrated by the reality that the family home was or might be lost and that a poor financial situation seemed never-ending.

Regarding the parental role, our findings showed that focus of the participants was to safeguard and protect their children from negative consequences of the gambling. This seemed to be conducted with an effort to hide these from their children. Participants also described how their children's situation had often changed radically. Protecting the children while also acknowledging their strains might place an additional burden on the parenting role in these partners. Like previous research, the current study found that partners had little or no support in fulfilling new roles and extended responsibilities. They described these functions as undesired and burdensome. Nonetheless, this study has also elaborated on how the adoption of new roles, supporting one's partner, and striving to keep the family together could also be connected to preserving a sense of dignity. Although the current findings suggest that partners of problem gamblers find their latitude and freedom of choice inhibited in many ways, understanding their situation as solely connected to pervasive losses also deprives them of recognition and dignity. Even though many of the participants in this study chose to stay in a challenging situation with dramatic consequences for the family's daily life, their descriptions are not unequivocally connected to powerlessness and loss.

Consistent with the work of Dickson-Swift and colleagues (2005), our findings demonstrated that the partners experienced feelings of guilt, anger, and blame, a loss of trust, and faced additional struggles like financial burdens and overall major responsibilities. In our study, these challenges were linked to feelings of being powerless over the gambling problem and its consequences. Simultaneously, the partners struggled to maintain their self-respect and dignity despite the losses that were obvious to others. This situation meant they found ways to regain power, although the spaces in which they could be powerful decreased because of the consequences of their partner's gambling problem. Thus, the current study suggests that experiences of partners of problem gamblers need to be understood as complex

and multifaceted. The findings indicate that the partners live with contradictions and dualities.

This study elaborates on how living with a problem gambler affects pivotal aspects of daily life and relations in the families and how these aspects appear to be entwined. Previous studies have emphasized the importance of including the family in the treatment of problem gamblers, both for the benefit of the problem gambler, and for supporting, informing and guiding the family members (Kourgiantakis et al., 2013, 2017; Shaw et al., 2007). The current study supports these recommendations. However, it also shows how relational aspects, including a lack of communication between the partner and the problem gambler, a breakdown in trust, and a lack of openness with the children, affects and are affected by practical daily life in the families. Thus, the study calls for family interventions that simultaneously address practical, daily life issues and relational aspects and the relationship between the two.

Limitations and Strengths of the Study

This research includes several limitations. The number of participants was limited. Furthermore, all the participants were female and lived with male partners. These issues can be understood as limitations. However, conducting research on a small, homogenous group of participants also enables in-depth exploration. The purpose of a qualitative study such as this one is not to generalize but rather to explore and elaborate on experiences related to certain phenomena. The findings shared in this study revealed that experiences of everyday life, relations and parenting in families affected by problem gambling are multifaceted and sometimes contradictory.

Through our coding and categorizing of data into common themes across the set of data, the personal context and storied experiences of each participant is partly lost. However, by describing and exploring the themes through extensive use of quotations, certain of the variations and possible interpretations provided by personal context were preserved and mediated. Although qualitative interview data can never capture or represent “the truth,” we would, in line with Funk and Stajduhar (2009), suggest that an interpretive approach is applicable when aiming to explore and make sense of the complexities and multiplicity of caregiver experiences. Thus, the personal experiences shared and interpreted in this study could contribute to a deeper understanding of and insight into everyday life, relations and parenting in families where one of the adults struggles with problem gambling.

Conclusion

Living with a partner struggling with problem gambling severely affects a variety of aspects of everyday life, relations, and parenting. Experiences of loss and loneliness across a span of issues connected to family life are striking. Partners of persons with gambling problems find their own and their family’s possibilities and latitude

inhibited by the situation. This restriction is because of concrete issues like poor finances and increased responsibility for taking care of practicalities in the family as well as a lack of support on these issues from both their partner and the service system. Furthermore, they also experience emotional loneliness in the relationship with their partner through the shame and stigma connected to problem gambling, and to choosing to stay with a problem gambler.

However, this study has also elaborated on how the partners' assumption of new roles and responsibilities is multifaceted. Assuming responsibility and becoming the one in charge, even with limited space to act, can also be understood as means to reclaiming dignity and gain power, albeit within limits.

The study shows how support to families experiencing gambling problems needs to be informed by this duality. Furthermore, the study underscores an urgent need for more family and context sensitive understandings and interventions in the field of problem gambling.

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Submitted February 14, 2019; accepted April 25, 2019. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: None declared (all authors).

Ethics approval: The research project was assessed and approved by the Norwegian Social Science Data Services (NSD) (17-074) on April 4, 2017.

Acknowledgements: This study was initiated and financed by the Norwegian Directorate of Health. The authors would like to thank the Norwegian organizations Spillavhengighet Norge (“Gambling Addiction Norway”) and Blå Kors (“Blue Cross”), for valuable advice and help with recruiting participants for the study.

L'illusion de contrôle liée au jeu auprès d'universitaires: le bénéfice du doute? / The Illusion of Control in Gambling among University Students: The Benefit of the Doubt?

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Résumé

Puisque la recherche antérieure a indiqué que de hauts niveaux d'éducation pourraient protéger contre les problèmes de jeu, des études ont testé l'hypothèse selon laquelle les universitaires entretiennent moins de pensées erronées liées aux jeux de hasard et d'argent (JHA), telle l'illusion de contrôle qui consiste à surestimer l'apport de l'habileté personnelle dans les résultats du jeu. Or, les résultats de ces études ont été équivoques. L'illusion de contrôle peut toutefois être favorisée par différents facteurs sociodémographiques, dispositionnels et cognitifs que peuvent présenter des individus fortement scolarisés, soit le degré d'optimisme, l'internalité du lieu de contrôle, les connaissances des statistiques et des probabilités (SP) et, finalement, le degré de conviction quant aux croyances liées au jeu. En effet, il a été démontré que les joueurs pathologiques ont non seulement plus de pensées erronées, mais ils tendent également à être davantage convaincus de la justesse de ces croyances. Ainsi, quelqu'un pourrait endosser un certain nombre de pensées erronées, mais exprimer du doute quant à la justesse de celles-ci. Par exemple, quelqu'un pourrait penser qu'un porte-bonheur aidera (un peu, modérément, beaucoup) à gagner, mais ne pas être certain d'avoir raison à ce sujet. Contrairement, une personne pourrait être persuadée (haut degré de conviction) que les porte-bonneurs aident ou n'aident pas. S'appuyant sur les données préalablement recueillies par Smith et Giroux (2018) pour une étude sur les comportements de jeu de 142 universitaires avec ou sans connaissances des statistiques et des probabilités (SP), la présente étude examine les relations entre l'illusion de contrôle liée aux JHA et ces facteurs connus pour influencer l'illusion de contrôle. Deuxièmement, cet article cherche à vérifier le potentiel prédictif de ces variables individuelles sur l'illusion de contrôle. Les résultats indiquent qu'un niveau élevé de connaissances des SP est associé à un degré supérieur d'optimisme ($p < .01$), ainsi qu'à moins de superstitions ($p < .01$). De plus, moins les universitaires sont convaincus quant à leurs croyances, plus ils rapportent d'illusion de contrôle ($p < .01$). Au sein de cet échantillon, le fait d'être un homme, d'avoir peu de connaissances des SP ainsi qu'un degré de conviction peu élevé prédisent statistiquement plus d'illusion de contrôle ($p < .01$). La discussion porte sur les avantages possibles de la présence de doute auprès d'individus scolarisés faisant état de ce type de pensées erronées.

Mots-clés/Keywords: illusion de contrôle, optimisme, lieu de contrôle, statistiques et probabilités, conviction, doute, universitaires, jeux de hasard et d'argent / illusion of control, optimism, locus of control, statistics and probabilities, conviction, doubt, university students, gambling

Abstract

Since previous research has indicated that high levels of education might protect against gambling problems, studies have tested the hypothesis that academics have fewer erroneous thoughts related to gambling, such as the illusion of control (i.e., the overestimation of the contribution of personal skill in gambling outcomes). However, the results of these studies were equivocal. The illusion of control can, however, be fostered by various sociodemographic, dispositional, and cognitive factors that may be present in highly educated individuals, including degree of optimism, internal of the locus of control, knowledge of statistics and probabilities (SP) and, finally, the degree of conviction about gambling beliefs. Indeed, it has been shown that pathological gamblers not only have more irrational thoughts, but they also tend to be more convinced of the correctness of these thoughts. For example, an individual might think that a lucky charm might help them win, but not be too sure how right they are to hold this belief (low degree of conviction). On the contrary, a person might be convinced that lucky charms definitely help them win, or definitely do not help them win (both of which are examples of a high degree of conviction). Based on data previously collected by Smith and Giroux (2018) investigating the gambling behavior of 142 university students with and without SP knowledge, this study examines the relationships between the illusion of control in gambling and factors known to influence the illusion of control. Secondly, this article seeks to verify the predictive potential of these individual variables on the illusion of control. The results indicate that a high level of SP knowledge is associated with a higher degree of optimism ($p < .01$), as well as fewer superstitions ($p < .01$). Moreover, the less university students are convinced of the rightness of their beliefs, the more they report an illusion of control ($p < .01$). Within this sample, being a man, having little SP knowledge and a low degree of conviction statistically predict more illusion of control ($p < .01$). The discussion explores how doubt can be beneficial for educated individuals who engage in such erroneous thinking.

Introduction

Dans un environnement où les jeux de hasard et d'argent (JHA) sont disponibles et accessibles (Ladouceur & Shaffer, 2005), il est désormais reconnu que la plupart des individus développera des fausses croyances par rapport au jeu, aussi appelées

pensées erronées ou distorsions cognitives (Delfabbro & Winefeld, 2000; Gaboury & Ladouceur, 1989; Ladouceur, Mayrand, Gaboury, & St-Onge, 1987; Ladouceur & Walker, 1996; Walker, 1992). Bien que nombreuses et variées, les pensées erronées liées au jeu peuvent être regroupées en trois catégories principales, soit l'illusion de contrôle, la mésinterprétation de l'indépendance des tours et les superstitions (Fortune & Goodie, 2012). En revanche, elles sous-tendent une même croyance: la perception que le joueur puisse contrôler le jeu, en modifiant son déroulement ou en pouvant le prédire efficacement (McInnes, Hodgins, & Holub, 2014). Ces pensées se retrouvent en plus grand nombre chez les personnes présentant un jeu d'argent pathologique (Delfabbro & Winefeld, 2000; Gaboury & Ladouceur, 1989; Ladouceur et al., 1987; Ladouceur & Walker, 1996; Walker, 1992).

L'une des pensées erronées largement documentées est l'illusion de contrôle (Langer, 1975) que l'on définit comme la tendance des individus à entretenir de fausses croyances quant à leur capacité à contrôler des événements essentiellement incontrôlables (Cowley, Briley, & Farrell, 2015). Les pensées erronées, particulièrement l'illusion de contrôle, seraient le résultat de divers facteurs inhérents aux JHA comme tels, par exemple la participation du joueur dans le déroulement du jeu (Barrault & Varescon, 2012; Thompson, Armstrong, & Thomas, 1998), mais aussi de facteurs propres à l'individu. Le fait d'être de genre masculin en fait notamment partie; les écrits rapportent effectivement que les hommes sont plus à risque de jeu d'argent pathologique (p. ex.: Johansson, Grant, Kim, Odlaug, & Götestam, 2009), mais aussi d'autres facteurs liés aux habiletés et aux motivations des individus. Par exemple, il a été démontré que l'illusion de contrôle varie en fonction du niveau de familiarité de l'individu envers la situation, de sa perception de compétence en comparaison avec autrui, de son niveau d'implication quant à la tâche, du contenu de ses connaissances antérieures, ainsi qu'en fonction de ses désirs de résultats particuliers et de contrôle (voir Thompson et coll., 1998 pour une revue).

La recherche sur le jeu a permis de montrer que de hauts niveaux d'éducation agissent en tant que facteurs de protection contre le jeu d'argent pathologique (Johansson et coll., 2009). D'emblée, il est légitime de s'attendre à ce que les individus les plus scolarisés soient mieux protégés contre l'illusion de contrôle en raison de leur capacité supérieure de raisonnement (Evans, Kemish, & Turnbull, 2004) et d'une meilleure compréhension des notions impliquées dans les JHA, soulevées par les études en prévention (p. ex.: Ladouceur, Sylvain, Boutin, & Doucet, 2000; Ladouceur, Sylvain, Letarte, Giroux, & Jacques, 1998; Sylvain, Ladouceur, & Boisvert, 1997). Pourtant, même si la dernière étude de prévalence québécoise a relevé une proportion moindre de problèmes de jeu chez les individus ayant reçu un diplôme d'études collégiales ou universitaires (Kairouz & Nadeau, 2014), il n'en demeure pas moins que les personnes scolarisées sont nombreuses à participer aux JHA (Kairouz & Nadeau, 2014; Smith & Giroux, 2018), qu'elles peuvent tout de même développer un problème de jeu (Kairouz & Nadeau, 2014; Smith & Giroux, 2018) et qu'elles ne sont pas immunisées contre des biais cognitifs (Gobet, 2011). Entre autres exemples, Evans et ses collaborateurs (2004) ont mené une étude dans laquelle les étudiants les plus scolarisés de leur échantillon ont persisté dans une

stratégie de jeu perdante plus longtemps que les personnes ayant des niveaux de scolarité inférieurs avant d'ajuster leur façon de faire. Des recherches ont aussi montré que les personnes ayant fait des études supérieures semblent être plus intéressées par des jeux reconnus pour favoriser l'émergence de pensées erronées, comme le poker (Bjerg, 2010; Chevalier, Hamel, Ladouceur, Jacques, & Sévigny, 2004; Kairouz & Nadeau, 2014).

Ces données dissonent lorsque comparées aux principes de prévention et de traitement du jeu d'argent pathologique qui s'appuient sur des interventions visant à améliorer le raisonnement et les connaissances des individus auxquels elles s'adressent. Elles donnent effectivement l'impression que la protection apportée par une éducation supérieure ne soit pas totale et que persistent certains biais cognitifs. Tout en étant évidemment plus rationnels, certaines caractéristiques de ces individus pourraient-elles les rendre tout de même enclins à l'illusion de contrôle ?

Parmi les facteurs dispositionnels pouvant agir sur les croyances liées aux JHA, on compte notamment le fait d'être optimiste. L'optimisme renvoie à la tendance à utiliser une heuristique en faveur d'événements positifs, au détriment d'événements importuns. Il s'agit d'un raccourci mental qui peut aisément sembler justifié puisque les événements positifs ont la plupart du temps une incidence plus élevée au cours de la vie (Segerstrom, Carver, & Scheier, 2017). Par exemple, il est plus probable qu'une personne achète une maison au cours de sa vie qu'elle soit frappée par la foudre. Néanmoins, certaines situations négatives sont hautement fréquentes, comme le fait de perdre ses parents ou de tomber malade, alors que certaines situations très agréables sont excessivement rares, notamment de remporter un gros lot. En raison de l'espérance négative de gains propre aux JHA, il est question d'optimisme irréaliste lorsqu'une personne surestime ses probabilités de gagner de l'argent au jeu. Le concept est alors strictement mathématique: croire qu'un événement est plus probable qu'il ne l'est en réalité (Shepperd, Pogue, & Howell, 2017).

Maintes croyances erronées liées aux JHA peuvent être interprétées par le biais d'optimisme. C'est le cas de certaines superstitions, souvent appelées «biais d'optimisme» en psychologie sociale (Roussiau & Bonardi, 2001), comme celles voulant que les chances de gagner puissent être augmentées en y croyant fermement ou en visualisant des situations gagnantes, en misant sur des numéros chanceux, en associant certains événements heureux à une plus grande chance, en adoptant une attitude positive et des comportements superstitieux ou en ayant recours à des objets destinés à porter chance. L'optimisme dépasse cependant le concept de superstition; l'espoir de se refaire qu'entretiennent nombre de joueurs après une série de pertes constitue un autre exemple d'optimisme irréaliste, plus mathématique qu'associé à la pensée magique. À l'aide de trois devis expérimentaux, Gibson et Sanbonmatsu (2004) ont d'ailleurs démontré que, contrairement aux individus pessimistes, les optimistes maintiennent en effet leurs attentes positives par rapport au jeu, mais persistent aussi dans leurs comportements de jeu après avoir perdu.

Le lieu de contrôle, un concept voisin de l'optimisme reconnu en psychologie de la personnalité (Rotter, 1966), porte sur la perception de relations causales (Martin-Krumm, 2012) et peut expliquer les raisons pour lesquelles certaines personnes persistent à jouer, alors que d'autres abandonnent ou jouent de façon essentiellement récréative. Un individu qui croit contrôler l'essentiel des événements de sa vie est considéré comme ayant un lieu de contrôle interne, alors que celui qui accordera au destin ou à une puissance supérieure la responsabilité de ce qui lui arrive possède un lieu de contrôle externe (Lefcourt, 2000).

Le lieu de contrôle a été lié au jeu dans diverses études (de Stadelhofen, Aufrère, Besson, & Rossier, 2009; Hong & Chiu, 1988; Stark, 2015); l'idée que la chance puisse supplanter l'habileté est particulièrement difficile à accepter chez les personnes dont le lieu de contrôle est interne (Sundali & Croson, 2006), d'autant plus que, d'un point de vue évolutionniste, les êtres humains seraient instinctivement programmés pour prédire leur environnement afin d'y survivre (voir Ladouceur et coll., 2000; Workman & Reader, 2007). Dans une population hongkongaise où l'incapacité à contrôler l'environnement serait perçue comme socialement plus menaçante chez les hommes que chez les femmes, Hong & Chiu (1988) ont constaté que le lien entre les comportements de jeu et le lieu de contrôle est modulé par l'illusion de contrôle chez les hommes, mais qu'il était direct auprès des femmes. L'impact du lieu de contrôle individuel serait également plus marqué dans la pratique de certains types de jeu dans lesquels existe une certaine part de stratégie, comme le poker (Lester, 1980). Finalement, tel que c'est le cas chez les personnes optimistes, celles possédant un lieu de contrôle interne persistent davantage dans des situations sur lesquelles elles considèrent avoir du pouvoir (Lefcourt, 2000).

Au-delà de facteurs dispositionnels influençant l'illusion de contrôle, bon nombre d'universitaires peuvent avoir acquis une certaine connaissance des statistiques et des probabilités (SP) pendant leurs études (Schoemaker, 1979, cité par Williams & Connolly, 2006). Ces connaissances peuvent porter au biais de représentativité (Tversky & Kahneman, 1974), c'est-à-dire utiliser à tort des notions de SP acquises en cours de formation, mais ne s'appliquant pas à des situations de hasard. La régression vers la moyenne en est un exemple. D'un point de vue statistique, si des données paraissent extrêmes de prime abord, elles devraient généralement se rapprocher de la moyenne dans le futur. Au jeu de la roulette par exemple, la bille a une chance sur deux de s'arrêter sur une case rouge ou noire à chacun des tours. Pourtant, si elle s'arrête sur la couleur «rouge» aux quatre premiers tours, bon nombre de personnes prédiront que la bille a plus de chances de s'arrêter sur une case noire la fois d'ensuite afin de rapprocher la moyenne des résultats de la probabilité attendue à chacun des tours. Ce biais cognitif nuit à l'interprétation de l'indépendance des tours, souvent erronée chez les joueurs (Ladouceur, 2004). Si l'illusion de contrôle est influencée par le niveau de familiarité des joueurs avec les situations proposées en jeu (Thompson et coll., 1998), connaître de telles notions mathématiques en soi peut-il mener des universitaires à surestimer leurs habiletés face aux JHA ou à surinvestir un domaine dans lequel ils peuvent se plaisir ou se

percevoir comme étant compétents? Par exemple, Benhsain et Ladouceur (2004) ont comparé les croyances avant, pendant et après avoir participé à une partie de pile ou face et à une session de jeu à la roulette américaine informatisée, de deux groupes de 30 étudiants universitaires différents quant à leurs habiletés en mathématiques. De façon inattendue, la quantité de croyances erronées rapportées par les deux groupes n'était pas significativement différente (Benhsain & Ladouceur, 2004). Quant à Pelletier et Ladouceur (2007), ils ont comparé les réponses à un questionnaire sur les perceptions erronées et les stratégies utilisées pour générer une séquence de pile ou face de 30 étudiants universitaires faisant partie de programmes fortement liés aux mathématiques à ceux de 30 autres étudiants de programmes à tendance sociale ou artistique. L'analyse de leurs résultats a révélé chez les étudiants ayant de meilleures connaissances en mathématiques plus de perceptions erronées, de même que des durées de jeu significativement plus longues.

En plus d'appliquer erronément les principes de SP en mésinterprétant l'indépendance des tours, les participants de ces deux études se sont-ils sentis plus concernés par ce type d'expérimentation ciblant un de leurs champs de compétence, favorisant ainsi l'illusion de contrôle? D'ailleurs, Smith et Giroux (2018) ont fait ressortir des taux de participation aux JHA, des fréquences de jeu, des montants misés, des préférences de types de JHA et des proportions de problèmes de jeu similaires entre deux groupes d'universitaires maîtrisant ou non les SP. Les connaissances mathématiques ne semblent pas donc empêcher les croyances erronées liées au jeu, ni même les comportements de jeu.

Si des connaissances spécifiques des SP ne protègent pas contre les cognitions erronées, les universitaires pourraient être affectés par la façon dont ils perçoivent leurs connaissances. En effet, les travaux de Delfabbro, Lahn et Grabosky (2006), de Griffiths (1994), de Joukhador, Blaszczynski et Maccallum (2004), de Ladouceur (2004) ou de Moodie (2007) ont tous indiqué que les joueurs pathologiques, comparés aux joueurs récréatifs, tendent à être davantage convaincus des croyances erronées qu'ils entretiennent par rapport aux JHA, compliquant la tâche de restructuration cognitive en contexte d'intervention. De plus, tel que le font les personnes optimistes ou ayant un lieu de contrôle interne, les gens présentant un excès de confiance quant à leurs connaissances ont tendance à continuer d'investir de l'argent, des efforts, du temps ou d'autres ressources dans des situations perdantes (Kruger & Dunning, 1999; Plous, 1993). De la même manière en jeu, si une personne se mesure à d'autres contre qui elle a déjà gagné, elle pourrait avoir tendance à surévaluer ses capacités alors qu'elle devrait plutôt diminuer son niveau de confiance, l'adversaire ayant lui aussi acquis de l'expérience. Park et Santos-Pinto (2010) ont eux aussi démontré que les prévisions des joueurs de poker quant à leur performance lors de tournois présentaient un biais de surestimation. Chez des universitaires avec ou sans connaissances des SP, leur niveau de conviction par rapport à leurs pensées concernant les JHA pourrait également être lié au degré de rationalité de ces pensées.

En résumé, bien que les initiatives de prévention et de traitement du jeu d'argent pathologique soient majoritairement axées sur la correction de distorsions cognitives

liées au jeu (Carlbring, Jonsson, Josephson, & Forsberg, 2010; Larimer et coll., 2012; Marceaux & Melville, 2011; Petry et coll., 2006) et que, par le fait même, il soit logique de croire que les personnes instruites entretiennent une plus petite proportion de pensées erronées liées aux JHA, la recherche a échoué à maintes reprises à confirmer cette hypothèse de manière irréfutable (Benhsain, Taillefer, & Ladouceur, 2004; Cloutier, Ladouceur, & Sévigny, 2006; Dowling et al., 2017; Johansson et al., 2009; Steenbergh, Whelan, Meyers, May, & Floyd, 2004). Il en est de même pour les études qui ont comparé leurs comportements de jeu (Bjerg, 2010; Chevalier et coll., 2004; Kairouz & Nadeau, 2014; Ladouceur & Sévigny, 2003; Pelletier & Ladouceur, 2007; Smith & Giroux, 2018; Steenbergh et coll., 2004).

Si des études supérieures améliorent le raisonnement, comment d'autres facteurs sociodémographiques, dispositionnels et cognitifs s'aménagent-il en regard de l'illusion de contrôle des universitaires ? Autrement dit, est-ce que le fait d'être plus optimiste, d'avoir un lieu de contrôle interne, de posséder ou non des connaissances des SP et d'être plus convaincus quant aux croyances liées aux JHA peut être associé à une plus grande illusion de contrôle auprès de cette population distincte?

Objectifs de recherche

Cette étude poursuit deux objectifs: d'abord, elle vise à vérifier la force d'association entre les croyances erronées d'illusion de contrôle liées au jeu, le degré d'optimisme, l'internalité du lieu de contrôle, les connaissances des SP et le degré de conviction quant aux croyances liées au jeu auprès d'une population universitaire. En deuxième lieu, l'étude tente de prédire statistiquement l'illusion de contrôle à l'aide de ces variables dispositionnelles et cognitives.

Méthode

Protocole de recherche

Cet article découle de l'analyse secondaire des données recueillies par Smith et Giroux (2018) pour une étude transversale observationnelle portant sur les comportements de jeu d'étudiants et de diplômés universitaires différant quant à leur niveau de maîtrise des SP.

Participants

Les données recueillies proviennent d'entrevues téléphoniques et de questionnaires auto-rapportés de 143 participants qui avaient été recrutés pour leurs connaissances ou non des mathématiques, sans égard à leurs attitudes ou leurs habitudes face aux JHA (voir Smith & Giroux, 2018, pour connaître les procédures détaillées de cueillette de données). Pour la présente étude, un des participants ayant omis de remplir des questionnaires, les données retenues pour analyses concernent donc 142 universitaires.

Description de l'échantillon. L'échantillon est composé majoritairement de femmes (62,0%) et l'âge moyen est de 28,17 ans ($\bar{ET} = 7,21$ ans). Les participants détiennent pour la majorité au moins un diplôme de baccalauréat, soit l'équivalent de la licence française (bac + 3) (65,0%), et sont célibataires (67,6%). Neuf participants sur dix (90,8%) avaient joué à un JHA au cours de la dernière année, mais parmi ceux-ci ($n = 129$), trois personnes sur quatre jouent occasionnellement, soit tout au plus une fois par mois (quelques fois dans les 12 derniers mois: 57,4%; environ une fois par mois: 20,2%) et seuls trois participants rapportent le faire quotidiennement (2,3%). Les montants misés au jeu dans le dernier mois comportent quelques données extrêmes ($= 92,00$ \$; $\bar{ET} = 474,41$ \$), mais la médiane se situe à 9,00 \$. Les joueurs de l'échantillon ont essentiellement joué à la loterie (régulière ou instantanée) ou ont participé à des tirages pour des collectes de fonds. Finalement, 2,1% de l'échantillon se qualifient comme joueurs à risque et 4,2% comme joueurs pathologiques probables.

Instruments

Les données ont été recueillies par Smith et Giroux (2018) par l'entremise de questionnaires auto-rapportés et d'une entrevue téléphonique. En plus des instruments décrits ci-dessous qui sont utilisés pour la présente étude, les auteurs ont administré l'*Inventaire des jeux de hasard et d'argent* de Ladouceur, Jacques, Chevalier, Sévigny et Hamel (2005) afin de déterminer la fréquence de jeu et les montants misés aux JHA dans la dernière année, de même qu'une version française adaptée pour les entrevues téléphoniques (Ladouceur, 1991) du *South Oaks Gambling Screen* (Lesieur & Blume, 1987) pour dépister d'éventuels problèmes de jeu.

Connaissances en SP. La section dédiée aux SP du *Test d'autoévaluation des mathématiques* de Noël (2002) a été utilisée. Ce test auto-administré a été conçu par l'université à distance de l'Université du Québec (TÉLUQ) à l'intention des étudiants souhaitant être admis aux programmes liés aux mathématiques (Noël, 2002) et comporte 30 questions à choix multiples sur le langage mathématique, les éléments d'algèbre, les équations, les fonctions et les SP. Les dix questions référant aux SP ont été utilisées par Smith et Giroux (2018), et aux fins de cette étude, les connaissances des SP sont mesurées à partir du nombre de bonnes réponses à ces dix questions.

Illusion de contrôle, mésinterprétation de l'indépendance des tours et superstitions. L'instrument de mesure utilisé a été l'*Inventaire de croyances liées au jeu (ICROL-J)* de Ladouceur, Jacques, Giroux et Sévigny (2004), révisé par Cloutier et ses collaborateurs en 2006. Cet instrument a été développé au Centre québécois d'excellence pour la prévention et le traitement du jeu (CQEPTJ) de l'Université Laval et a démontré un coefficient de fidélité test-retest acceptable ($r = 0,68$; Cloutier et coll., 2006). Il est formé de 40 énoncés pour lesquels le répondant exprime son niveau d'accord en se référant à une échelle de type Likert allant de 0 (totalement en désaccord) à 10 (totalement en accord). Les éléments du questionnaire concernent trois types de croyances, soient l'illusion de contrôle (14 éléments,

scores variant de 0 à 140), l'indépendance des tours (12 éléments, scores variant de 0 à 120), puis les superstitions (14 éléments, scores variant de 0 à 140). Un score élevé à ces sous-échelles indique une plus grande quantité de perceptions erronées.

Degré de conviction quant aux croyances liées au jeu. Pour chacun des énoncés de l'*ICROL-J* (Cloutier et coll., 2006), Smith et Giroux (2018) avaient formulé à l'égard des participants une deuxième consigne afin qu'ils indiquent également jusqu'à quel point ils étaient convaincus de la justesse de leur réponse à chaque élément, en lui accordant un score entre 0 (pas du tout convaincu) et 10 (totalement convaincu). Par exemple, un individu pouvait croire qu'un énoncé était vrai et l'indiquer en accordant 10 points à celui-ci dans l'*ICROL-J*, mais exprimer des doutes quant à la justesse de sa réponse et accorder un score de 3 points sur l'échelle de conviction. À des fins d'uniformité, les scores sont répartis sur les trois facteurs représentant ainsi des degrés de conviction par rapport à l'illusion de contrôle, à l'indépendance des tours et aux superstitions. Un score élevé sur cette échelle ajoutée dont les scores varient de 0 à 120 ou 140 points selon le nombre d'éléments révèle une forte conviction ou confiance en ses réponses aux éléments spécifiques à ce type de pensées erronées de l'*ICROL-J*.

Degré d'optimisme. Le *Life Orientation Test-Revised* (LOT-R; Scheier, Carver, & Bridges, 1994), traduit librement en français, mesure le degré d'optimisme des participants. Il s'agit d'un instrument largement utilisé pour obtenir cette donnée (Pan et coll., 2017) qui consiste en un questionnaire de 10 éléments pour lesquels les participants indiquent leur degré d'accord sur une échelle de type Likert de cinq points allant de 1 (totalement en désaccord) à 5 (totalement en accord). Le score total peut s'étendre de 0 à 24 points et se calcule à partir de la somme des scores aux éléments 1, 3, 4, 7, 9 et 10, les quatre autres éléments étant des éléments de remplissage minimisant les risques d'erreurs liées à la mesure (Scheier et coll., 1994). Un score élevé représente un degré d'optimisme élevé. L'outil est connu pour avoir des propriétés psychométriques acceptables auprès de différentes populations (Bush, Mandel, & Giardina, 1998; Goodman, Chesney, & Tipton, 1995; Herzberg, Glaesmer, & Jürgen, 2006; Pan et coll., 2017; Scheier et coll., 1994), bien qu'une analyse factorielle robuste conduite par Herzberg et son équipe (2006) ait appuyé la principale critique formulée envers l'instrument voulant que l'optimisme et le pessimisme soient deux facteurs distincts et non pas deux opposés d'un continuum unidimensionnel. Afin d'éviter une mauvaise interprétation des résultats, bien que le calcul des scores demeurera inchangé, il est question ici de degrés fort ou faible d'optimisme seulement, sans faire référence à des traits pessimistes.

Internalité du lieu de contrôle. Le *Locus of control scale* (Rotter, 1966) consiste en 29 paires d'énoncés pour lesquelles les participants doivent choisir celui qui correspond le mieux à leur façon de penser, l'un référant à un lieu de contrôle interne, l'autre à un lieu de contrôle externe. Quatorze des 29 éléments ont été traduits librement en français et les autres proviennent d'une traduction validée par Alaphilippe et Chasseigne (1993). Le test contient six éléments de remplissage (1, 8, 14, 19, 24 et 27) et 23 éléments pour lesquels on accorde un point chaque fois

que l'énoncé référant à un lieu de contrôle interne est choisi. Les scores varient donc de 0 à 23 points et une personne obtenant un score plus haut sera considérée comme ayant un lieu de contrôle plus interne (Rotter, 1966). Dans sa forme originale, l'instrument connaît une cohérence interne ainsi qu'une fidélité test-retest à 1 mois acceptables (Rotter, 1966; Wang & Iv, 2017).

Information sociodémographique. Un questionnaire qui avait été construit pour l'étude recueille l'information sociodémographique à l'aide de neuf questions ouvertes ou à choix multiples dont l'âge, le sexe, l'état civil et le niveau de scolarité complété, retenus pour cette étude.

Procédure

À partir de la banque de données recueillies par Smith et Giroux (2018), une nouvelle banque de données ne contenant que les variables nécessaires à l'étude a été créée. Un certificat de conformité éthique du comité d'éthique à la recherche de l'Université Laval (CÉRUL: 2008-267 R-1) avait été obtenu par Smith et Giroux dont l'article décrit les stratégies de recrutement et de cueillette de données.

Analyses statistiques. La version 25,0 du logiciel IBM SPSS Statistics a servi aux analyses statistiques. Des analyses descriptives ont été menées sur les données sociodémographiques et les variables de comportements de jeu (participation, fréquence de jeu, montants misés, problèmes de jeu) afin d'obtenir un portrait de l'échantillon.

Dans le but d'examiner les relations entre les variables de croyances liées au jeu, soit «illusion de contrôle», «mésinterprétation de l'indépendance des tours» et «superstition» et les facteurs individuels des participants, les «connaissances des SP», le «degré d'optimisme», l'«internalité du lieu de contrôle» et le «degré de conviction», une matrice de corrélation a été créée. À cet effet, puisqu'aucune de ces variables ne respecte la loi normale (Kolmogorov-Smirnov et Shapiro-Wilk: $p_s < 0,05$), le coefficient de corrélation de Spearman est privilégié et est interprété selon les balises de Cohen (1988). Ainsi, une corrélation de 0,10 indique un effet de petite taille, autour de 0,30, un effet de taille moyenne et une forte corrélation représentent une corrélation de 0,50 ou plus. Finalement, des analyses de régression multiple sont réalisées pour identifier de potentiels prédicteurs de l'illusion de contrôle. En raison des effets rapportés sur les conduites de jeu de certains facteurs sociodémographiques (Dowling et coll., 2017; Johansson et coll., 2009), des variables sociodémographiques sont également incluses dans les modèles statistiques testés, soient l'âge, le sexe, le niveau de scolarité complété, de même que l'état civil des participants. Les distributions des scores de pensées erronées étant soumises à une forte asymétrie positive, les analyses de régression portent sur le logarithme des données brutes afin de respecter les postulats statistiques d'homogénéité de la variance des résidus. Lorsqu'un modèle global est statistiquement significatif, mais que certaines variables qui le composent ne le sont pas, une sélection descendante des variables est effectuée afin d'augmenter la puissance du modèle.

Résultats

Force d'association entre l'illusion de contrôle et les variables individuelles

La matrice de corrélation (voir Tableau 1) suggère que certaines variables soient liées entre elles. D'abord, l'illusion de contrôle rapportée à l'ICROL-J est fortement associée aux autres types de pensées erronées de cet instrument (mésinterprétation de l'indépendance des tours et superstitions). Il en va de même entre le degré de conviction envers les éléments d'illusion de contrôle et celui des éléments concernant les autres types de pensées erronées. Des corrélations négatives significatives de force modérées à fortes sont trouvées entre les scores des trois types de pensées erronées et les scores des trois échelles de degré de conviction. Ensuite, le score de connaissance des SP est négativement associé au score de superstition, puis positivement au degré d'optimisme, de façon modérée. Finalement, il est possible de remarquer une faible corrélation positive significative entre le degré d'optimisme et le degré d'internalité du lieu de contrôle. Toutes les autres associations ne sont pas significatives.

Prédicteurs de l'illusion de contrôle¹

Le modèle retenu à la suite d'une sélection descendante des variables est significatif ($F(3, 136) = 10,575, p < 0,01$), il explique 19,4 % de la variance des scores d'illusion de contrôle, puis se compose de trois variables qui sont statistiquement significatives soit, dans l'ordre: un degré de conviction envers l'illusion de contrôle plus faible ($F(1, 136) = 26,800, p < 0,01, \beta = -0,023; IC\ 95\ \% = [-0,032 \text{ à } -0,014]$), un score moins élevé de connaissances des SP ($F(1, 136) = 5,368, p = 0,022, \beta = -0,121; IC\ 95\ \% = [-0,224 \text{ à } -0,018]$), puis le genre masculin ($F(1, 136) = 4,197, p = 0,042, \beta = 0,484; IC\ 95\ \% = [0,017 \text{ à } 0,951]$).

Discussion

Cette étude visait à quantifier les associations entre les différents types de pensées erronées et des variables faisant état d'illusion de contrôle. Elle visait également à prédire statistiquement l'illusion de contrôle à partir de ces variables. Pour ce faire, une banque contenant les données recueillies par Smith et Giroux (2018) de 142 diplômés ou étudiants universitaires a été étudiée.

Cohérence des mesures

La relation étroite entre les différentes sous-échelles de l'ICROL-J (Cloutier et coll., 2006) suggère que la mesure utilisée ait été homogène. De plus, que cette cohérence ait été aussi retrouvée parmi les sous-échelles de la mesure de degré de conviction ajoutée par Smith et Giroux (2018) permet de prétendre à une certaine fidélité des

¹Ces analyses ont été reproduites en excluant les données des participants chez qui un jeu pathologique probable ($n = 3$) ou un jeu à risque ($n = 6$) avaient été dépisté, et elles donnent les mêmes résultats.

Tableau 1
Matrice de corrélations bivariées de Spearman des variables à l'étude, moyennes (*M*) et écarts-types (*ÉT*)

Variables	PE-ic	PE-mit	PE-su	SP	OPT	LDC	DC-ic	DC-mit	DC-su
PE-ic									
PE-mit	0,696*								
PE-su	0,505*	0,500*							
SP	-0,132	-0,067	-0,269*						
OPT	-0,087	-0,030	-0,098	0,216*					
LDC	-0,105	-0,029	-0,134	0,071	0,181**				
DC-ic	-0,590*	-0,530*	-0,279*	-0,070	0,070	0,154			
DC-mit	-0,513*	-0,563*	-0,286*	-0,045	0,053	0,112	0,854*		
DC-su	-0,461*	-0,483*	-0,372*	0,056	0,089	0,087	0,712*	0,717*	
M	23,19	15,46	11,26	4,66	13,16	14,01	123,35	106,75	129,29
ÉT	23,88	15,49	14,60	2,24	4,26	4,36	26,11	22,66	25,26
N	140	142	139	142	140	142	137	138	139

Notes. PE-ic = Score moyen (sur 140) d'illusion de contrôle. PE-mit = Score moyen (sur 120) de mésinterprétation de l'indépendance des tours. PE-su = Score moyen (sur 140) de superstitions. SP = Score moyen (sur 10) au test de SP. OPT = Score moyen (sur 24) au degré d'optimisme. LDC = Score moyen (sur 23) au lieu de contrôle. DC-IC = Score moyen (sur 140) au degré de conviction quant à l'illusion de contrôle. DC-mit = Score moyen (sur 120) au degré de conviction quant à la mésinterprétation de l'indépendance des tours. DC-su = Score moyen (sur 140) au degré de conviction quant aux superstitions. * $p < 0,01$. ** $p < 0,05$.

données recueillies en procédant de cette façon. De même, l'association entre optimisme et lieu de contrôle interne rapportée dans la littérature (Peterson & Stunkard, 1992) se maintient dans un échantillon universitaire.

Connaissance mathématique: moins de superstitions, mais plus d'optimisme

La matrice de corrélation a illustré qu'une meilleure connaissance des SP chez les participants était associée à moins de superstitions. L'hémisphère gauche du cerveau des personnes les plus fortes en mathématiques étant davantage sollicité (Kahneman, 2011), leur raisonnement pourrait tendre à être plus logique, analytique et séquentiel, ce qui laisserait moins de place aux superstitions, bien qu'elles n'en soient pas à l'abri. De plus, ce sont essentiellement des croyances de type probabilistes qui sont à la base des superstitions: par exemple «il ne faut pas faire de paris un vendredi 13, car je risque de perdre», «mes chances de gagner de l'argent augmentent si je transporte un porte-bonheur», etc. Les études ayant observé les pensées erronées d'universitaires avec et sans connaissances des SP ont surtout évalué la mésinterprétation de l'indépendance des tours ou alors n'ont pas distingué les types de pensées erronées (Benhsain et coll., 2004; Cloutier et coll., 2006; Pelletier & Ladouceur, 2007; Steenbergh et coll., 2004). Toutefois, l'instrument utilisé pour mesurer les superstitions portait sur des exemples tirés des JHA; il n'est pas possible à ce moment-ci d'affirmer qu'une bonne connaissance des SP puisse être associée à de moindres superstitions en général, tels les risques associés à la rencontre d'un chat noir, au fait de passer sous une échelle, de briser un miroir, etc. Cela explique peut-être aussi qu'aucune relation significative n'ait été relevée entre le degré d'optimisme et les superstitions alors que parallèlement, l'analyse de la matrice de corrélation a aussi relevé un degré plus important d'optimisme chez les participants ayant mieux performé au questionnaire sur les SP. Dans un chapitre destiné à la résilience mathématique, Lee et Johnston-Wilder (2017) ont d'ailleurs affirmé que la résilience nécessaire à l'apprentissage des mathématiques était fortement liée à l'optimisme, lui-même une forme de résilience. Les résultats de la présente étude constituent un premier pas dans la direction de ce que ces auteurs avancent.

Hommes et illusion de contrôle: l'effet se maintient chez les universitaires

L'étude révèle que le fait d'être de sexe masculin figure parmi les prédicteurs significatifs de l'illusion de contrôle chez les participants universitaires. Cet effet du genre est d'ailleurs bien documenté dans la recherche en jeu (Barrault & Varescon, 2012). Il semble que le haut niveau d'éducation de l'échantillon et l'absence de problèmes de jeu ne suffisent pas à masquer cet effet. Ce résultat renforce la nécessité d'intervenir sur ce type de croyances auprès de clientèles masculines, peu importe leur niveau d'éducation ou leur statut de joueur.

Le bénéfice du doute?

Les prédicteurs les plus importants de l'illusion de contrôle auprès de l'échantillon universitaire de l'étude sont une connaissance moindre des SP et, infirmant

l'hypothèse formulée à priori, un faible degré de conviction envers les croyances liées à cette illusion de contrôle. Cela revient à dire que les connaissances mathématiques des participants semblent contribuer à une meilleure compréhension des JHA, en diminuant l'illusion de contrôle, bien que leurs croyances ne soient pas toutes adéquates. Si «le doute est le début de la sagesse» (Aristote, IV^e siècle av. J.-C., cité par Dorion, 2011) toutefois, il semble alors avoir été bénéfique pour les participants de cette étude ayant rapporté plus d'illusion de contrôle en les ayant amenés à faire preuve de plus de précautions que les joueurs réguliers et problématiques des études précédentes (Delfabbro et coll., 2006; Griffiths, 1994; Joukhador et coll., 2004; Ladouceur, 2004; Moodie, 2007).

Ces résultats surprenants soulèvent que connaissances et métacognition ne vont pas nécessairement de pair, comme ce fut le cas dans l'étude de Miller & Geraci (2011) qui demandaient à des étudiants universitaires en situation d'examen de prédire leur performance sur ce dernier. Ceux ayant obtenu les moins bons résultats ont eu tendance à surestimer davantage leur score que ceux ayant mieux performé. Toutefois, les chercheurs leur ont aussi demandé de préciser leur niveau de confiance quant à leur prédiction de score et à ce chapitre, ce sont les étudiants ayant moins bien réussi qui ont affirmé avoir le moins confiance en leur estimation.

Trois hypothèses sont plausibles pour expliquer que ce soit l'association inverse à celui relevé chez les joueurs problématiques qui ait été découvert auprès d'universitaires. D'abord, des études universitaires forment les personnes pour qu'elles aient recours à davantage de sources fiables et d'informations scientifiquement démontrées pour prendre des décisions ou formuler des arguments (Evans et coll., 2004). Il est ainsi possible que les participants aient choisi d'user de prudence en l'absence d'informations supplémentaires en raison de leur parcours académique. De plus, la présence de doute chez ceux dont les croyances sont plus erronées pourrait-elle révéler des connaissances moins bien maîtrisées? En effet, il se peut que les participants possèdent certes davantage de connaissances théoriques, tel que démontré par leur performance sur les questions mathématiques ou simplement par leur niveau d'éducation, mais qu'ils peinent toutefois à appliquer leurs connaissances concrètement en contexte de JHA. Ce phénomène a d'ailleurs préalablement été discuté par Evans et ses collaborateurs (2004) qui ont déterminé que l'abstraction des situations d'apprentissage puisse nuire au transfert des connaissances en situations concrètes. Finalement, chez des personnes hautement instruites, la formulation d'énoncés leur demandant d'évaluer leur degré de conviction par rapport à la justesse de leurs croyances aurait-elle pu agir comme une amorce de restructuration cognitive en soi, les invitant involontairement à se remettre en question?

Forces et limites

Si l'utilisation de données de participants ne jouant que très peu limite la généralisation des résultats aux joueurs réguliers ou problématiques et fait en sorte que ces résultats doivent être interprétés avec prudence, elle permet cependant la mise en lumière de caractéristiques propres à ces populations moins à risque, ouvrant la

porte à l'étude des facteurs de protection du jeu d'argent pathologique (Lalande et coll., 2013). De plus, cette recherche a su étudier la cognition en jeu en s'intéressant à des variables cognitives autres que les pensées erronées uniquement, tel qu'il est habituel de le faire dans les études dans le domaine, en plus d'avoir élargi son champ d'intérêt à des facteurs dispositionnels moins éprouvés. Toutefois, il importe de rappeler que la validité des mesures de ces facteurs dispositionnels puisse avoir été compromise par l'utilisation de versions traduites non validées de questionnaires. Un échantillon de plus grande taille aurait par ailleurs pu permettre le test d'un modèle théorique composé de variables médiatrices ou de modération. Finalement, pour la présente étude, il a été question d'utiliser évaluation académique des connaissances en SP, plutôt que d'avoir inféré ces connaissances à partir du domaine d'études des participants ou alors en les ayant évaluées à l'aide de problèmes uniquement tirés d'exemples en jeu, minimisant ainsi un possible biais d'interprétation en raison d'une validité de construit chancelante.

Conclusion

Dans un échantillon universitaire jouant peu et éprouvant peu de problèmes de jeu, cette étude a permis d'explorer les liens entre des facteurs sociodémographiques, dispositionnels et cognitifs pouvant conduire à entretenir de l'illusion de contrôle par rapport aux JHA et les pensées erronées liées aux JHA en tant que tels, dont l'illusion de contrôle. Les analyses ont relevé que des connaissances en SP sont accompagnées de moins de superstitions et de degrés plus élevés d'optimisme. De plus, l'illusion de contrôle des participants a pu être prédite par peu de connaissances des SP, un faible degré de conviction envers les croyances liées aux JHA, en plus de souligner à nouveau qu'elle soit plus importante auprès des hommes.

Quoi qu'il en soit, il n'en demeure pas moins que la majeure partie de la variance des scores d'illusion de contrôle n'est pas expliquée par les variables examinées aux fins de cette étude. Il semble alors que d'autres facteurs entrent en jeu dans l'explication du développement ou du maintien de pensées erronées liées aux JHA. Entre autres, auprès d'un échantillon d'hommes adultes jouant régulièrement au poker, Mathieu, Barrault, Brunault et Varescon (2018) sont parvenus à prédire 34,8% des cognitions erronées des participants en évaluant leurs motivations à jouer. Aussi, en étudiant les habiletés de raisonnement de joueurs problématiques, Toplak, Liu, Macpherson, Toneatto et Stanovich (2007) ont accordé au niveau d'impulsivité et aux scores d'alexithymie de leurs participants près de 20% de la variance de leurs scores de jeu pathologique du DSM-IV-TR (APA, 2000). Il pourrait être intéressant d'étudier l'apport de divers facteurs, notamment l'impulsivité, l'alexithymie et les motivations au jeu, dans le portrait des cognitions erronées liées aux JHA d'universitaires jouant globalement peu.

Des études longitudinales permettraient de répondre à des questions comme celle-ci: «est-ce le fait d'être optimiste et peu enclin à la superstition qui pousse à suivre des études dans des domaines liés aux SP ou est-ce plutôt que de telles études aient le pouvoir d'augmenter l'optimisme et de diminuer la pensée superstitieuse

et l'illusion de contrôle en cours de parcours?» Aussi, des études expérimentales, de démantèlement notamment, pourraient offrir davantage d'information sur l'impact du sexe masculin, de traits de personnalité optimistes, de superstitions, de connaissances des SP et du degré de conviction sur des processus cognitifs particuliers, connus pour influencer le cours du jeu, tels la prise de décision en contexte de hasard, de risque et d'incertitudes, la flexibilité mentale et ainsi de suite.

Il serait certainement pertinent de mener une telle recherche auprès de joueurs réguliers ou problématiques afin de vérifier si les associations décrites dans cet article se maintiennent dans de telles populations ou si au contraire, un tel approfondissement des connaissances à ce sujet pourrait faciliter l'identification d'ingrédients actifs acquis par la poursuite d'études supérieures qui en font un facteur de protection contre les problèmes de jeu et ultimement d'ajuster le contenu et le format des programmes offerts à la population. Par exemple, il pourrait être judicieux de favoriser la correction des croyances erronées en instillant le doute en cours de séance de jeu, par exemple en posant des questions aux joueurs, tel que dans la mesure utilisée pour cette étude, plutôt qu'en leur donnant simplement de l'information.

Pour conclure, les outils et manuels de prévention et de traitement destinés à l'intervention abordent l'illusion de contrôle au premier plan lorsqu'il est question de JHA. À ce jour cependant, les initiatives d'intervention ne tiennent pas compte de facteurs sociodémographiques, dispositionnels et cognitifs qui puissent intervenir sur l'illusion de contrôle liée aux JHA, tel que soulevé par cette étude.

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Manuscrit soumis le 28 novembre 2018 et accepté le 3 mai 2019. Cet article a fait l'objet d'une évaluation par les pairs. Toutes les adresses URL étaient actives au moment de la soumission.

Submitted November 28, 2018; accepted May 3, 2019. This article was peer reviewed. All URLs were available at the time of submission.

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Conflit d'intérêts/Competing interests: Isabelle Giroux est directrice du Centre québécois d'excellence pour la prévention et le traitement du jeu / Isabelle Giroux is the director of the Quebec Center of Excellence for the Prevention and Treatment of Gambling

Approbation éthique/ Ethics approval: Cette étude utilise des données secondaires anonymisées / This study used secondary de-identified data

Remerciements/Acknowledgements: Cette recherche a été réalisée grâce au financement du Fond sur la prévention et le traitement du jeu de la Fondation de l'Université Laval. Lors de la réalisation de la recherche, I.S. était récipiendaire d'une bourse doctorale du Fonds de recherche du Québec – Société et culture (FRQ-SC) et du ministère de la Santé et des Services sociaux (Québec, Canada). Nous remercions particulièrement Christian Jacques et Axelle Moreau pour leur apport critique tout au long du déroulement de la recherche. Les auteurs souhaitent également remercier les relecteurs anonymes pour leurs commentaires très utiles. / This research was conducted with funding from the Fonds sur la prévention et le traitement du jeu of the Fondation de l'Université Laval. In the process of conducting this research I.S. received a doctoral scholarship from the Fonds de recherche du Québec – Société et Culture (FRQ-SC) and the Ministère de la Santé et des Services sociaux (Québec, Canada). We wish to thank Christian Jacques and Axelle Moreau for their critical contribution throughout the course of the research. The authors also wish to thank the anonymous reviewers for their very helpful comments.

Promoting Cross-Sector Collaboration and Input into Care Planning Via an Integrated Problem Gambling and Mental Health Service

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Abstract

Although problem gambling and mental illnesses are highly comorbid, there are few examples of integrated problem gambling and mental illness services. This has meant that it is unclear whether such services are needed, why they may be used, and how they operate to support clients who are affected by the comorbidity and the clinicians who are providing care. This study reports on data collected via telephone questionnaire-assisted interviews of 20 clients and 19 referrers who had accessed one such Australian integrated problem gambling and mental illness program between July 2014 and June 2016. Data revealed that clients were often referred in the context of psychiatric or psychosocial crisis, or when clinicians encountered clients who were not making progress and wanted a second opinion about diagnosis and treatment. Improved management of illness symptoms or gambling behaviour was a commonly reported benefit, and a number of clients reported gaining a feeling of reassurance and hope following assessment as a result of a deeper understanding of their issues and available treatment options. Access to dual-specialist expertise on problem gambling and mental illness may therefore enhance treatment planning, management during crises, and cross-sector collaboration to improve access to care and its impact on people who are experiencing comorbidity.

Keywords: gambling, mental health, comorbidity, integrated care, user feedback

Résumé

Bien que le jeu problématique et les maladies mentales aient un taux élevé de comorbidité, il existe peu d'exemples de services intégrés pour le jeu et la maladie

mentale. En d'autres termes, il n'est pas clair si de tels services sont nécessaires, à quelles fins ils peuvent être utilisés et la manière dont ils fonctionnent pour aider les clients touchés par cette comorbidité et les cliniciens qui leur fournissent des soins. La présente étude a rendu compte des données recueillies lors d'entretiens assistés par un questionnaire téléphonique menés auprès de 20 clients et de 19 répondants qui avaient eu accès à l'un des programmes australiens intégrés de lutte contre le jeu problématique et la maladie mentale entre juillet 2014 et juin 2016. Les données révèlent que les clients étaient souvent recommandés à d'autres services dans le contexte d'une crise psychiatrique ou psychosociale ou lorsque les cliniciens rencontraient des clients qui n'avaient pas fait de progrès et qui souhaitaient obtenir un deuxième avis sur le diagnostic et le traitement. Une gestion améliorée des symptômes de la maladie ou du comportement de jeu constituait des avantages souvent rapportés, et un certain nombre de clients ont déclaré avoir ressenti du réconfort et de l'espoir après une évaluation, en raison d'une meilleure compréhension de leurs problèmes et des options de traitement disponibles. L'accès à une double expertise en matière de jeu problématique et de maladie mentale peut donc améliorer la planification du traitement, la gestion de crise et la collaboration intersectorielle afin d'améliorer l'accès aux soins et l'incidence des soins pour les personnes souffrant de cette comorbidité.

Introduction

In a recent article, Martyres and Townshend (2016) argued for the importance of addressing comorbidity in problem gamblers. Problem gambling and mental illnesses are commonly comorbid. In outpatients seeking treatment for mental illness, approximately 6% experience problem gambling (Haydock, Cowlishaw, Harvey, & Castle, 2015; Manning et al., 2017), far higher than the 0.8% of adult Australians in the general population who experience it (Hare, 2015). Personality disorder (e.g., 14% with antisocial personality disorder) and mental illness (e.g., 58% with substance use and 38% with mood disorders) are also highly prevalent in treatment-seeking problem gamblers (Dowling et al., 2014, 2015).

Mental illness can be a contributor to and a consequence of problem gambling (Shaffer & Korn, 2002). Social consequences of problem gambling can be catastrophic and include loss of employment, relationship breakdowns and isolation, and severe financial debt (Browne et al., 2016). These consequences make a person vulnerable to psychological distress or exacerbate symptoms of an existing illness (Yakovenko, Clark, Hodgins, & Goghari, 2016). Mental illness can also increase gambling behaviour and related harm. Gambling can be used to escape social isolation and negative affective states or to improve mood in people with affective or psychotic disorders (Quilty, Watson, Toneatto, & Bagby, 2017; Yakovenko et al., 2016). Delusional beliefs about control of gambling outcomes can increase gambling urge and frequency. Riskier gambling-related decision making and reduced sensitivity to negative feedback

can also accompany schizophrenia and borderline personality disorder (Pedersen, Goder, Tomczyk, & Ohrmann, 2017; Schuermann, Kathmann, Stiglmayr, Renneberg, & Endrass, 2011), increasing the potential for harm when they engage in gambling.

The response of mental health services to problem gambling, or of problem gambling services to mental illness, is affected by multiple factors. A study in which mental health clinicians in public, private, or nongovernmental services were interviewed reported that routine screening for problem gambling rarely occurred (Rodda, Manning, Dowling, Lee, & Lubman, 2018). This was thought to be due to problem gambling often being seen as a low priority and to limited expertise or confidence among mental health clinicians in identifying or responding to problem gambling. In addition, at the client level, help seeking in people experiencing problem gambling is often low, affected by a range of factors, including shame, stigma, and pessimism about the potential for improvement or not viewing the comorbid issue as a priority, reducing the likelihood of mental health clinicians identifying problem gambling (Harvey, 2013; Rodda et al., 2018). Experience with mental illness is variable in gambling clinicians, in particular affecting their capacity to treat people at risk for suicidality or experiencing psychosis. This has led to recommendations for stepped-care approaches that enable gambling clinicians to work more closely with specialist mental health services for clients with severe mental illness (Dowling et al., 2015). Psychiatric comorbidity may also negatively affect problem gambling treatment compliance and success through increased dropout rates from gambling treatment or increased gambling participation during treatment (Melville, Casey, & Kavanagh, 2007; Smith et al., 2011). At a systems level, the separation of funding and management of gambling services from health and human services may perpetuate differing service attitudes, and different processes for referral and eligibility between services may affect access (Davidenko, Goodyear, Weir, & Sundbery, 2014). The result can be that people with comorbidity may not simultaneously receive care that addresses all of their needs.

Different approaches are available for achieving the recommended concurrent treatment of problem gambling and mental illness (Dowling et al., 2015; Martyres & Townshend, 2016). More research has examined approaches to addressing comorbid psychiatric illness and substance use, or to addressing comorbid psychiatric and physical illness, than to addressing comorbid problem gambling and mental illness; however, findings are relevant to the latter. Three broad approaches have been identified (Ivbijaro, Enum, Ali Khan, Sai-Kei, & Gabzdyl, 2014; Mangrum, Spence, & Lopez, 2006). In many settings, each issue is treated in parallel by different clinicians or services. Integrated treatment programs, however, involve one clinician or team with dual-specialist expertise, which enables them to concurrently treat both issues. Integrated care can also be achieved through cross-service collaboration to deliver joint input to assessment, care planning, and treatment enabled through such practices as co-location, a common health record, and shared values related to the importance of concurrently addressing comorbidity (Ivbijaro et al., 2014). Integrated care (via dual-specialist clinicians or effective cross-service collaboration) can improve outcomes. For example, a study that randomly assigned people with substance use and mental health disorders to integrated or parallel treatment found that integrated treatment produced greater reductions in

psychiatric hospitalization and arrest (Mangrum et al., 2006). Integrated care may also improve outcomes for clients with problem gambling and mental illness (Davidenko et al., 2014). Clients can access all needed care in one location with fewer appointments, as care planning considers and treats the causes and consequences of both issues, and clinicians are knowledgeable in or able to access consultation to address behavioural consequences (e.g., self-harm, aggression, financial loss) of both issues. Cross-service collaboration can also benefit staff through decreased isolation, improved transfer of information, and more holistic practice (Martyres & Townshend, 2016).

Few previous examples of dual-specialist problem gambling and mental illness services have been identified (Lubman et al., 2017). Although services such as the South Australian Gambling Therapy Service advocate the potential benefit of concurrently treating depression (Smith et al., 2011), the primary focus is specialist problem gambling treatment. Martyres and Townshend (2016) described a partnership program implemented within problem gambling treatment services. This program funded problem gambling services to establish collaborative partnerships (via outreach, secondary consultation, co-location, and co-counselling sessions) with mental health, addiction, and family services. Partnership development workers who delivered the program reported it to be successful in establishing positive relationships with other agencies, up-skilling staff, and increasing the uptake of gambling screening within partner services.

Commencing in 2010, a state-wide Problem Gambling and Mental Health Program (PGMHP) was established to provide a dual-specialist problem gambling and mental illness service staffed by a part-time psychiatrist and two part-time allied health clinicians or nurses. Referred clients were assessed and, if required, given a brief intervention (mostly over less than 1 month). Types of brief intervention included gambling and/or mental illness psychoeducation, suggestions to change medication with progress reviewed, help in accessing ongoing problem gambling counselling or specialist mental health care or establishing venue self-exclusion; family intervention; and motivational interviewing to enhance readiness for treatment. Clinicians in specialist problem gambling or mental health services across the state were provided with education and consultation to build capacity and enhance cross-sector collaboration. With few such dual-specialist problem gambling and mental illness services, we conducted the present study to gather experiential feedback from clients and referrers about their PGMHP contact. This study had three aims: (a) to explore why people were referred, (b) to measure how they rated different aspects of the contact, and (c) to explore perceived benefits of referral or aspects of the PGMHP that could be improved.

Method

Design and Participants

This study conducted a telephone questionnaire-assisted interview of clients who underwent an assessment by a clinician from the PGMHP between July 2014 and

June 2016, as well as their referrers. Referrers could be mental health or gambling clinicians, primary care clinicians, or a friend or family member. Fifty-one clients had been assessed by the service between July 2014 and June 2016; however, 22 were unable to be contacted via their preferred mode of communication. Of the 29 who were contacted and invited to participate, 20 completed an interview (39% of all eligible clients) and nine declined. Thirty-eight people had referred a client for a PGMHP assessment during the study period. Eighteen were unable to be contacted, as they had left their former workplace, were on extended leave, or did not respond to their invitation. Of the 20 who were contacted, 19 completed an interview (50% of all eligible referrers) and one declined to participate. The reason that invited clients or referrers declined participation was not recorded.

Procedure

This study was approved by a hospital ethics committee (#364/16). Eligible clients and referrers were contacted via telephone by a clinician who had not been involved in assessment and were invited to take part in the feedback project. If they chose to participate, they were provided with a Participant Information Statement and a time was scheduled to complete a telephone interview. In completing the interview, the interviewer read the questions to each participant and wrote their responses onto a questionnaire verbatim. Participating clients were mailed a \$10 reimbursement voucher following completion of the interview.

Measure

Client and referrer questionnaires were developed by the research team. Both measures were piloted with potential participants to ensure face validity and suitability of items. The referrer questionnaire contained 13 forced-choice items and four open-ended items. Forced-choice items asked referrer participants about the following: their role; where they live or work; how they had contact with the PGMHP; the number of clients referred during the 2-year study period; how feedback was received; the overall rating of PGMHP helpfulness, assessed with an 11-point scale from 0 (*not at all*) to 10 (*extremely*); and seven statements about their contact experience with PGMHP, rated with a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*; see Table 1). Open-ended questions were as follows: “For what reasons have you referred someone for an assessment by a PGMHP clinician?”, “How would you describe our referral and assessment process?”, “In what way or ways has referral of clients for an assessment been helpful for you as a clinician or for your clients?”, and “How could the PGMHP improve how it supports you as a referrer and your clients?”.

The client questionnaire contained 13 forced-choice and three open-ended items. Client participants were additionally asked what they did in relation to post-assessment recommendations, but these data will be reported on in a future paper. Forced-choice items asked client participants about the following: age, gender, and postcode of where they lived (which was coded as being in a metropolitan or regional location); who had referred them for assessment; how they had received

feedback following the assessment; overall rating of PGMHP helpfulness by using an 11-point scale from 0 (*not at all*) to 10 (*extremely*); and seven statements about their experience with PGMHP contact, rated by using a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*; see Table 1). Open-ended questions were as follows: “Why did you choose to undergo an assessment with a PGMHP clinician?”; “Overall, what has been most helpful in your contact with the PGMHP?”; “What, if anything, should the PGMHP improve about how it helps clients?”

Table 1
How Clients and Referrers Rated Aspects of Their PGMHP Experience

Group	Item	Mean (SD) ^a	n (%) at least “agree”
Clients (n = 20)	After being referred, I was able to complete an assessment with a PGMHP clinician in a timely manner	4.4 (0.7)	18 (90%)
	I found it easy to access the PGMHP or attend to complete the assessment	4.4 (0.6)	19 (95%)
	I had a better understanding of my gambling and/or mental health issues after completing an assessment	4.0 (1.0)	17 (85%)
	Following contact with the PGMHP clinician, I felt more hopeful that I had a plan to manage my mental health and/or gambling issues	4.2 (0.8)	18 (90%)
	I received the type of help that I expected	4.1 (0.7)	16 (80%)
	I would recommend that others who are experiencing gambling and mental health issues access the PGMHP	4.7 (0.5)	20 (100%)
	Through completing a PGMHP assessment, I was able to access treatment that was helpful for me	4.2 (1.1)	17 (85%)
	I have found it easy to access support from the PGMHP for my clients	4.4 (0.7)	17 (89%)
Referrers (n = 19)	My referred clients have been happy to access the PGMHP for an assessment	4.3 (0.6)	18 (95%)
	I have been kept updated about the progress and outcome of a referral for a PGMHP assessment	3.9 (1.1)	14 (74%)
	Advice or recommendations given by a PGMHP clinician have been relevant to my clients’ problems	4.4 (0.6)	18 (95%)
	I would recommend that other clinicians who have clients with more complex gambling and mental health issues refer them to the PGMHP for an assessment	4.6 (0.6)	18 (95%)
	The reasons for referring clients for a PGMHP have been satisfactorily addressed	4.3 (0.5)	19 (100%)
	Undergoing an assessment with a PGMHP clinician has helped to improve the outcomes for referred clients	4.0 (0.8)	15 (79%)

Note. PGMHP = Problem Gambling and Mental Health Program

^a Rated by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree

Analysis

Descriptive statistics were used for continuous or categorical data. Qualitative responses were analysed thematically by using the six-stage thematic approach proposed by Braun and Clarke (2006). This approach involved familiarization with responses, generation of initial codes, collation of codes into potential themes, review of themes in relation to coded extracts and the entire data set, defining and naming themes, and reporting on outcomes. Thematic coding was cross-checked by a second researcher as a means of enhancing reliability. The proportion of clients and referrers who provided a response that was consistent with identified codes and subthemes was also calculated.

Results

As shown in Table 2, the mean age for clients was 47 years, and slightly more females than males participated. More clients and referrers were living in metropolitan than in regional areas, and most referrals came from problem gambling counsellors, with fewer from mental health or primary care clinicians. Six (32%) referrers had referred only a single client for assessment, whereas four (21%) had referred two to three clients, and nine (47%) had referred at least four clients for assessment.

As shown in Table 1, clients' and referrers' ratings of aspects of their contact with the PGMHP were consistently high. Only one client or referrer did not agree or strongly agree that they would recommend others who were affected by problem gambling and mental health issues to access the PGMHP.

Figure 1 shows the mean overall rating of helpfulness of the contact with the PGMHP. Ratings were again consistently high, with 50% of clients rating this as 10 (extremely helpful). There was no significant difference in the ratings of clients and referrers, $t(37) = 0.48$, $p = .64$.

Table 2
Client and Referrer Characteristics

Variable	Clients ($n = 20$)	Referrers ($n = 19$)
Age at assessment, mean (SD)	46.9 (13.4)	-
Male gender, n (%)	11 (55%)	-
Residential location at assessment, n (%)		
Metropolitan Melbourne	12 (60%)	13 (68%)
Regional Victoria	8 (40%)	6 (32%)
Referrer, n (%)		
Problem gambling counsellor	16 (80%)	16 (84%)
Mental health clinician	3 (15%)	3 (16%)
General practitioner	1 (5%)	0 (0%)

Note. SD = standard deviation

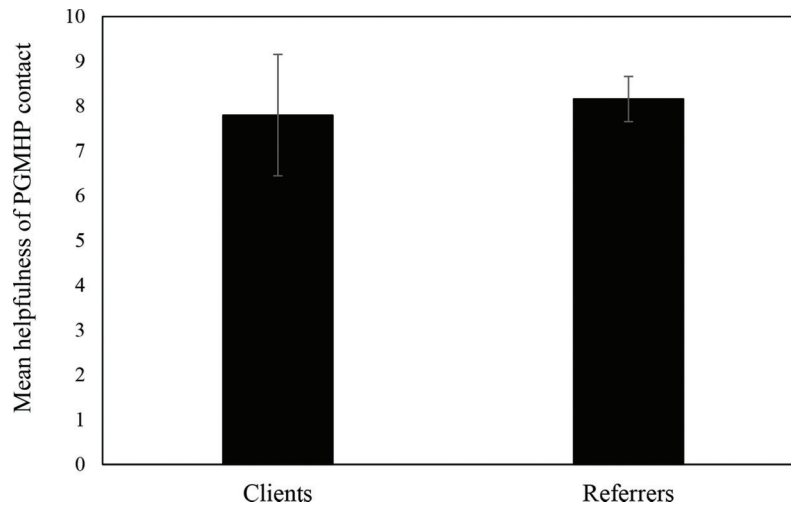


Figure 1. Mean client ($n = 20$) and referrer ($n = 19$) rating of overall helpfulness of Problem Gambling and Mental Health Program (PGMHP) contact from 0 (*not at all*) to 10 (*extremely*). Note: error bars represent the 95% confidence interval.

Five subthemes summarized what clients and referrers reported as the reasons for referral (see Table 3). Among clients, these reasons included for advice or support in a time of crisis with severe gambling behaviours or significant psychosocial complications (40%); for assessment and management of mental health issues (35%), which included assessment of new symptoms, clarification of diagnosis, and management advice; to gain insight into their problem gambling (33%); to explore management options for problem gambling (25%); and for further advice because they had exhausted all known options for management (20%). Referrers reported having made referrals for assessment and management of mental health issues,

Table 3
Reasons for Referral

Client ($n = 20$)	Referrer ($n = 19$)
For increased support during crisis or significant psychosocial consequences of problem gambling (40%)	For assessment and management of mental health issues (68%)
For assessment and management of mental health issues (35%)	For specialist gambling and mental health assessment for comorbid or complex illness (32%)
To gain further insight into problem gambling (33%)	For biological, psychological, and social management of problem gambling (26%)
To explore management options for problem gambling (25%)	For clients unable to make changes, having exhausted available options for management (26%)
For further management of ongoing gambling, having exhausted available options for treatment (20%)	For a risk assessment to determine safety of client and problem gambling staff (5%)

which in particular involved seeking diagnostic clarification or medication review (68%); for specialist assessment of comorbid gambling and mental health issues, or complex illness (32%); and for biological, psychological, and social management of problem gambling (26%). The complexity of caring for some of this population was shown through the referrers seeking referrals for help with clients who were unable to make changes, having exhausted available options for management (26%), as illustrated in the following quotes: “*My client was stuck and relapsing after work in counselling*” and “*We were feeling stuck, my client had been in counselling for years.*”

One referrer requested assessment of aggression risk for a client with a known forensic history to determine the safety of the client and of counselling staff to participate in ongoing treatment (5%).

The aspects of the service that clients found most helpful were summarized by six subthemes (see Table 4). The most frequent benefit noted by clients was management recommendations for problem gambling (50%), which included specific suggestions that had made a significant impact, such as the “*suggestion of counselling*” and “*specifically, the suggestion of voluntary administration,*” which involved supporting a client to appoint a financial administrator to limit the client’s access to money that was impulsively spent on gambling. Other subthemes deemed as most beneficial were gaining insight into the gambling and/or mental health issues (40%), with responses such as “*taking the time to discuss and realize the significance of my gambling*” and “*gaining understanding of my gambling and mental health issues,*” as well as

Table 4
Beneficial Aspects of the Service

What the client felt was most helpful (<i>n</i> = 20)	How referrers felt the service benefitted them (<i>n</i> = 19)	How referrers felt the service benefitted the client (<i>n</i> = 19)
Recommendations for management of problem gambling (50%)	Access to expertise in mental health and gambling (84%)	Access to a specialist service (68%)
Gaining insight into their reasons for gambling and/or mental health issues (40%)	Validation and reassurance of the work being done already by clinicians and counsellors (37%)	Alternative strategies to assist client (21%)
Assessment and management of mental health issues (35%)	Improved engagement with clients (32%)	Validating the client’s experience (21%)
Felt listened to and understood, or reassured (30%)	Support and guidance when client is not progressing (11%)	Improved engagement following mental health treatment (11%)
Unsure (5%)		Help to address gambling issues (5%)
Unhelpful (5%)		Client encouraged to access further psychiatric care (5%)

assessment and management of mental health issues (35%), which included *“peace of mind about a mental health diagnosis”* and *“medication advice.”* Responses such as *“I felt empowered to help myself,”* *“having someone to talk to so I wasn't doing it by myself,”* and having been given *“reassurance and hope”* exemplified the subtheme of feeling listened to and understood, or reassured (30%). Less frequently reported were indecision about a helpful aspect (5%) and a feeling that the service had been unhelpful (5%), in which participants stated that they had *“disagreed with the wording on the report and chose to ignore the suggestions”* for management.

Table 4 also shows the benefits that referrers perceived for themselves and clients. The most beneficial aspect for referrers was the access to expertise in both mental health and gambling (84%), with examples including having *“a medical perspective,”* *“a multi-disciplinary team,”* and *“support when outside of my level of expertise.”* This was followed by validation and reassurance of the work that clinicians and counsellors had been doing (37%), which was particularly helpful for those with complex clients or clients requesting a second opinion, as shown in the following quote: *“It allowed me to show my client their progress from an outsider's perspective.”*

Improved engagement with clients (32%) was also achieved, illustrated with the following quotes: *“building rapport by being able to respond to an expressed need,”* and *“improved engagement following mental health treatment.”* Two referrers said it was helpful to get input when the client was not progressing: *“stuck in progress but not engaging with their general practitioner or local psychiatric service.”*

The most frequently reported beneficial aspect for clients was access to a specialist service in problem gambling and mental health (68%). Most beneficial was *“access to a psychiatrist who understands gambling”* or to a psychiatrist *“where gambling would be predominant in the assessment.”* Other frequent subthemes of benefits were alternative strategies given in management suggestions (21%) and validation of the client's experience (21%), as, having received feedback from clients, they *“felt listened to, and understood.”* Referrers saw improved engagement in therapy following the treatment of mental illness (11%), and some felt that the help in addressing gambling issues was most beneficial (5%). A final benefit involved the experience of having a positive encounter with psychiatry (5%), with a client *“being able to engage with ongoing psychiatric follow-up after a positive experience through the program.”*

Five subthemes summarized what clients suggested could be improved. Eight clients said there was nothing to improve. The most frequent improvement suggestion was to offer additional follow-up (40%), including monthly in-person reviews or phone follow-up: *“Follow-up would be helpful to assess how the recommendations are going”.*

Two clients suggested providing further education about the health consequences of gambling and how to get help, for example, by *“holding seminars”* or *“pop-up booths outside venues for people who may not realize that they are in need of help yet.”* Improved communication with clients (10%), for example, by sending the report to clients, and improved access for clients in regional areas (5%) was also suggested.

For referrers, improving access was the most common recommendation (37%) in order to “*expand geographically*” and “*reinstate regional outreach to facilitate joint assessments*,” or to “*employ more clinicians and grow the service*.” Referrers also suggested providing additional follow-up (16%) in the form of further reviews with clients, or by following up with referrers over the phone after the assessment. Also suggested were changes to the referral process (16%), for example a “*dedicated phone referral line*” or an “*email rather than a fax referral*,” and report provision (16%), including “*faster provision of reports*” and “*sending the report to all health providers involved in the client's care*.” Further education was also recommended about the PGMHP or how to respond to problem gambling and mental illness comorbidity for counsellors and clinicians (11%), for example “*online modules that would also help to promote what the service can offer*,” and reinstatement of residential gambling treatment (5%). One referrer said there was nothing to improve.

Discussion

This study explored how clients and referrers experienced an integrated problem gambling and mental illness service by examining why people were referred, how they rated aspects of their experience, and what was perceived to be beneficial or in need of improvement. The questionnaire-assisted telephone interview revealed overall a high level of client and referrer satisfaction. Most clients (95%) and referrers (89%) agreed that the service was easy to access. Most clients agreed they had a better understanding of their issues (85%) and felt more hopeful (90%) following assessment. Most referrers (95%) agreed that the advice was relevant and they would recommend other clinicians to refer clients with complex gambling and mental health issues for assessment. Highlighting the complexity of the problems of many referred clients, clients in particular felt that referral was initiated for support during a crisis, and referrers felt that referral was initiated for support when clients were not making progress or engaging with other services. Being able to access a specialist in both gambling and mental health was a key benefit for clients and referrers, exemplified by statements such as “*seeing a psychiatrist who understands gambling*.” Other reported benefits were being given specific recommendations for gambling management, management of mental health issues, gaining insight, and receiving validation. For referrers, validation referred to support and endorsement of the work they had been doing, and for their clients, it referred to an outside perspective of progress they had made. For clients, this meant taking the time to discuss their issues and gain a deeper understanding and a feeling of reassurance and hope. Improving access, particularly in regional locations, and expanded options for post-assessment follow-up were the most commonly suggested improvements.

Study data summarizing why people were referred highlights why the capacity to access dual-specialist services such as the PGMHP may be beneficial. Referral was often in the context of crisis, complexity, or a lack of progress in therapy. Increased complexity and a requirement for clinicians to possess a greater diversity of assessment and treatment skills is common in the treatment of people with comorbid mental health and addiction issues (Flynn & Brown, 2008). Concerns

regarding forensic risk, mental state deterioration potentially requiring hospitalization, and capacity to make financial or living decisions were among the reasons for referral. The multidisciplinary nature of the team staffed by experienced mental health and addiction clinicians meant that they had broad expertise related to risk assessment and management, mental health and problem gambling diagnosis, and treatment planning and delivery to work with referrers, clients, and their families in responding to crises or identifying and addressing barriers to ongoing treatment engagement.

Given the urgency with which many referrals needed to be assessed, timely access was a priority. To enhance this timeliness, system integration was promoted through negotiation with individual services about how support was provided (e.g., visiting outreach clinics occurring onsite, regular onsite case discussions, joint education provision to a local specialist mental health services, or didactic education for staff). The use of direct clinician intake and varied methods of engaging referrers, clients, and family members in joint assessment and care planning by using various methods (e.g., videoconference, assessment conducted onsite at the referring service, joint therapy delivery involving the referrer and client) has also occurred to simplify access and enhance continuity of care (Martyres & Townshend, 2016). These methods are similar to approaches recommended by Savic, Best, Manning, and Lubman (2017), who proposed that cultivating positive interagency relationships was particularly important for promoting integrated care. Facilitated linkage also occurred for some clients, with PGMHP clinicians sourcing and assisting access to required services. Highlighted in the study data was that many clients were helped to access specialist mental health services; however, many clients referred from primary care or mental health services were similarly assisted to access problem gambling treatment. Some clients were said to be agreeable to accessing the PGMHP while not engaging with their own local public mental health service or general practitioner. It may be that equal focus on problem gambling is a less confronting entryway into ongoing psychiatric care.

Specific gaps in the service were identified, notably, improving access to the program by expanding the size of the program and access in regional areas. While the number of participating clients (40%) and referrers (32%) from regional areas showed the value of regional outreach as an integral part of the PGMHP model, this has fluctuated across the years due to changes in funding. This was certainly acknowledged in areas of improvement for the service and in suggestions to strengthen regional outreach, as access can be geographically difficult even for those in outer metropolitan regions, not just in regional areas. Improvements to system integration via faster provision of reports and sending of reports to all those involved in a client's care were also suggested, as well as changes to the referral system to offer a single entry point responded to by a PGMHP clinician. These changes were all implemented following receipt of feedback.

Study findings support the benefit of the adopted service model and add to a little-researched area of collaborative care among mental health and problem gambling services. Some of the benefits reported in collaborative mental health and substance use services are mirrored in these results, in particular regarding access to care for

complex clients (Flynn & Brown, 2008). In the design and delivery of the service, factors recommended for the promotion of integrated or collaborative care were considered, including an authorizing environment (government policy and funding promotes collaboration), system integration (e.g., through co-location or joint training), enhancing clinician awareness of and response to comorbidity (e.g., through training, resource provision, supervision), and addressing client barriers to addressing comorbidity (e.g., illness acuity, risk of causing harm to self or others, shame; Lee, Crowther, Keating, & Kulkarni, 2013; Rodda et al., 2018; Savic et al., 2017). Many of these factors were present or pursued to enhance integration of care provision with the primary care providers (problem gambling counsellors and primary care and mental health clinicians), but also to build collaboration between referrers and other specialist services (e.g., broader addiction or specialist mental health) required to provide ongoing specialist care for identified comorbidities.

A number of limitations were evident. A primary limitation was that only 39% of eligible clients and 50% of referrers participated. It is possible that the responses provided were not representative of the overall population experience of contact with the PGMHP. However, given that a broad range of positive aspects were reported, as well as areas for service improvement, this study is likely to have described the most meaningful aspects of client and referrer experience. Most clients and referrers originated from problem gambling services. How mental health clinicians or clients had experienced contact with the integrated service model was, therefore, explored in less detail, highlighting that this as an area for future exploration. Confidence among mental health clinicians in screening for gambling issues and limited expertise in responding to problem gambling has been identified as a barrier (Rodda et al., 2018). Accessing training and client-specific assessment and advice on managing gambling in mental illness clients through integrated services such as the PGMHP will likely build clinician capability and confidence in screening for and responding to problem gambling. The extent to which this was achieved for referring mental health clinicians is, however, unclear. Further exploration of changes in clinical outcome measures achieved by clients who were assessed and offered brief intervention by the PGMHP would also be needed to determine the nature and extent of mental health and gambling and the social impacts of service contact.

Conclusion

Clients with comorbid problem gambling and mental illness were often referred to an integrated service, either in the context of clinical or psychosocial crisis, or when clinicians felt stuck or wanted advice on how to work with clinical complexity. The PGMHP offered a multidisciplinary clinical team that used outreach, a dedicated intake clinician and delivery of capacity building via joint assessment, and input into case discussions and didactic clinician education to enhance the accessibility, reach, and collaborative delivery of care for clients and referrers. Client and referrer feedback were in most cases positive about how helpful the contact with the PGMHP was. Primary areas for improvement related to growing the availability and reach of the PGMHP, particularly in regional areas, and the capacity to continue to offer

support to referrers and referred clients beyond the period of assessment and brief intervention. What remains unknown is whether clients' and referrers' satisfaction translates into positive clinical and psychosocial outcomes for clients, highlighting a need for further research.

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Submitted October 10, 2018; accepted May 2, 2019. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: The health service that conducted this research (Alfred Health) receives funding from the Victorian Responsible Gambling Foundation for the delivery of the evaluated service; however, the design, handling, and reporting of this study was carried out independently.

Ethics approval: This project was approved by The Alfred Hospital Human Research Ethics Committee (364/16 approved on 29/7/2016).

Acknowledgements: The authors are grateful to the referrers and clients who participated in this study. The Victorian Responsible Gambling Foundation, Victoria, Australia, provided funding that was used in the conduct of this study. Stuart Lee is supported by an Early Career Fellowship (APP1111428) from the Australian National Health and Medical Research Council.

That's what you get for waking up in Vegas: Fatigue and alcohol consumption are associated with the duration of gambling sessions

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Abstract

Fatigue and intoxication can impair people's thinking, including their decision-making and assessments of risk. However, little research has specifically examined whether links exist between episodes of gambling, sleep restriction and alcohol consumption. Gambling often occurs in environments where alcohol is served and opening hours are long, making potential interactions between intoxication, fatigue and gambling relevant for exploration from a harm reduction standpoint. The current study tracked the gambling, alcohol consumption and sleep patterns of an online sample of regular gamblers and drinkers ($N = 132$, 28% female) for six days using online diaries. Results confirm that the three behaviours are related at the individual level; with significant between-subjects correlations between gambling and sleep ($r = -.20$), gambling and alcohol consumption ($r = .22$), and sleep and alcohol consumption ($r = -.19$). However, no strong or reliable within-subjects (day by day) relationships were found. That is, although more intense gamblers slept less and drank more, they were no more likely to drink relatively more or sleep relatively less, on the same days which they gambled. We also observed a negative auto-correlation effect for each behaviour: engaging in more of one behaviour on one day is associated with a reduction of the same behaviour the following day. This result suggests that individual-level traits, rather than contextual or environmental effects, are responsible for observed co-morbidities between these health-related behaviours. Further, that gambling consumption, like alcohol and sleep, is subject to satiation and refractory effects.

Keywords: gambling, sleep, alcohol, harm minimization, decision-making

Résumé

La fatigue et l'intoxication peuvent nuire à la faculté de penser, notamment à la prise de décisions et à l'évaluation des risques. Cependant, peu de recherches ont particulièrement tenté de découvrir s'il existait des liens entre des épisodes de jeu, une privation de sommeil et une consommation d'alcool. Le jeu se produit souvent dans des lieux où l'on sert de l'alcool et les heures d'ouverture sont longues; ces endroits sont donc propices à l'exploration des interactions potentielles entre l'intoxication, la fatigue et le jeu, du point de vue de la réduction des méfaits. La présente étude a suivi les tendances de jeu, de consommation d'alcool et de manque de sommeil d'un échantillon en ligne de joueurs et de buveurs réguliers ($N = 132$, 28% de femmes) pendant six jours à l'aide de journaux en ligne. Les résultats confirment que les trois comportements sont liés sur le plan individuel, avec des corrélations significatives entre les sujets, notamment entre le jeu et le sommeil ($r = -.20$), le jeu et la consommation d'alcool ($r = 0,22$) et le sommeil et la consommation d'alcool ($r = -.09$). Cependant, aucune relation intrasujet forte ou fiable (jour après jour) n'a été constatée. Autrement dit, même si les joueurs plus actifs dormaient moins et buvaient plus, ils n'étaient pas plus susceptibles de boire relativement plus ou de dormir moins les jours où ils jouaient. Nous avons également observé un effet d'autocorrélation négatif pour chaque comportement : s'engager intensément dans un comportement le même jour est associé à une réduction du même comportement le jour suivant. Ce résultat laisse croire que les traits individuels, plutôt que les effets contextuels ou environnementaux, sont responsables des comorbidités observées entre ces comportements liés à la santé. De plus, les comportements liés au jeu, comme la consommation d'alcool et le manque de sommeil, sont sujets à des effets de saturation et à des effets réfractaires.

Introduction

Minimizing harm from gambling is a topic of interest for many governments and NGOs, with recent research suggesting that many persons who do not fit the criteria for problem gambling are nonetheless experiencing significant harm from their gambling (Browne, Greer, Rawat, & Rockloff, 2017). Fatigue and intoxication can produce a negative impact on the way people think, including on their decision-making, which can in turn lead to poor gambling-related outcomes (Kynndon & Dickerson, 1999; Noy et al., 2011). However, little research has addressed the interaction between alcohol consumption, sleep restriction, and gambling, and whether this combination of factors contributes to gambling harm. Furthermore, few studies have investigated relationships between gambling, alcohol and sleep restriction in a real-world context. Most research has examined individual differences; finding that persons who typically drink more and sleep less also tend to gamble more intensively. This situation raises the question of whether or not these observed between-subjects

differences are because of episodic effects, e.g., inebriation contributing to uncontrolled gambling; or instead gambling environments fostering the consumption of alcohol. The alternative is a trait-based explanation, in which co-occurrence in individuals is because of individual differences, such as socio-economic status or behavioural impulsivity, that cause them to pursue all of these activities.

Background

Alcohol and Gambling. Population studies have consistently suggested those persons who have problems with alcohol are also more likely to experience problems with gambling. Persons who gamble are commonly categorised into risk segments depending on their likelihood of experiencing problems with gambling, e.g., no-risk (including non-gamblers), low-risk, moderate-risk, and problem gamblers, all according to the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001). A US-based national telephone survey conducted for the National Gambling Impact Study Commission found that problem gamblers are seven times more likely to be abusing alcohol than non-gamblers and low-risk gamblers (Gerstein, Hoffmann, & Larison, 1999). In Australia, the Victorian Gambling Study reported that almost half of problem gamblers had clinically significant levels of alcohol abuse, compared to 14% of no-risk gamblers (Billi, Stone, Marden, & Yeung, 2014). Similarly, the Danish Health and Morbidity Survey suggested that problem gamblers were significantly more likely to exceed the Danish Government's sensible drinking guidelines of 21 standard drinks per week for males and 14 for females (Algren, Ekholm, Davidsen, Larsen, & Juel, 2014). Just over 35% of problem gamblers exceeded these sensible drinking guidelines, compared to only 11.9% of non-problem gamblers. These studies across multiple jurisdictions show that a relationship does exist between alcohol abuse and gambling. However, the cross-sectional surveys shed no light upon the question of whether these comorbidities are because of the common influence of shared traits, or rather the direct influence of situational and episodic factors.

The relationship between alcohol consumption and gambling on an acute level has been explored through past experimental studies. One experiment examining EGM gambling with real money suggested that, compared to the control group, moderate alcohol consumption by probable problem gamblers leads to longer EGM gambling sessions and a non-significant trend toward power-betting (the option to increase the amount wagered on an outcome after being shown half of the spin result). Interestingly, no significant differences were found for non-pathological gamblers (Ellery, Stewart & Loba, 2005). Following a similar experimental paradigm, Ellery and Stewart (2014) found that alcohol consumption, compared to control beverage consumption, resulted in increased rates of "doubling up" (choosing to bet on a bonus game following a regular win) when gambling on an EGM but, again, only in probable problem gamblers. A similar experiment with a within-subjects manipulation demonstrated that following alcohol consumption, participants took less time to make decisions on a simulated blackjack task and lost all their "money" (points) more quickly than when they had not consumed alcohol (Phillips & Ogeil, 2007).

This expedited loss of all gambling funds, as well as placing larger average bets, was also found in a large study (n=130) comparing alcohol consumption with a placebo beverage (Cronce & Corbin, 2010). These experimental studies offer strong evidence for the role of alcohol in inducing impaired control when gambling but also perhaps more so in vulnerable populations.

However, despite highly similar testing protocols and important results for our understanding of how acute alcohol consumption affects gambling, these studies differ markedly in their findings in terms of which gambling behaviours are actually affected. Certain studies indicate an increase in average bet size but no significant difference in time on device (Cronce & Corbin, 2010). Other studies suggest increased time on device but no difference in overall spend or bet size (Ellery et al., 2005). Yet another study indicates increase bonus betting (or “risky” betting) but no increase in mean bet size or time on device (Ellery & Stewart, 2014). Other studies still demonstrate no significant differences in any gambling measures between alcohol consumption and placebo conditions (Breslin, Sobell, Cappell, Vakili, & Poulos, 1999; Corbin & Cronce, 2017). In addition, which of these behaviours that were exacerbated by alcohol consumption are likely to lead to real world gambling harm is also difficult to ascertain from the results? A more real-world paradigm, such as behavioural tracking, may offer insights into which of these gambling behaviours is the most likely when consuming alcohol.

Longitudinal studies examining the link between alcohol consumption and gambling harm offer suggestive evidence on cause and effect in the real world. The first general population prospective study of problem and non-problem gamblers, conducted in New Zealand, indicated that a substantial number of those experiencing problems with gambling in 1991 were no longer experiencing problems with gambling in 1998. However, problem gamblers who also engaged in hazardous drinking in 1991 were more likely to remain problem gamblers in 1998 rather than to recover (Abbott, Williams, & Volberg, 2004). This fact suggests that alcohol may contribute to the maintenance of gambling problems over the long term. Alternatively, hazardous use of both alcohol and gambling products may in fact both be indicators of an underlying vulnerability that is prejudicial to recovery.

Evidence has emerged that an underlying vulnerability may explain the co-occurrence of gambling and alcohol problems. Goodwin, Browne, Rockloff and Donaldson (2015) found that some people have a generalised tendency to over-consume many unhealthful products. This trait-like tendency towards over-consumption is a useful explanation for covariance in the use of high salt foods, cigarettes, drugs, gambling and alcohol. This trait perspective in turn suggests that co-occurrence of these behaviours is not because of direct relationships between these activities (e.g., drinking while gambling), but rather because of influence of “third variables,” such as behavioural impulsivity, at the individual level affecting the use of all these potentially unhealthful products.

Sleep and Gambling. A handful of large population panel studies have found significant positive correlations between sleep restriction and gambling problems. One such study (Parhami et al., 2012) compared severe problem gamblers not currently seeking treatment (historically classified as pathological gamblers by meeting between 5 to 10 of the DSM-IV criteria for pathological gambling) to problem gamblers not currently seeking treatment (meeting 1–4 of the DSM-IV criteria) and recreational gamblers (non-problem gamblers). Parhami et al. (2012) found that non-treatment seeking severe and problem gamblers had significantly poorer quality of sleep than recreational gamblers. Severe non-treatment-seeking problem gamblers also reported significantly more daytime sleepiness than problem and recreational gamblers. Although not significant, a linear-trend of decrease in quality of sleep and increase in daytime sleepiness was observed when comparing the three groups: recreational, problem, and severe non-treatment-seeking problem gamblers. The authors of the study believe that this progressive relationship between problem gambling severity and negative sleep outcomes is likely to exist as a significant finding if investigated with a larger sample size (Parhami et al., 2012).

Good reasons can be located to suspect a direct structural relationship between sleep restriction (i.e., lack of sleep) and gambling at the episodic level. It may be that gambling late at night disturbs sleep, or that stress because of gambling harm leads to poor sleep, or both. However, it is also possible that an underlying trait, such as that reported by Goodwin and colleagues (2015), may be responsible for the over-consumption of reward-oriented stimuli, such as gambling; and lesser prioritisation of non-reward-oriented stimuli, of which sleep may be one. Unfortunately, little research has taken place concerning why sleep problems are more common in problem gamblers (Parhami et al., 2012).

In examining the temporal pattern of sleep and gambling behaviour, no experimental studies examining the effect of gambling on subsequent sleep quality or quantity have been published. However, experimental studies investigating the effect of sleep deprivation on gambling behaviour have been conducted using proxy measures, such as the Iowa Gambling Task (IGT; Bechara, Damasio, Damasio, & Anderson, 1994), to measure gambling decisions. Studies using the IGT to study the effects of sleep deprivation on decision making have shown that as little as one night of sleep deprivation (23 hours of continual wakefulness) leads to persons making poorer decisions (Killgore, Grugle, & Balkin, 2012). That is, a tendency does exist for sleep deprived individuals to favour short-term over long-term gains. This practice is found within subjects, i.e., individuals that had previously been exposed to the IGT and learned to choose the advantageous deck of cards still select the long-term disadvantageous deck when sleep deprived. Moreover, after a recovery sleep, participants go back to favouring long-term gains over short-term gains and long-term losses. This effect has been replicated over a range of time periods of sleep deprivation, including 49, 51 and 75 hours of total sleep deprivation (Killgore, Balkin, & Wesensten, 2006; Killgore, Lipizzi, Kamimori, & Balkin, 2007). These results suggest that sleep deprivation leads to a decision making strategy disproportionately

influenced by large gains. Large losses are ignored or given less weight than in normal decision making (Killgore, et al., 2012).

Continuous forms of gambling, similarly to the IGT, consist of short term gains in the form of intermittent large wins, interspersed with continuous small wagers and associated small losses. This pattern usually results in an overall net loss at the end of a gambling session. In relating this type of gambling to the IGT, those that engage in “healthy” gambling set spend limits for themselves, thus making the advantageous choice to cease gambling once their limit is reached. For example, no-risk and low-risk gamblers often begin gambling with a set stake, such as \$20, and may walk away once that stake has been lost. Those that have problems with gambling often bet more than they can afford to lose and chase losses (PGSI; Ferris & Wynne, 2001), thus making disadvantageous choices, similar to those that choose the long-term losses IGT card deck. Studies showing that sleep deprivation results in decision making deficits when using the IGT may, therefore, mean that gambling while sleep deprived may in turn lead to increased gambling-related harm in the community.

Aim of Present Study

The aim of the present study was to examine the relationship between gambling, sleep restriction and alcohol use in a longitudinal design. An online diary was used to track participants’ alcohol use, gambling, and sleep patterns over six days to investigate whether a relationship functions between these three behaviours.

The current study examined whether a link exists between episodes of gambling, sleep and alcohol consumption, which can include common environmental influences, such as the availability of alcohol and gambling opportunities, as well as direct impacts of one behaviour on another, as depicted in Figure 1. We anticipated that there will be a circular link in that consuming more alcohol while gambling will lead to longer gambling sessions and shorter sleep duration on the following day, while shorter sleep duration will subsequently lead to longer gambling sessions and increased alcohol consumption. The ecological momentary assessment (EMA) design style of the current study can help determine which explanation is most plausible for any discovered links between these three behaviours.

Method

Participants

Participants were recruited via Amazon’s Mechanical Turk, which is an online panel provider/crowdsourcing marketplace. The Amazon service, based in the United States, provides a crowd-share marketplace for online work. Mechanical Turk allows individuals and organizations to post online surveys that workers can complete for small cash amounts or Amazon credit. The validity of Mechanical Turk’s online panels have been studied by researchers in the areas of psychology and social science and, more specifically, in substance use and gambling; and have been found to be more

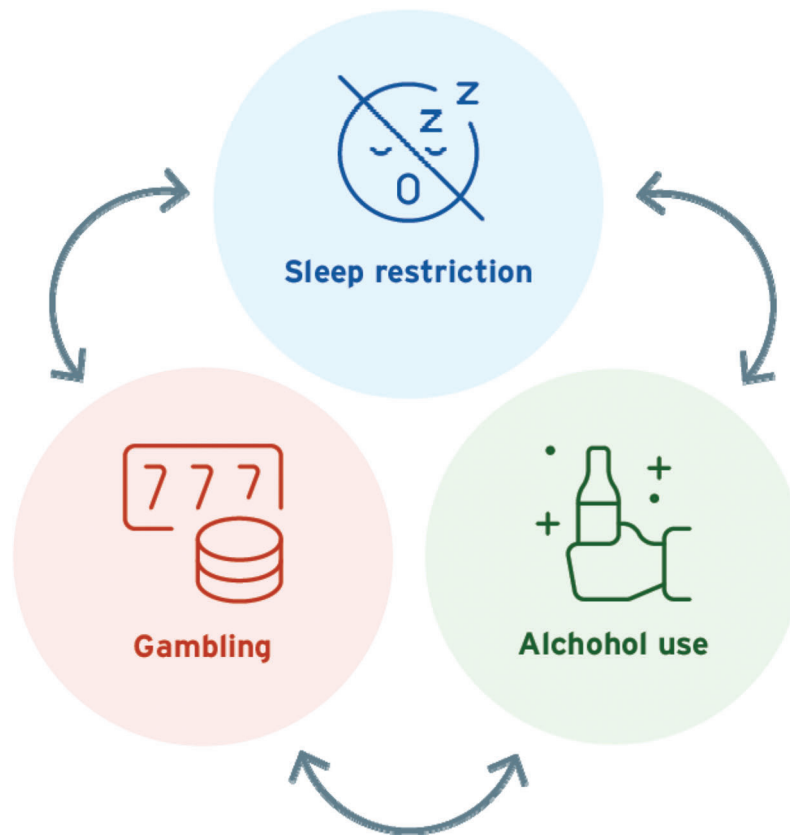


Figure 1. A depiction of a potential tri-directional relationship between gambling, alcohol use and sleeprestriction.

demographically diverse than undergraduate university samples. Furthermore, American studies have shown Mechanical Turk samples to be broadly representative of the American population (Buhrmester, Kwang, & Gosling, 2011; Kim & Hodgins, 2017).

The current study period ran for six days, but participants were free to withdraw at any time. Participants were compensated US\$0.80 for the initial screening questionnaire and US\$0.50 per survey that they completed thereafter, which was rated as a fair and effective compensation level in the context of the US minimum wage and the relative time commitment required (Kim & Hodgins, 2017). The study was conducted in late November, 2016. The 176 persons who volunteered and who were eligible subsequently gave their informed consent and completed the initial survey. Of those persons, 132 consented to recontact (75% consent rate). All participants were over the age of 18 years and were regular gamblers and drinkers (once or more drinks per week). The justification for this inclusion criteria was to ensure that a large proportion of the participants would be likely to gamble and consume alcohol during the study period in order for meaningful data to be collected. Nevertheless, the research did not specifically target persons with gambling or alcohol problems. US-based Helpline information was included in the study information for those concerned about their gambling or drinking. The study was approved by the Central Queensland University (Australia) Human Ethics Committee (Project Number H16/06-161).

A breakdown of the demographics of the followed-up sample is shown in Table 1. Of the 132 participants, over 70% were male. Ages ranged from 19 to 57 years with a mean age of 32. Over half the sample (58.8%) consumed alcohol two to three times per week, with the remaining participants consuming alcohol four or more times per week (41.2%). The majority of participants gambled two to three times per week (51.5%). The majority of participants were classified either as married (39.4%) or as single, never married (36.4%). For over 90% of the sample English was the language spoken at home.

Table 1
Participant demographics

	n	%
Age range		
18–19	1	0.8
20–24	14	10.6
25–29	46	34.8
30–34	35	26.5
35–39	11	8.3
40–44	9	6.8
45–49	7	5.3
50–54	7	5.3
55–59	2	1.5
Gender		
Male	93	70.5
Female	37	28
Alcohol consumption frequency		
2–3 times per week	77	58.8
4 or more times per week	54	41.2
Gambling frequency		
2 to 4 times per month	1	0.8
2 to 3 times per week	68	51.5
4 to 5 times per week	34	25.8
6 or more times per week	29	22
Relationship status		
Married	52	39.4
Widowed	1	0.8
Divorced	4	3
Separated	1	0.8
Domestic partnership or civil union	7	5.3
Single but cohabiting with a significant other	18	13.6
Single, never married	48	36.4
Main language spoken at home		
English	123	93.2
Other	8	6.1
Aboriginality		
Aboriginal/& Torres Strait Islander	13	9.8
Non-aboriginal	118	89.4

Procedure

Eligible participants first completed a screening questionnaire. Questionnaire topics included demographics, and were based on the Consumption Screen for Problem Gambling (CSPG; Rockloff, 2012), the AUDIT-C measure of hazardous drinking (Bush, Kivlahan, McDonell, Fihn & Bradley, 1998), and the Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman & Kupfer, 1989). Those subjects who consented to recontact were then prompted daily for seven days by email messages to complete a daily online diary. Because of a technical issue on the seventh day, data from that day was discarded, leaving six days of high integrity data to analyse. Each daily diary was open for 24 hours only from 3:00 a.m. to 2:59 a.m. US Eastern Standard Time (EST) and asked participants to recall their previous day's activity, i.e., yesterday. Participants recorded the current time of day and total time spent sleeping, drinking alcohol and gambling. The opening and closing times for the survey were chosen to reduce the likelihood of participants referring to the same "waking" day when they were recalling the previous day's activities.

Data Analysis

Analyses were conducted using the R statistical package. Participants indicated the time they had slept in their previous main sleep and naps in 12-hour time. This figure was then converted to 24-hour time using the formula below (Paterson, Browne, Ferguson & Dawson, 2016) to obtain a total sleep time for main sleep and total sleep time for naps. Data were screened for human error and inputs that obviously exceeded logical norms were adjusted, for example, when participants may have selected "p.m." instead of "a.m." resulting in a sleep time of over 24 hours.

$$\left\{ \begin{array}{ll} 24 - t_{\text{sleep}} + t_{\text{wake}} & \text{if } t_{\text{sleep}} > t_{\text{wake}} \\ t_{\text{wake}} - t_{\text{sleep}} & t_{\text{sleep}} \leq t_{\text{wake}} \end{array} \right\}$$

Non-parametric correlations were employed because of mild violations of normality assumptions in the behavioural variables. Data were first averaged at the participant level. Between-subjects correlations were calculated on this data set. Subtraction of the participant means from the daily observations yielded relative differences within subjects. Within-subjects correlations were calculated from these deviations. Therefore, these statistics represented independent sources of between- and within-subjects co-variation in the original dataset.

Results

Table 2 presents between-subjects correlations between sleep restriction, gambling, and alcohol consumption. Overall, persons who gambled more also consumed more alcohol, were more likely to nap during the day, and more likely to sleep less during their main overnight sleep when aggregated across days. More specifically, Table 2 indicates that on average, persons who gambled more also slept less overnight; persons who gambled more, drank more; persons who drank more, napped more; and persons who drank more, slept less overnight.

Table 2

Relationship between time spent sleeping, gambling, napping and number of standard drinks consumed: Between-subjects correlations

	1. Sleep Duration	2. Gambling Duration	3. Drinks Consumed	4. Napping Duration
1. Sleep Duration	-			
2. Gambling Duration	-.20*	-		
3. Drinks Consumed	-.19*	.22*	-	
4. Napping Duration	-.09	.03	.15*	-

* $p < .05$.

Putting aside individual differences, we found a significant difference between the number of hours slept on days in which someone gambled (“gambling day”) compared to days in which they do not gamble (“non-gambling day”). On a day when somebody gambles, on average they sleep for seven hours ($M = 7.01$, $SD = 1.85$) compared to about seven hours and twenty minutes ($M = 7.36$, $SD = 1.64$) when they do not gamble, $t(526) = 2.47$, $p = .0137$.

These findings are similar with respect to alcohol consumption. Participants consumed just over three and a half standard drinks, on average, on days when they gambled ($M = 3.62$, $SD = 5.41$) compared to two and a half standard drinks on days when they did not gamble ($M = 2.55$, $SD = 3.47$), $t(420) = 2.81$, $p = .0051$.

Table 3 indicates the effect of the amount of time subjects spent gambling. Within-subjects correlations between time spent gambling, time spent sleeping, time spent napping and the number of standard drinks consumed show a small but significant relationship between time spent gambling and the number of standard drinks consumed. Surprisingly, as shown in the last row of Table 3, participants did not gamble more, sleep less and drink more on weekend (Friday and Saturday) nights than weeknights. A significant negative correlation between weekend drinking and weekend gambling was found.

Lastly, lagged correlations were calculated to predict day-by-day changes in gambling, alcohol consumption and sleeping from the prior day’s values. Results demonstrated that when relating behaviours of one day to that of the previous day, each behaviour is only significantly correlated with that same behaviour. There was a negative correlation of $-.14$ between the amount of time spent sleeping over one 24-hour period compared to the previous 24-hour period. There was also a negative correlation of $-.23$ between the number of standard drinks consumed one day compared to the previous day. Finally, there was a negative correlation of $-.28$ between the amount of time spent gambling one day compared to the previous day. However, when examining the relationship between gambling and engaging in the other behaviours, it was evident that consuming more or less alcohol or obtaining more or less sleep did not in fact predict the next day’s gambling duration.

Table 3

Relationship between time spent sleeping, gambling, napping and number of standard drinks consumed: Within-subjects correlations

Variables	1	2	3	4	5
1. Sleep Duration	-				
2. Gambling Duration	-.06	-			
3. Drinks Consumed	-.03	.08*	-		
4. Napping Duration	-.13	-.01	.03	-	
5. Fri/Sat Period	-.01	-.03	-.08*	.00	-

*p < .05.

Discussion

The results indicated that gambling, sleep and alcohol consumption were related, but that this relationship is primarily because of between-subjects differences. This fact was evidenced by the co-occurrence of behaviours within individuals but the lack of lagged-correlations, i.e., a time-based predictive relationship, between the three variables. This finding supported a trait-based, rather than an episodic-based, explanation for the co-occurrence of these behaviours. The discovery was consistent with previous research that proposes that behaviours such as gambling and drinking form part of an attraction to supernormal stimuli, and that this interest is symptomatic of a consumptiveness trait (Goodwin et al., 2015). Similarly, traits such as impulsiveness have been linked to the overconsumption of gambling and alcohol (Lawrence, Luty, Bogdan, Sahakian & Clark, 2009) and poor quality and quantity of sleep (McGowan & Coogan, 2018). The current study pointed to a trifecta of unhealthy behaviours occurring in certain individuals: increased gambling, increased drinking, and decreased sleep quantity and/or quality. These findings also supported longitudinal studies that have found links between alcohol abuse and gambling (Abbott et al., 2004) and gambling and sleep restriction (Parhami et al., 2012). However, this study is the first to look at all three behaviours in tandem across multiple days of measurement.

Though primarily because of individual differences, we did find that on days that persons gamble, they sleep significantly less. This determination was contrary to our hypothesis that there would be a lagged effect—that sleeping less one day would predict more gambling and alcohol use the next day. However, it is an interesting observation nonetheless. We also found that on days when persons gamble they drink significantly more. This relationship was not explained by a “weekend effect”; the tendency to drink more and sleep less on a Friday or Saturday night. In fact, we found that the opposite is true: a small negative correlation did exist between drinking and weekend days. Young persons are drinking at historically low levels (Livingston, 2014; Raninen, Livingston & Leifman, 2014), which may be changing traditional weekend binge patterns of alcohol consumption. As the majority of our sample was under 35 years of age, it is possible that our data reflects changing

attitudes to alcohol. Alternatively, the lack of a weekend effect may illustrate the breakdown of traditional work schedules, with higher proportions of the population engaging in non-standard work hours/days (Australian Bureau of Statistics, 2012). Moreover, the co-occurrence of gambling, alcohol consumption and sleep restriction, and the absence of a weekend effect, indicates that these activities are intrinsically linked outside of the usual realm of leisure time activities, at least for regular (weekly) gamblers and drinkers.

When excluding individual differences, and examining within-subjects day-to-day cross- and lagged- correlations, we found little association between the three variables. However, there was a negative episodic effect for each singular behaviour, illustrating that engaging in one behaviour does not result in more or less engagement in a different behaviour the following day but does result in less engagement in the same behaviour the following day. Consuming more alcohol or sleeping more one day with the effect of doing less of that same behaviour the following day can be attributed to physiological drivers or “hangover” effects. However, these physiological drivers are not present in gambling, and yet this behaviour had the strongest negative lagged correlation. That gambling one day could have a satiating effect, leading to a lesser degree of gambling the following day, is counter to literature describing binge gambling over multiple days (Nower & Blaszczynski, 2003). This satiating effect warrants further study as it is a novel finding in stimuli, such as gambling, that are vulnerable to behavioural addiction.

The EMA design of the present study allowed the time-course of the three behaviours to be examined day-by-day. Despite our results suggesting that one behaviour did not predict a different behaviour day-by-day, this null result should nevertheless not be seen as confirmation of a lack of a functional relationship between these variables. Instead, it demonstrates that the time-course of the relationships do not resolve themselves across one full day. For instance, it could be the case that alcohol consumption could influence subsequent gambling consumption over the time period of a few hours. Thus, this finding prompts us to think differently about the scale of the time-course of these behaviours. Rockloff et al. (2018) demonstrated that playing a simulated mobile gambling game one week led to an increase in real gambling the next week, illustrating a longer than expected time-course for simulated gambling influencing real gambling. The current results suggest that chronic sleep loss or alcohol consumption may play a greater role than acute sleep restriction or alcohol consumption in predicting gambling. This assertion is supported by Belenky and colleagues (2003) who demonstrated a dose-response relationship in performance-based tasks in response to increasing amounts of sleep restriction over seven days. The existence of a longer time-course in the relationship between sleep and gambling is especially relevant to our understanding of gambling given the increasing prevalence of chronic sleep restriction in modern society, with nearly half of Americans obtaining less than the recommended amount of sleep needed for optimal performance (National Sleep Foundation, 2008). Future studies should explore the relationship between sleep, gambling and alcohol over a longer time period than that

which was used in the current study to capture the cumulative effects of sleep loss or alcohol consumption.

Limitations

As with other self-report studies, this study is limited by participants' accurate recall about events that occurred the previous day. The method utilised reduces reporting inaccuracies that rely on longer timeframes, but we also concede that it can be difficult for persons to recall accurately the numbers of drinks they may have consumed, the amount of time for which they gambled, and their total sleep time. In the future, asking participants to engage in real-time reporting of their drinking and gambling behaviour, possibly through a mobile phone application or another type of experience-sampling, may improve the accuracy of data collection. We also acknowledge that a longer data collection period, for example, one month, might offer greater insights into these behaviours.

The sample was recruited from Amazon Mechanical Turk, and whereas a 2017 study reported similarities between Mechanical Turk samples and samples recruited elsewhere, such a connection may in fact not have been the case in the current study (Buhrmester et al., 2011; Kim & Hodgins, 2017). In addition, the sample size of the current study restricted us from looking at the differences in gambling forms and modes. It may be that engaging in certain forms of gambling, such as sports betting for example, may enjoy a greater impact on the amount of alcohol one consumes, but because of the sample size we were unable to investigate these differences. In addition, the mode that one uses to gamble, be it via the Internet or in a gambling venue, may have an impact on factors such as alcohol consumption. The sample size may also have affected the statistical strength of the associations between sleep restriction, alcohol and gambling. Additionally, work and lifestyle factors were not taken into consideration in this study which may have an impact on people's sleep and consumption choices.

Finally, the authors recommend further work be undertaken to investigate causation, such as experimental studies that manipulate gambling, alcohol and sleep restriction. This type of applied research would offer great insights into how the current gambling environment influences gambling. Gambling policy-makers, as well as treatment providers and consumers themselves, would greatly benefit from this type of real-world research.

Conclusion

Gambling environments are often accessible late into the night and provide ready access to alcohol. Moreover, fatigue and intoxication are known to affect decision-making. The current study examined real-life gambling, sleeping-duration and alcohol consumption across a six-day period. The results suggest that a relationship does operate between these three behaviours across persons and across days. Those persons who persistently spend more time gambling, more time drinking alcohol or

less time sleeping, are likely to also engage in the other activities. Moreover, on the particular days when persons gamble, drink or are sleep restricted, they are more likely to engage in the other activities. In the future, different timeframes for measurement may reveal the distinct causal path that links these three behaviours in a cycle of reinforcing action.

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Submitted December 12, 2018; accepted July 24, 2019. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: The authors have not received direct funding from the gambling-industry at any time, and declare no competing interests for the present research.

Ethics approval: The study was approved by the Central Queensland University (Australia) Human Ethics Committee (Project Number H16/06-161).

Acknowledgements: The authors gratefully acknowledge research funding and support by Central Queensland University for the conduct of this study. All findings and conclusions are the sole responsibility of the authors.