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Problem gambling in a Nordic context

Moving from social factors to a psychosocial perspective

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Johanna Nordmyr

Abstract

Nordmyr, Johanna, 2020: Problem gambling in a Nordic context – Moving from social factors to a psychosocial perspective.
Supervisors: Associate Professor Anna K. Forsman, DrPH, Åbo Akademi University; Professor Lisbeth Fagerström, PhD, Åbo Akademi University

Aims In the growing field of research on gambling and problem gambling various focal points for prevention efforts are determined. The aim of this thesis is to identify and synthesise the evidence concerning social risk factors in relation to gambling and problem gambling in a Finnish and Nordic context, with a special emphasis on the less studied psychosocial factors. Further, it aims to present an overview of the state-of-the-art of Nordic gambling research.

Methods Studies I-II utilized cross-sectional population survey data from the 2011 Western Finland Mental Health Survey (n = 4624, response rate 46.2%), with logistic regression analyses (Odds Ratios, 95% confidence intervals) performed in both studies. Systematic mapping review technique was applied in Study III, encompassing searches in 21 bibliographical e-databases and Google Scholar, covering Nordic gambling-themed articles published between 2000 and 2015. Systematic screening and coding of select variables was performed in line with a specified study protocol. In Study IV, publications from international scientific journals included in Study III were manually screened to identify studies focusing on psychosocial aspects. Search updates for the time period 2016-2019 were also undertaken. Study screening was performed in line with predetermined inclusion and exclusion criteria, and key information coded.

Results In Study I, gambling form (online and mixed-mode gambling) as well as psychological distress increased the risk of reporting problem gambling among male past-year gamblers. The socio-demographic variables language and age group were also associated with problem gambling among men. Among female past-year gamblers, gambling form (mixed mode gambling) and reporting problematic alcohol use were associated with experienced problem gambling. In Study II, identical psychosocial factors – higher levels of experienced loneliness and lower levels of experienced trust in people in one's neighbourhood – were associated with both problem gambling and problematic alcohol use. No structural aspects of social networks were significantly associated with problem gambling. Study III encompassed 382 relevant publications, with 310 of these identified in international and national scientific databases. The majority of the identified studies had first authors with Finnish, Norwegian or Swedish affiliations. The majority of Nordic gambling studies represented prevalence research (38.8%), focusing on

gambling activities or problem gambling and various associated factors. Correspondingly, the majority of the studies (39.7%) analyzed population samples/cohorts or other cross-sectional samples, with many of the studies also applying review approaches or presenting case studies (for example the gambling regulation system of a country). The scientific disciplines most frequently represented were social sciences (including media and humanities) and public health sciences. Study IV included 21 original gambling studies applying statistical or interview/narrative methods, with loneliness and social support being the most frequently featured psychosocial phenomena, evidencing mixed results in relation to gambling and problem gambling.

Conclusions In this thesis, psychosocial phenomena are identified as relevant factors to consider in relation to gambling and problem gambling in the Nordic context, albeit questions remain regarding the causality and directionality of these complex connections. Results also highlight the significant role of psychosocial factors, compared to structural aspects of social networks, in relation to problem gambling in a Finnish sample. These results support further research on psychosocial experiences not only as harms caused by problem gambling but also as potential determinants of problem gambling. Here, the framework of Wardle and colleagues (2018) is a suitable backdrop for illustrating both harms and determinants in a multi-level socio-ecological framing. The survey study results further highlight inter-level interactions in problem gambling, where for example individual-level socio-demographic factors such as gender can interact with the gambling environment to affect the risk of experiencing problems.

The mapping study results highlight the need for a shift in the focus of Nordic gambling research from cross-sectional prevalence studies to increased translation of evidence into prevention and service-focused research initiatives. Gaps concerning for example research applying various qualitative methods and interdisciplinary research also emerged. Few longitudinal projects were identified, although these are now increasing in the Nordic setting. Concerning target groups, less research has focused on older adults and children. While a health science framework has been employed in Nordic gambling research, health science research with a more humanistic perspective such as that of caring science would add valuable contributions to both theory and health and social care practice, alongside the major epidemiological evidence base.

Keywords: gambling, problem gambling, psychosocial risk and support factors, population-based association study, systematic review, health sciences, caring science, Finland, Nordic

Abstrakt

Nordmyr, Johanna, 2020: Spelproblem i en nordisk kontext – Från sociala faktorer till ett psykosocialt perspektiv
Handledare: Akademilektor Anna K. Forsman, DrPH, Åbo Akademi;
Professor Lisbeth Fagerström, PhD, Åbo Akademi

Syfte Inom det växande forskningsfältet kring spel om pengar och relaterade problem identifieras fokusområden för preventiva insatser. Avhandlingens syfte är att identifiera och syntetisera evidensen rörande sociala riskfaktorer för spel om pengar och spelproblem i en finländsk och nordisk kontext, med särskilt fokus på mindre beforskade psykosociala faktorer, samt att presentera en översikt av nordisk spelforskning.

Metoder Delstudier I och II baserades på data från enkätstudien Enkät om psykisk hälsa i Västra Finland insamlat år 2011 (n = 4624, svarsprocent 46.2%). Logistiska regressionsanalyser utfördes i bägge studier (Oddskvoter, 95% konfidensintervall). Studie III utgjorde en systematisk kartläggningsstudie där sökningar utfördes i 21 bibliografiska databaser samt i Google Scholar, och nordiska publikationer med temat spel om pengar publicerade åren 2000-2015 ingick. Systematisk screening och kodning av förutbestämda variabler utfördes i enlighet med ett specificerat studieprotokoll. I Studie IV utfördes en manuell screening av publikationerna identifierade i internationella vetenskapliga journaler i Studie III för att urskilja studier med ett psykosocialt fokus. Uppdatering av databassökningar för perioden januari 2016-juli 2019 utfördes också. Screening av studier utfördes enligt fastställda inkluderings- och exkluderingskriterier och nyckelinformation kodades.

Resultat I Studie I var spelform (spelande både online och offline eller enbart online) och psykisk belastning associerade med en ökad risk för spelproblem bland män som ägnat sig åt spel om pengar under det senaste året. De sociodemografiska faktorerna språk och ålder var också associerade med spelproblem bland män. Bland kvinnor var spelform (spelande både online och offline) och problematisk alkoholanvändning förknippat med en högre risk för spelproblem. I Studie II var identiska psykosociala faktorer – högre nivå av upplevd ensamhet och lägre nivå av tillit till personer i ens grannskap – associerade med både spelproblem och problematisk alkoholanvändning. Inga strukturella faktorer kopplade till socialt nätverk var signifikant associerade med spelproblem. Studie III omfattade 382 relevanta publikationer, 310 av dessa identifierades i internationella och nationella vetenskapliga databaser. Majoriteten av identifierade studier hade en första författare med en finländsk, norsk eller svensk institutionstillhörighet. Majoriteten av nordiska spelstudier utgjorde prevalensstudier (38.8%) med fokus på spel om pengar eller spelproblem och associerade faktorer. I linje med detta analyserades

befolkningssampel eller andra tvärsnittssampel i majoriteten av studierna (39.7%), medan många studier även tillämpade översiktsmetodik eller presenterade olika fallstudier (rörande exempelvis spelregleringen i ett land). Samhälls- och humanistiska vetenskaper samt folkhälsovetenskap var oftast representerade när det gäller disciplin. I Studie IV inkluderades 21 originalstudier där statistiska metoder eller intervju- eller narrativa metoder tillämpats. Ensamhet och socialt stöd var de psykosociala fenomen som framkom mest frekvent i studierna, och visade på blandade resultat i förhållande till spel om pengar och spelproblem.

Konklusioner I avhandlingen identifieras psykosociala fenomen som relevanta faktorer att beakta i förhållande till spel om pengar och spelproblem i den nordiska kontexten, även om frågor kvarstår rörande orsakssamband och riktning i dessa komplexa kopplingar. Resultaten belyser också hur psykosociala faktorer, jämfört med strukturella aspekter av sociala nätverk, spelar en signifikant roll i förhållande till spelproblem i ett finländskt sampel. Resultaten stöder vidare forskning där psykosociala faktorer inte enbart undersöks i egenskap av negativa påföljder av spelproblem, utan också som potentiella determinanter för problematiken. Här fungerar Wardle och kollegors (2018) ramverk som en användbar kuliss för att belysa både negativa effekter av spelproblem men även determinanter utifrån ett socioekologiskt multinivåperspektiv. Enkätstudieresultat belyser även interaktionsaspekter, där exempelvis sociodemografiska faktorer på individnivå såsom kön kan interagera med spelmiljö och därmed påverka risken för att uppleva problem.

Resultaten av kartläggningsstudien understryker behovet av ett fokusskifte i nordisk spelforskning från prevalensstudier med tvärsnittsdesign till preventions- och servicefokuserade forskningsinitiativ. Ett behov av mer forskning där kvalitativa forskningsansatser tillämpas samt behov av mer interdisciplinär forskning framkommer också. En brist på longitudinella projekt identifierades men förekomsten av denna typ av projekt och studier ökar nu i Norden. Gällande målgrupper så har mindre forskning fokuserat på äldre personer samt barn. Medan ett hälsovetenskapligt ramverk tillämpats i nordisk spelforskning, så skulle hälsovetenskaplig forskning med ett humanistiskt perspektiv såsom det vårdvetenskapliga erbjuda värdefulla bidrag till både teori samt hälso- och socialvårdspraxis, vid sidan om den omfattande epidemiologiska evidensbasen.

Nyckelord: spel om pengar, spelproblem, psykosociala stöd- och riskfaktorer, befolkningsbaserad sambandsstudie, systematisk litteraturöversikt, hälsovetenskaper, vårdvetenskap, Finland, Norden

List of original publications[1]

ARTICLE I

Nordmyr, J., Forsman, A. K., Wahlbeck, K., Björkqvist, K., & Österman, K. (2014). Associations between problem gambling, socio-demographics, mental health factors and gambling type: sex differences among Finnish gamblers. *International Gambling Studies, 14*(1), 39-52. https://doi.org/10.1080/14459795.2013.840328

ARTICLE II

Nordmyr, J., Forsman, A. K., & Österman, K. (2016). Problematic alcohol use and problem gambling: Associations to structural and functional aspects of social ties in a Finnish population sample. *Nordic Studies on Alcohol and Drugs, 33*(4), 381-397. https://doi.org/10.1515/nsad-2016-0032

ARTICLE III

Nordmyr, J. & Forsman, A. K. (2018). A systematic mapping of Nordic gambling research 2000-2015: Recent advances and future directions. *Addiction Research & Theory, 26*(5), 339-348. https://doi.org/10.1080/16066359.2018.1426753

ARTICLE IV

Nordmyr, J. & Forsman, A. K. (2020). A systematic review of psychosocial risks for gambling and problem gambling in the Nordic countries. *Health, Risk & Society.* https://doi.org/10.1080/13698575.2020.1796929

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1. Introduction

Health challenges have changed in response to societal and lifestyle related developments with non-communicable forms of ill-health such as mental health problems presenting a major challenge (World Health Organization [WHO], 2019). Concerning lifestyle or health behaviours, a broad array of themes may be considered, including diet, physical exercise or alcohol use as well as phenomena related to issues such as social relationships or recreational activities. These lifestyle behaviours can – depending on context and situation – influence a person's experience of health and well-being in a positive or negative manner and in the short or long-term.

Gambling is one example of a recreational activity with potential negative consequences for the person participating in gambling activities and others around them. Negative effects include occasional financial problems or relationship conflicts as well as severe problems including separations or divorce, the wellbeing of children and other family members being negatively affected, loss of housing, and mental health problems including suicidal ideation and suicide attempts. These described challenges are reported by clients who have contacted the Finnish Peluuri services, which provide support for persons experiencing problem gambling and those around them who can also experience negative consequences (Silvennoinen & Vuorento, 2020).

Jonsson (2006) reviewed prevalence rates of problem gambling in the Nordic countries, highlighting how country comparisons are challenged by the use of varying screening instruments and different time perspectives applied (lifetime versus past-year), along with e.g. variation in study response rates. These challenges were addressed in a study by Williams, Volberg and Stevens (2012) where the global standardized rates of past-year problem gambling based on population prevalence studies between the years 1975 and 2012 were synthesised. The prevalence rates ranged from 0.5% to 7.6% with an average rate across all countries of 2.3%. The Nordic countries (where data was available for the period 2002-2011) reported average or lower than average rates: Denmark 0.5%; Finland 2.0%; Iceland 1.0%; Norway 1.1%; Sweden 1.5%.

Global past-year problem gambling prevalence rates have also been reviewed by Calado and Griffiths (2016), for the timeframe 2000-2015. Here, the non-

standardized past-year prevalence rates also varied globally (0.12–5.8%) and within Europe (0.12–3.4%). The authors highlighted challenges to direct comparisons due to methodological variations. The past-year prevalence rates of problem gambling among adolescents in the Nordic countries have previously ranged from 0.4 to 4.2% (Kristiansen & Jensen, 2011). Again, these are non-standardized prevalence rates, and the authors highlighted the challenges of varying methodological procedures among the reviewed studies.

Results from the most recent national gambling study in Finland conducted in 2019 showed a past-year problem gambling prevalence rate of 3.0% (Salonen et al., 2020) as indicated by the South Oaks Gambling Screen (Lesieur, & Blume, 1987). The difference in the prevalence rate of problem gambling between 2015 and 2019 (3.3% and 3.0%) was not statistically significant (Salonen et al., 2020).

Browne et al. (2017) highlighted that the – from a public health viewpoint – relatively low prevalence of problem gambling does not equate to the total negative impact, when the experiences of occasional negative consequences are also accounted for. Salonen et al. (2019) found in a larger Finnish study that 11.3 % of respondents had experienced at least one negative gambling consequence in the last year with the most frequently reported being harm to psychological or emotional wellbeing and negative financial consequences. It is also important to highlight the scope of negative effects in relation to individuals around a person experiencing problem gambling or occasional harm, so called concerned significant others (CSO's) (Kalischuk et al., 2006; Kourgiantakis et al., 2013; Riley et al., 2018). This is illustrated in a Finnish population study conducted in 2019, where 21.1% of respondents reported that at least one significant other (father; mother; sibling; grandparent; partner; child; close friend) in their life experienced problems related to gambling (Salonen et al., 2020). Common forms of negative consequences experienced by concerned significant others include emotional distress and relationship problems (Salonen et al., 2014; Salonen et al., 2016). Goodwin et al. (2017) estimated that around six other people are affected when a person experiences problem gambling, including a spouse/partner, close friend, parent, sibling, child, other family members, and / or co-worker.

The understanding of the nature and causes of problem gambling has implications for both prevention and support initiatives. This requires a nuanced approach, taking into consideration various determinants of problem gambling

on different levels, and applying a more holistic view of health. This scope includes a person's life context and related experiences, encompassing also psychosocial features related to social network and relationships. Caring science as a humanistic oriented science with a holistic perspective on health provides a useful lens when focusing on psychosocial phenomena in relation to health and illness, in this case problem gambling. This thesis examines multi-level factors related to gambling and problem gambling in a Finnish and Nordic context, emphasising psychosocial phenomena (experiences related to the social networks and interpersonal relationships of the individual). The thesis also provides a systematic mapping of the emerging knowledge field of Nordic gambling research, highlighting the research advances made and needed. The thesis results can provide guidance to Nordic gambling research and aid the development of prevention initiatives by highlighting the role of psychosocial phenomena.

2. Definition of the central concepts – gambling and problem gambling

2.1. Gambling

In this thesis *gambling* is defined as the "*staking money or something of material value on an event having an uncertain outcome in the hope of winning additional money and/or material goods"* (Williams et al., 2017, p. 11). From a broader health science and public health perspective, people´s gambling participation can be conceptualized on a continuum ranging from no gambling to more frequent gambling and/or gambling with increasing stakes, with both positive and negative impacts potentially occurring at different levels of gambling along the continuum (Korn & Shaffer, 1999; Korn et al., 2003; Latvala et al., 2019). The term *past-year gambler* is used in this thesis to describe people who report participating in at least one type of gambling at least once during the past 12 months.

2.1.1. Gambling-related harm

Langham and colleagues (2016, p. 4) defined gambling-related harm as *"any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community or population".* Langham et al. (2016) specified thematic classifications of harm that can occur in parallel or sequentially: cultural harm; financial harm; harms relating to relationships; emotional or psychological harms; harm to health; negative impacts on working life, studies or economic activity; criminal acts. Gambling-related harm is in this thesis considered a broader concept than problem gambling, encompassing for example the societal costs of gambling-related harm.

2.2. Problem gambling

While gambling participation is not necessarily associated with negative consequences, this thesis places a primary focus on problematic aspects of a person's gambling, of which there is a plethora of definitions and

conceptualisations in the research field, reflecting for example differences in disciplinary understanding (Delfabbro, 2013; Neal et al., 2005). This thesis adheres to the perspective often applied in public health research, focusing on risk associations and consequences of a person's gambling (Delfabbro, 2013). Problem gambling is "*characterized by difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community"* (Neal et al., 2005, p.125). In line with a continuum approach, the term problem gambling in this thesis encompasses various levels of problematic gambling in addition to the gambling of persons potentially fulfilling criteria for *pathological gambling* (see 2.2.3.). As the brief screen employed in the survey studies of this thesis was developed to identify problematic and pathological gambling, the possibilities for identifying persons experiencing only occasional harm or at-risk gambling may, however, be limited (see the Discussion for more details).

2.2.1 Pathological gambling

The term *pathological gambling* represents a medical perspective with an addiction-based approach and more focus placed on the individual (Delfabbro, 2013). The current clinical diagnosis term is Gambling Disorder, featured in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) under "Substance-related and Addictive Disorders" (American Psychiatric Association [APA], 2013), also featured in the *International Statistical Classification of Diseases and Related Health Problems* (ICD-11) under "Disorders due to addictive behaviours" (WHO, 2018). Persons potentially fulfilling criteria for pathological gambling would be included in the group of people identified as experiencing problem gambling in the survey studies of this thesis, but specifically distinguishing these participants is not an aim of the thesis.

3. Earlier research findings and knowledge gaps

The research topic of problem gambling can and has been approached from various theoretical frameworks (i.e. disciplinary perspectives), levels (i.e. societal, community, individual) and thematic angles (i.e. various operationalizations of the gambling activity and related factors). A study examining the growth of the gambling research field, encompassing over two thousand articles published between 1903 and 2003, evidenced shifts in the disciplinary focus of the growing research field (Shaffer et al., 2006). The results highlighted that a medical view centering on the concept of psychopathology and addiction has been a core theme within gambling studies and became even more prominent in publications from 1999 to 2003, reflecting a medicalization of problem gambling. During the same period, studies addressing biomedical perspectives (neuroscience) and epidemiology (demographics, comorbidity) became increasingly prevalent (Shaffer et al., 2006). No mapping of the Nordic gambling research field had been performed up until the publication of the third study included in this thesis.

In the growing evidence base on factors related to problem gambling, various aspects of the gambling activity and environment as well as a person's social context and circumstances have been identified. Abbott and colleagues (2013; 2015; 2018) summarized factors associated with problem gambling in the international interdisciplinary research base covering various levels of society. They highlighted how broader cultural phenomena (e.g. socio-cultural attitudes to gambling), as well as gambling environment and forms (where and how gambling takes place) can constitute a risk factor for problem gambling. Further, the social networks and relationships (e.g. gambling activities in one's family and peer group) seem to play a role in the individual's gambling activities and related experienced problems. In addition to these factors, previous research has examined individual characteristics (e.g. sex, age, educational level, socio-economic status), as well as mental health issues and problems related to substance use in relation to gambling problems (Abbott et al. 2013; 2015; 2018). This thesis is primarily focused on social factors related to problem gambling, adding to this field of knowledge through emphasizing subjective psychosocial factors, while acknowledging the overall life situation of the individual.

3.1. Individual-level risk factors associated with problem gambling

Individual characteristics associated with problem gambling in the collated international research (Abbott et al., 2013: 2015; 2018) include among other factors male gender, younger age and ethnic minority status. Additional individual-level factors include co-occurring mental health and substance use problems, as well as various issues related to participation in different types of games and gambling forms (in relation to online access or offline/land-based access) of gambling activities and related situational context (Abbott et al., 2004; 2013; 2015; 2018). Similar factors were also featured in the collected evidence from 23 articles reporting on longitudinal studies analyzing early risk factors for problem gambling, where identified risk factors included male gender, alcohol use frequency, tobacco, cannabis and illicit drug use, depressive states, and number of gambling activities, but also e.g. impulsivity, undercontrolled temperament and peer antisocial behaviours (Dowling et al., 2017).

With regard to gender, Abbott et al. (2018) referred to the collected evidence base and concluded that both gambling participation rates and the prevalence rates of problem gambling are higher among men than women. The authors noted, however, that the difference in problem gambling prevalence rates could be attributed to other gender-related factors such as preferred gambling types and forms. In a systematic review synthesising the evidence from 29 studies, Merkouris, Thomas, Shandley et al. (2016) also noted that a higher prevalence of problem gambling among men may be related to differences in preferred gambling activity. Further, while the research did present some conflicting results, certain individual-level risk factors emerged as more commonly associated with problem gambling among men (impulsive traits and problematic substance use) and women (unemployment, psychological distress, childhood abuse) (Merkouris, Thomas, Shandley et al., 2016). In addition to gender, age has been found to be associated with problem gambling, with higher prevalence rates generally found among younger age groups (Abbott et al., 2004; 2013; 2015; 2018). Further, the frequency of problem gambling is typically higher in immigrant or ethnic minority groups in Western settings (Abbott et al., 2018). As pointed out by Abbott and colleagues (2018), these associations are complex and could stem from cultural characteristics or experiences related to the migration or integration process, in addition to highly personal factors. The same

complexity applies to the varying associations between problem gambling and educational level, occupational status and socio-economic status (Abbott et al., 2004; Abbott et al., 2018; Castrén, Basnet, & Pankakoski, 2013). For example, in the review of early risk and protective factors in childhood, adolescence and young adulthood, high socio-economic status emerged as a protective factor, albeit the results of the three included studies focusing on this outcome varied (Dowling et al., 2017).

Research has indicated that problem gambling is associated with various substance use and mental health problems (Dowling et al., 2015; Lorains et al. 2011; Yakovenko & Hodgins, 2018). However, the directionality of the relationships between experienced mental health problems and problem gambling varies in studies (Hartmann & Blaszczynski, 2016; Holdsworth, Haw et al., 2012; Pilver et al., 2013). Abbott et al. (2018) highlighted that, albeit less studied, problem gambling is associated with a decreased sense of wellbeing and increased levels of experienced distress. In the review of early risk factors identified in longitudinal studies, psychological distress was not identified as a significant risk factor for the development of problem gambling specifically among youth and younger adults (Dowling et al., 2017).

Links between type of gambling and problem gambling have also been identified (Abbott et al., 2018). While certain continuous gambling forms and types, such as online gambling, electronic gambling machines and casino table games appear to be associated with problem gambling (Abbott et al., 2018; Gainsbury et al., 2013; Harris & Griffiths, 2018; Hing et al. 2015; Kairouz et al., 2012), it is important to consider gambling forms in relation to how they relate to a person's overall participation in (frequency of) gambling and the number of different games a person participates in (Abbott et al., 2018).

Up to the publication of the first study of the thesis at hand, these outlined factors had been analysed in two larger Finnish studies examining population-level data. A study by Castrén, Basnet and Pankakoski et al. (2013) presented findings in line with international research. That is, they identified links between problem gambling and male gender, younger age, risky alcohol consumption and smoking, unemployment and lower education level, as well as indications that men and women engage in different gambling patterns. For this study it should be noted that the associations could vary according to the level of problem gambling. Men

gambled at a more frequent level and the types of gambling activities differed (e.g. more online poker activities among men). Problem gambling was associated with frequent participation in multiple types of gambling. A different Finnish study surveying another population sample (Castrén, Basnet, Salonen et al. 2013) similarly identified male gender (but not younger age), mental health problems, risky alcohol consumption and smoking as risk factors of problem gambling, as well as slot machine usage and online gambling.

3.2. Social risk factors associated with problem gambling – from social networks to interpersonal relationships

Abbott et al. (2018) established research links between peer and family gambling and subsequent gambling and problem gambling. With regard to social factors, sociodemographic factors and gambling participation in a person's social network appeared as the strongest links whereas research available on other social factors is scarcer. Suissa (2015) discussed how experiences related to a person's social relationships and networks are important to consider in understanding risk in relation to problem gambling. Earlier research has highlighted the role of social networks, social life events and psychosocial factors in relation to gambling initiation and activities over time. The role of social context and networks and related experiences in gambling initiation and pathways have been highlighted by for example Reith and Dobbie (2011; 2013) and McQuade and Gill (2012). Earlier research specifically from the Finnish context has highlighted associations between experienced loneliness and problem gambling (but not problems in the more severe spectrum, i.e. gambling disorder) in a larger population sample (Castrén, Basnet, Salonen et al. 2013), and interview-based studies showed how feelings of togetherness and belonging were associated with gambling introduction among young people (Matilainen & Raento, 2014) and recreational gamblers' views that social issues such as experienced loneliness may lead to problem gambling (Pöysti & Majamäki, 2013).

The evidence on social family influences on youth gambling and problem gambling, including family socio-demographic factors, general family climate and family relationship characteristics was reviewed by McComb and Sabiston (2010). The authors concluded that family factors can function as both risk and

protective factors in relation to adolescent gambling and related problems. For example, the evidence on perceived family support was mixed, evidencing both positive and negative associations between low levels of perceived support and problem gambling. This was also the case for family cohesion. Family functioning was not a significant predictor of problem gambling in the study where it was featured as a factor. None of the included studies in the review by McComb and Sabiston (2010) explored the theme in a Nordic setting. In a review of longitudinal studies of early risk and protective factors for problem gambling (Dowling et al., 2017), only one of the included studies analysed a psychosocial factor (perceived social support), with statistically non-significant findings (Edgerton et al., 2015). Two relationship factors functioning as protective factors were identified; parent supervision and social problems (Dowling et al., 2017). In a review of problem gambling among older people, encompassing three studies with a Nordic focus, it was noted that older people may gamble to handle negative feelings caused by limited access to meaningful activities or an inability to participate in social activities due to age-related changes. Thus, gambling served to compensate for decreased social support and other experienced deficiencies in one's social life (Subramaniam et al., 2015). The research concerning problem gambling and psychosocial factors in the Nordic countries has not been systematically reviewed – an exercise which could be useful for furthering the evidence base in this area. This was the aim of the fourth study included in this thesis.

4. The social context of the Nordic countries

Social determinants on various levels, "*the conditions in which people are born, grow, live, work, and age*" (Marmot et al., 2012, p. 1014), impact a person´s experience of health and wellbeing (Marmot, 2005; Marmot et al., 2012). These determinants encompass both structural, macro-level determinants related to social, economic and political context and also individual-level social position, circumstances and experiences related to income, education, occupation and gender – all affecting mechanisms such as material circumstances and health behaviours related to health outcomes (Solar & Irwin, 2010; Commission on Social Determinants of Health, 2008).

The thesis at hand focuses on the Nordic Region, i.e. Denmark, Finland, Iceland, Norway and Sweden, as well as the Faroe Islands, Greenland and Åland, with a special focus on Finland. The Nordic region constitutes a welfare state context with various social services and benefits universally available for residents throughout the life course and an associated high living standard and low levels of overall inequality from an international perspective (Esping-Andersen, 1990; Marmot, 2018). While the Nordic countries show higher levels of wellbeing and lower levels of inequalities compared to other countries, changes and increasing inequality has also been noted (Mackenbach, 2012; The Organisation for Economic Co-operation and Development [OECD], 2020). Earlier research has shown that the Nordic welfare states are characterized by high levels of trust (Andreasson, 2017), which is considered as one key mechanism contributing to health and wellbeing among citizens (Holmberg & Rothstein, 2017; Rothstein, 2010). This makes the Nordic context an interesting arena to look at with regard to nuanced phenomena related to social context such as psychosocial phenomena –a specific knowledge field within social determinant research.

5. Theoretical starting points on problem gambling

5.1 The concept of health and the health sciences

Within the broad spectrum of health sciences, the promotion of health and wellbeing and the prevention of disease and ill-health are of interest. Health and illness are, however, understood and conceptualized in various ways in different sub-disciplines.

A medical perspective on health employs a naturalistic, reductionist perspective with an emphasis on functional aspects and the absence of disease (with a subsequent focus on clinical diagnoses and related practice), endorsed by some as being objectively quantifiable (e.g. Boorse, 1977). Other perspectives highlight a person's abilities and goal attainment in standard circumstances as key focal points in relation to health (e.g. Nordenfelt, 1995).

In this thesis, a holistic, multidimensional view on health is applied in line with the multi-dimensional definition of health introduced by the World Health Organization in 1948: "*a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*" (WHO, 2014). The thesis further reflects a public health viewpoint where the health and wellbeing of a person is considered from a multi-level perspective, and their shifting position in the health continuum is affected by determinants on various levels (Tulchinsky & Varavikova, 2010). Further, the holistic perspective on health endorsed within caring science, highlighting the meaning of subjective experiences and contextual phenomena in relation to health and illness, is applied (e.g. Fagerström, Eriksson & Engberg, 1999; Fagerström, 2019; Eriksson 2000; Eriksson 2015). These perspectives can perhaps be summarized in the definition of health put forth by Bircher and Kuruvilla (2014, p. 368): "*a state of wellbeing emergent from conducive interactions between individuals' potentials, life's demands, and social and environmental determinants".* This definition can be seen as a response to the critique of the original WHO definition, for example regarding the use of the term "complete" in relation to wellbeing (Huber et al., 2011).

5.2. A multi-level perspective on health and its determinants

Dahlgren and Whitehead (1991) illustrated how determinants on multiple levels shape health status and experience. Individual characteristics such as sex, age and hereditary factors form the core of the model, followed by a level of lifestyle-related factors including alcohol use, physical activity or gambling. The following level encompasses social and community networks, such as family and wider social circles. This is followed by living and working conditions (access and opportunities in relation to jobs, housing, education and welfare services), and the final macro level includes broader socioeconomic, cultural and environmental conditions such as policy (Dahlgren & Whitehead, 1991). In a similar model, Bircher and Kuruvilla (2014) highlighted three interacting levels of health determinants: Individual determinants (including life demands and individual potential – biologically given or personally acquired – to meet demands); social determinants; and environmental determinants. Throughout life, a state of health occurs when a person´s potentials suffice to respond satisfactorily to the demands of life, which can vary according to factors such as age, sex or gender, personal roles, and culture. Life's demands can be physiological, social, or environmental, with social demands encompassing social integration throughout the life course and roles and expectations in relation to e.g. work or relationships (Bircher & Kuruvilla, 2014). Notably, the models of Dahlgren and Whitehead (1991) and Bircher and Kuruvilla (2014) both highlighted the role of social networks, relationships and associated factors as determinants for health and wellbeing.

5.2.1. A multi-level perspective on problem gambling

As noted earlier, this thesis applies a public health perspective on gambling (Korn & Shaffer, 1999; Korn et al., 2003) as a broad range of determinants of problem gambling are considered. This can be seen as reflecting the multi-level perspectives on health by Dahlgren and White (1991) and Bircher and Kuruvilla (2014) described above. Also, the range of harms is viewed in an equally broad perspective. The multi-level model for gambling-related harm developed by Wardle and colleagues (2018) – highlighting a socio-ecological framing – is considered relevant in this thesis in light of the focus placed on social and psychosocial factors.

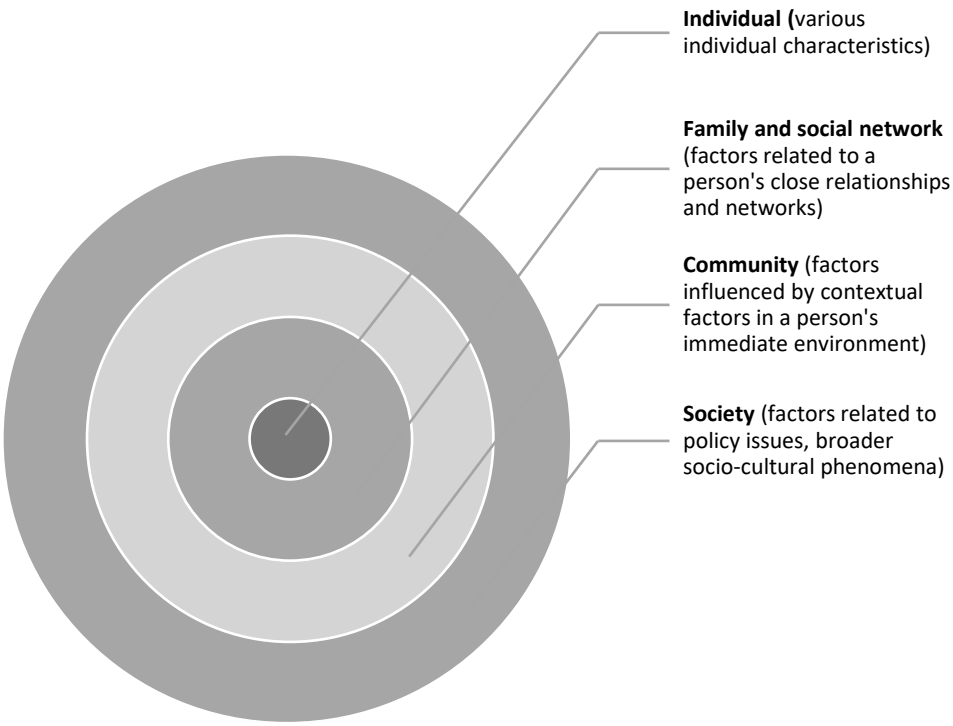

Figure 1. The socio-ecological model for gambling-related harms by Wardle et al. (2018).

While the socio-ecological model places primary focus on gambling-related harm, Wardle et al. (2018) noted that in the same way as harm can be experienced by individual people, families and communities, the determinants of harm and problem gambling are also formed at these levels. Interpersonal harm includes relationship disruption, social isolation and erosion of trust from family, friends and community. The model highlights how interpersonal-level factors such as family or peer gambling culture but also other factors, with a specific mention of social support, can be affected by as well as influence a person's gambling and eventual related problems (Wardle, et al., 2018). Hence, social networks and relationships and related psychosocial aspects are a point of interest also as factors influencing gambling and eventual subsequent harm.

5.3. The social determinants of health: making the case for psychosocial pathways

The role of social networks, relationships and related experiences in relation to health are featured in several disciplines within the health sciences. In, for example caring science, a person's social relationships and network and related experiences of phenomena such as acceptance, trust and belonging form a part of the person's life context and lived experience (Dahlberg & Segesten, 2010). Depending on the circumstances and nature of the psychosocial phenomena, these experiences can serve as a salutogenic health resource (Eriksson, 2000, p. 120) or as a health barrier contributing to the risk of various forms of health problems.

In order to add to the knowledge field of social risk factors and health problems, this thesis applies a psychosocial framework in the study of health-related risk and protective factors. This means that the subjective experiences surrounding a person's social network and interpersonal relationships are of primary interest when improving the understanding of the pathways and mechanisms for health and experienced wellbeing, while not overlooking the broader societal and community context and circumstances. The definition and view of psychosocial phenomena applied builds on the conceptual discussion of Martikainen and colleagues (2002). According to Martikainen et al. (2002) the Oxford English Dictionary definition of the term psychosocial implies that psychosocial factors can be seen as mediating the effects of structural social factors on individual health and wellbeing status, or that they are conditioned and modified by the social structures and contexts in which they exist. Consequently, they proposed that psychosocial factors constitute influences acting primarily between social structural factors and individual-level psychological characteristics. Further Martikainen et al. (2002) exemplified by describing how a social network may provide both instrumental aid as well as social contacts and emotional support, concluding that the contacts and emotional support would qualify as a psychosocial process.

In this thesis, psychosocial factors are viewed as the functional or qualitative aspect of networks and relationships – e.g. positive experiences of social support or negative experiences of loneliness (considered to indicate a lack or deficiency in relationships), as opposed to structural factors such as the number of people

in one's network and the frequency of contact with them, or an individual's marital status (Cohen & Wills, 1985; Thoits, 2011). Thoits (2011) pinpointed the mechanisms by which psychosocial factors can have a protective influence on health, such as perceived emotional or instrumental social support or experienced companionship and belonging. Many psychosocial phenomena, such as social support, build on principles of reciprocity in interpersonal relationships (Antonucci & Jackson, 1990; Fyrand, 2010).

The focus on psychosocial factors can be related to the wider research area on social capital (Bourdieu, 1986; Putnam, 2000) and its connections to both objective and subjective health and ill-health outcomes and experiences (Ehsan et al., 2019). In their framework of harmful gambling, Abbott et al. (2018) mentioned social capital in relation to gambling availability in areas with lower socioeconomic status and lower social capital, and they noted that more research could focus on the effects of gambling on social capital. While this thesis does not focus on social capital as such, the psychosocial concept applied aligns somewhat with the dimension of cognitive social capital (differentiated from structural social capital) described by Islam et al. (2006). Earlier reviews have indicated that these cognitive aspects of social capital appear as more relevant for mental health outcomes compared to structural aspects of social capital (De Silva et al., 2005; Ehsan & De Silva, 2015). It can also be pointed out that earlier research indicate that social capital may be more relevant in countries with higher levels of inequality (Ehsan et al., 2019; Islam et al., 2006), making the egalitarian Nordic welfare context an arena of interest (i.e., what role, if any, do psychosocial factors have in this context, in relation to problem gambling?).

This thesis stems from the aforementioned multileveled theoretical frameworks and models, emphasising the level encompassing social networks and relationships and related experiences as important when developing the evidence for the factors and potential mechanisms and pathways related to gambling and problem gambling.

6. Thesis overview and the included studies

This thesis consists of four sub-studies, focusing on varying gambling-related aspects and employing different research methods.

Study I examined problem gambling and associated socio-demographic factors, mental health problems, problematic alcohol use and gambling form among past-year gamblers in a Finnish setting, utilizing cross-sectional population survey data. The study was motivated by various preceding research findings, including the impact of an evolving online gambling arena.

In Study II, differences between problem gambling and problematic alcohol use in relation to the associations to psychosocial aspects were explored. The motivation for the study lay in earlier research concerning the role of social relationships and networks in relation to problem gambling as well as perceived commonalities between problem gambling and problems related to substance use.

Motivated by the vast array of gambling research covering various aspects of gambling and problem gambling, the potential usefulness of a study providing an overview of the field arose during the process with studies I and II. Hence, study III was designed to map the field of Nordic gambling research in recent years, covering both structural and qualitative aspects of conducted studies.

Study IV builds on the data from the third study and examined what psychosocial factors, outcomes or themes have been featured in Nordic gambling research and eventual associations between psychosocial factors and gambling activities or problems.

7. Study aims

This thesis aimed to identify and synthesise the evidence concerning social risk factors in relation to gambling and problem gambling in a Finnish and Nordic context, with a special emphasis on psychosocial factors that may constitute a risk for problem gambling. Further, it endeavoured to present an overview of the state-of-the-art of Nordic gambling research.

The following specific research questions were addressed in relation to the overall aims of the thesis:

- What are the associations between problem gambling and socio-demographic factors, mental health problems, problematic alcohol use and gambling form (online, offline/land-based, mixed) among male and female past-year gamblers in a Finnish population sample? (Study I)
- When focusing on the psychosocial risk factors and related risk profiling, are there differences between problem gambling and problematic alcohol use in a Finnish population sample? (Study II)
- When focusing on the social context and related risk profiling, are there differences between structural and functional aspects of social networks and relationships and their association to problem gambling and problematic alcohol use? (Study II)
- How are Nordic gambling publications from the period 2000-2015 distributed between the Nordic countries and research institutions? (Study III)
- What research disciplines, methodological approaches and study focus have been featured in gambling research in the Nordic countries during the period in question? (Study III)
- What knowledge gaps and developmental needs can be identified within the field, and what are the implications and related recommendations for policy and research? (Study III)
- What psychosocial factors, outcomes or themes are featured in Nordic articles published in international journals between the years 2000-2019? (Study IV)
- How are these psychosocial factors or themes associated with various gambling-related factors? (Study IV)

8. Methodological approaches

This thesis encompasses studies of gambling and problem gambling from different perspectives, warranting the use of different descriptive research methods. In line with its aims, the thesis encompasses both cross-sectional survey design (studies I and II), and systematic review design (studies III and IV). Information on the designs, outcomes and analyses of the included studies can be viewed in Table 2.

Table 2. Overview of included studies.

Study	Aim	Design/Method	Included variables	Analysis
I	To study the associations between problem gambling and socio-demographic factors, mental health problems, problematic alcohol use, and gambling form among men and women	Cross-sectional survey study (Western Finland Mental Health Survey 2011) Sample: 1546 women, 1438 men Mean age: 48.6 years (SD 17.0)	-Problem gambling (Lie/Bet tool) -Form of gambling involvement: land-based gambling only, both land-based and online gambling, online gambling only -Mental health problems (Psychological distress, GHQ-12) -Problematic alcohol use (CAGE tool) -Socio-demographic variables (gender, age group, occupation, language, education)	Pearson's chi-square test Logistic regression analyses
II	To study differences between problem gambling and problematic alcohol use, when considering associations to structural and functional (psychosocial) aspects of social ties	Cross-sectional survey study (Western Finland Mental Health Survey 2011) Sample: 2632 women, 1992 men 16.8% (*n* = 774) aged 15–29 years, 46.6% (*n* = 2144) 30–59 years, 36.6% (*n* = 1684) 60–80 years	-Problem gambling (Lie/Bet tool) -Problematic alcohol use (CAGE tool) -Structural aspects of social ties (marital status, frequency of social contacts, association activities) - Functional aspects of social ties (experienced loneliness, experienced social support, trust in people in one's neighbourhood, general trust) -Socio-demographic variables (gender, age group, occupation, language)	Pearson's chi-square test Logistic regression analyses
	To depict the gambling research field in the Nordic countries	Systematic mapping review Systematic searches in 10	-Author information (names [author 1-6], gender, country and affiliation of corresponding author) -Centre (university hospital,	Systematic coding of key information (quantitative

III	during the time period 2000-2015	international bibliographic databases, 9 Nordic bibliographical databases Complementary searches in the SweMed+ database, DART-Europe E-theses portal, Google Scholar. Hand searches in five select journals	university, research institution, other centre) -Publication title; year; type (research article, research report, doctoral dissertation). - Country (sample/context) -Age group and gender of sample (if applicable) - Methodological approach - Focus area - Scientific discipline	and qualitative descriptors)
IV	To present an overview of psychosocial phenomena featured in Nordic gambling research during the time period 2000-2019	Systematic review Based on data gathered within the scope of study III, as well studies identified in search updates for 2016-2019	- Author, publication title; publication year - Design (data/psychosocial measure or dimension/ analyses) - Key findings (emerged themes in interview studies or results of statistical analyses) -Quality assessment (internal and external validity, scores -, +, ++)	Systematic coding of key information (quantitative and qualitative descriptors)

8.1 Studies I and II – Population-based cross-sectional survey studies

Cross-sectional studies are appropriate when looking at the associations between different phenomena of interest, including the health and social characteristics of a population under study, at a certain point in time (Polit et al., 2001). Postal or web-based survey forms are common methods for collecting descriptive data (de Vaus, 2014; Dillman, 2007). The cross-sectional studies included in this thesis utilized regional population survey data from a paper-and-pencil self-report survey, the Western Finland Mental Health Survey, collected in 2011 (n = 4624). The survey project (Herberts et al., 2012) formed a part of the evaluation of regional development projects started in 2005 focusing on mental health promotion, prevention of mental health problems and substance abuse, as well as development services for mental health and substance abuse problems. Survey waves were conducted in 2005, 2008, 2011 and 2014, with gambling-related questions added to the survey in 2011. The collected information included socio-demographic background variables, individual-level

psychological factors, community resources, experienced mental health problems and the use of health and social services and associated attitudes. The 2011 questionnaire consisted of 38 questions (approximately 150 variables) of which the majority were multiple-choice. The included measures were selected based on validity and reliability, as well as comparability with other Finnish and international studies (Herberts et al., 2012).

In all survey waves, survey recipients (*n* = 10 000) aged 15 to 80 years were selected from the Population Information System by the Digital and Population Data Services Agency (formerly the Finnish Population Register Centre), applying a random sampling approach. The sample was stratified according to hospital district, aiming to reflect the population in the study region. The sample area has a population of nearly one million and includes both rural and urbanized regions. Two weeks prior to the questionnaires being posted, information was sent to the recipients via mail. A link to the survey website was provided for further information. The questionnaires, written in the respondents' mother tongue, were enclosed in the hospital districts' marked envelopes. Respondents registered as having a mother tongue other than Finnish or Swedish received the questionnaire in the language registered by the majority of the residents in their municipality, in addition to information on how to request an English version of the questionnaire. The survey response rate in 2011 was 46.2% (Herberts et al., 2012).

8.1.1. Study I

In Study I, the sample consisted of respondents having participated in some type of gambling activity during the past year (i.e. past-year gamblers) that responded to the Lie/Bet instrument: 1546 women and 1438 men.

Measures

Gambling activities

The respondents' gambling during the past 12 months was surveyed using questions enquiring about overarching types of gambling and gambling forms (if games were played online or offline): scratch and win tickets, lottery tickets and similar lottery games; betting (e.g. sports, horses); slot machine gambling (e.g.

video poker); casino games (e.g. card games such as poker, roulette). Information about frequency of play was collected for all types of gambling with the following response alternatives: never / occasionally / several times a month / several times a week / daily or almost daily (Herberts et al., 2012). Respondents were subsequently grouped according to their reported gambling activities during the past year; whether they had participated in land-based/offline gambling only, in both land-based and online gambling, or in online gambling only.

Problem gambling

The Lie/Bet tool (Johnson et al., 1997; Johnson et al., 1998) – a validated screening instrument – was used to identify respondents possibly experiencing problem gambling. It can be noted that the screening instrument does not pinpoint persons fulfilling clinical criteria for pathological gambling. The instrument encompasses two questions, derived from the diagnostic criteria for pathological gambling in the DSM-IV (APA, 1994), with yes or no response options. Answering yes to one, or both, of the statements suggests problem gambling. The two items were used as a dichotomous dependent variable in analyses (respondents answering yes to one or both questions were classified as possibly experiencing problem gambling).

Socio-demographic variables

The variables gender (man/woman), language (Finnish/Swedish/other), age (four age groups: 15–29, 30–49, 50–64, 65–80), education (under 10 years or 10 years or over) and occupation (employed full-time, employed part-time, student, military service, retired, unemployed, homemaker/caregiver, other) were included.

Psychological distress

The General Health Questionnaire, GHQ-12 (Goldberg & Hillier, 1979; Pevalin, 2000) was included, assessing psychological distress. The GHQ items are scored as 0 or 1 and the points from all questions are summarized. Having a score of >4 points indicates psychological distress.

Problematic alcohol use

The four-item CAGE screening tool was included to identify problematic alcohol use. The four questions have yes and no response options (Ewing, 1984), and

items are scored as 0 or 1. Respondents who score a total of ≥ 2 points are classified as showing signs of problematic alcohol use.

Analyses

Pearson's chi-square tests were used to study the distribution of variables included in analyses. Logistic regression was used to analyse the relationship between the independent variables and the nominal dependent variable (i.e. being categorized as reporting problem gambling versus being categorized as not reporting problem gambling). Analyses generated the probability of a categorization in the form of odds ratios, OR, applying 95% confidence intervals (Polit et al., 2001). In the analyses, all variables were analysed simultaneously, functioning as confounders to one another (Pampel, 2000). Weighting was not applied in the analyses (Lohr & Liu, 1994; Winship & Radbill, 1994).

8.1.2. Study II

In study II, all 4624 respondents (57.1% women, *n* = 2632) were included in the analyses.

Measures

Problem gambling and problematic alcohol use

As in study I, the Lie/Bet tool (Johnson et al., 1997; Johnson et al., 1998) was used to identify respondents possibly experiencing problem gambling, and the CAGE screening tool was included to identify problematic alcohol use among respondents (Ewing, 1984).

Socio-demographic variables

Study II included the variables gender (man/woman), language (Finnish/ Swedish/ other), age group (15–29 years, 30–59 years, 60–80 years), employment status (full-time or part-time employment; student/military service/retired/caregiver; unemployed).

Structural aspects of social ties

Marital status ("being married", "in a common-law marriage or relationship", "divorced", "unmarried" or "widowed"), frequency of social contacts with friends and neighbours ("several times a week" and "several times a month" were combined and coded as frequent social contacts, while "a few times a year", "never" and "does not exist" were coded as infrequent social contacts) and association activities were used to measure the quantitative and structural aspects of social ties in this study. Participation in association activities was assessed with the question "How active are you when it comes to association activities?" Response options were "very active", "fairly active" (these two options combined and dichotomized into an "active" category), "not very active" and "not active at all" (these two alternatives dichotomised into a "non-active" category).

Functional (psychosocial) aspects of social ties

The Oslo 3-item Social Support Scale, OSS-3, (Brevik & Dalgard, 1996), was used to measure experienced social support. The first question was "How many people are so close to you that you can count on them if you have serious personal problems?" Response alternatives included the options "none", "1 or 2", (the first two options grouped together in analyses as indicating a low level of experienced support) "3–5" (coded as a moderate level of support) and "more than 5" (coded as a high level of experienced support).

Experienced loneliness was assessed by the question: "Do you ever feel lonely?", with four response options: "often", "sometimes", "seldom" and "never". The variable was recoded into alternatives "often", "seldom" and "never" (the options often and sometimes recoded into one category).

Questions regarding trust in people in one's neighbourhood and general trust were included: "Most people in my neighbourhood can be trusted" and "It is better not to trust anyone". The response options to both questions were the following: "fully correct", "quite correct", "quite incorrect" and "fully incorrect". The responses were dichotomised and reversely studied (i.e., agreement with the statements being coded as trust for the first question and disagreement with the statements being coded as trust for the second). The single-item questions have been used in earlier studies (see Herberts et al., 2012).

Analyses

Pearson's chi-square tests were utilized when studying the distribution of the included variables. Associations between problem gambling and problematic alcohol use (dependent variables) and independent variables were measured using logistic regression analyses (Odds Ratios, OR, with 95% confidence intervals, Pampel, 2000). The logistic regression analyses were performed stepwise, with three models constructed for each dependent variable, applying the same order of independent variables. The first model encompassed socio-demographic variables, the second model adding on structural social tie variables, and the third model focusing on the functional (psychosocial) aspects of social ties. Post-hoc regression analyses of interaction effects were performed between social tie variables that proved to be statistically significant and socio-demographic factors, controlling simultaneously for all other included factors in the third model of the logistic regression analyses. As in study I, weighting was not applied in analyses.

8.2 Studies III and IV – Systematic review studies

The development of review methods has been described by Chalmers et al. (2002), an area which today encompasses multiple methods including systematic mapping reviews (Grant & Booth, 2009; Lockwood & Tricco, 2020). Systematic mapping or scoping reviews are a continually developing methodology generally utilized to illustrate a certain field of research and identify gaps in the research field or evidence base, which can be useful for policymakers, practitioners and researchers. Mapping reviews generally endorse a broad array of studies, describing them according to e.g. theoretical perspective, design or population group/ setting and other descriptive features which can identify research gaps or provide the basis for an informed decision regarding whether to undertake a more in-depth review or synthesis on a subset of studies (Grant & Booth, 2009; Lockwood & Tricco, 2020).

A systematic review, in turn, aims to draw together all the knowledge on a more specified topic, synthesising the results of the included studies on a deeper level than the systematic mapping study. A wide range of study designs can be included in a systematic review according to the review aims and research

questions (Grant & Booth, 2009). Mulrow (1994) highlighted the advantages of systematic review methods, including e.g. possibilities for determining if scientific findings are consistent and can be generalised across populations and settings and the potential to limit bias and improve the reliability and accuracy of recommendations. The systematic review in this thesis included articles covering studies where different research methods were employed, including interview studies. Hence, the review encompasses an element of meta-synthesis (Polit et al., 2001).

8.2.1. Study III

In this study, mapping technique for multidisciplinary systematic reviewing outlined by Curran and colleagues (2007) was applied along with recommendations suggested by Daudt et al. (2013), building on to Arksey and O'Malley's framework (Arksey & O'Malley, 2005).

Searches

Systematic searches were performed in 10 international bibliographic databases: CINAHL; Academic Search Premier; PsycInfo, Web of Science; Pubmed; ScienceDirect; Sociological Abstracts; Social Services Abstracts; ASSIA: Applied Social Sciences Index Abstracts; International Bibliography of the Social Sciences. Searches were also conducted in the following Nordic bibliographical databases: Danish National Research Database and Bibliotek.dk (Denmark); Juuli portal and ARTO Reference Database of Finnish Articles (Finland); Leitir.is (Iceland); Openaccess.no and Norwegian and Nordic index to periodical articles (Norart) (Norway); Digitala Vetenskapliga Arkivet (DiVA) and SwePub (Sweden).

In addition, searches were conducted in the SweMed+ database and in the DART-Europe E-theses portal, as well as hand searches in five journals (Nordic Studies on Alcohol and Drugs/Nordisk Alkohol- och Narkotikatidskrift; Scandinavian Journal of Psychology; Nordic Journal of Psychiatry; Acta Psychiatrica Scandinavica; Scandinavian Journal of Public Health). The journals were selected based on frequency of publications generated from them in the data material gathered from the international e-databases. In order to identify relevant gray literature, Google Scholar searches were performed in the Nordic languages and in English.

Inclusion criteria

A focus on gambling (prevalence of gambling participation; problem gambling; gambling legislation etc.) in a Nordic setting or country was an inclusion criterion. Studies published in English or a Scandinavian language between the time period 1.1.2000 and 31.12.2015 were included. International scientific publications focusing on the Nordic context with authors from non-Nordic institutions were included, whereas publications by Nordic authors not focusing on the Nordic context were excluded. Original studies (journal articles, empirical or theoretical), review studies and doctoral theses were included. Less restrictive inclusion criteria were endorsed for publications identified in the Nordic databases and journals (for example, editorials in scientific journals were included). The authors attempted to limit the Nordic records to scientific publications.

Screening

When screening the identified records, article inclusion was based on the manifest information provided in the record titles, abstracts and key words. The initial data screening – where all duplicates and all clearly irrelevant publications were excluded – was performed by one researcher. The remaining records were screened by two researchers independently and eventual discrepancies regarding the inclusion or exclusion of articles were discussed and resolved.

Coding and analysis of key information of the included publications

Manual, blinded double coding was conducted by two researchers. A number of structural descriptors were coded for each publication (if applicable) in addition to publication title and year: author names (author one to six); gender (corresponding author); country (corresponding author); affiliation (corresponding author); centre (university hospital, university, research institution, other centre); publication type (research article, doctoral dissertation, other). Also, content-related descriptors were considered (if applicable): country (sample/context); age group of sample; gender of study subjects; methodological approach; focus area; discipline.

Numeric data was analysed using IBM SPSS Statistics software (version 23). Also, a text cloud of the content of the included international publications and theses was generated, functioning as a form of discourse analysis (Potter & Wetherell, 1994). The text cloud was generated utilizing the key terms featured in the publication titles and abstracts according to frequency of usage.

In addition to quantitative research descriptors, information on the *h*-index of the most frequently published authors identified from each country, as well as journal impact factors, were gathered.

8.2.2. Study IV

The articles published in international scientific journals (*n* = 183) from Study III were scanned for inclusion. Additionally, the searches conducted in ten international bibliographical databases were updated in line with the strategies detailed in Study III, covering the time period January 2016 to July 2019, and these additional identified studies were screened for inclusion in the same manner.

Inclusion criteria

Studies were included based on publication type (original studies included, review studies, editorials and similar excluded) and study content. Studies with a focus on gambling or problem gambling in relation to psychosocial factors, outcomes or – in the case of interview or narrative studies – themes or categories, were included. Studies focusing on biomedical perspectives, regulatory and legislative issues related to gambling or problem gambling and other topics unrelated to psychosocial themes were not included.

Screening

Based on title, abstract and key word information, an initial screen of identified studies was performed by one researcher, where articles clearly irrelevant in relation to the review scope were excluded. Potentially relevant studies and studies with unclear content were thereafter scanned in full text versions for inclusion by two researchers. Articles reporting on studies where interview or narrative methods were applied were reviewed in full-text to assess their relevance.

Data extraction and synthesis

The following descriptors were considered for the included publications: author and publication year; quality assessment (internal and external validity, overall validity); study design (data/psychosocial measure or dimension/analyses); key findings (emerged themes in interview studies or results of statistical analyses).

With regard to statistical findings, the results of the most comprehensive analyses are reported (i.e. if regression models were performed, the results of these were reported instead of eventual preceding Pearson's chi-square tests or similar). Only findings of Nordic participants were reported, also for studies including participants from non-Nordic countries. For studies applying interview or narrative approaches, an inclusion criterion was surfaced themes with a comprehensive (thematic) focus on social components. This follows the synthesising or meta-aggregation process outlined by Pearson (2004) where findings in the forms of themes, categories and similar from included review studies are collated.

Quality appraisal

Quality assessment of studies was performed utilizing the recognized NICE checklists, with separate systematic guidelines for quantitative and qualitative studies (National Institute for Health and Care Excellence, 2012a; National Institute for Health and Care Excellence, 2012b). Study quality was assessed by one researcher and unclear cases discussed between two researchers. Internal and external study validity was coded as ++, +, or -. A high quality score, ++, indicated that all or most checklist criteria were fulfilled. + indicated moderate quality, where some checklist criteria had been fulfilled, and where they had not been fulfilled (or adequately described), study conclusions were unlikely to alter. – indicated a low quality score (few or no checklist criteria fulfilled, study conclusions could easily be altered).

8.3. Ethical considerations

The studies undertaken adhere to the principles concerning human research ethics of the Declaration of Helsinki (World Medical Association, 2013), as well as general guidelines for the responsible conduct of research and ethical sustainability (Finnish Advisory Board on Research Integrity, 2012). The guidelines for responsible conduct of research encompass integrity, meticulousness, and accuracy in conducting research, as well as in recording, presenting, and evaluating research results. Further, the work adheres specifically to the ethical principles of research in the humanities and social and behavioural sciences, encompassing three main areas: Respecting the autonomy of research subjects; avoiding harm; privacy and data protection (National Advisory Board on Research Ethics, 2009).

The survey studies were based on population survey data stemming from the Western Finland Mental Health Survey. In Finland, ethical approval is not required for voluntary, anonymous population surveys. However, ethical approval was applied for and received from the Ethical Committee of the Finnish Institute for Health and Welfare (30 January 2014). In this case, it was recognized that the overarching project theme – mental health, mental health problems and related service use – can be perceived by many as a sensitive subject, requiring special consideration in relation to for example confidentiality aspects. The survey study targeted persons aged 15-80 years, i.e. persons considered able to give informed consent to survey participation. Considering the perceived sensitivity of the subject, the use of respondent identification numbers on the return envelope were not used even though they may have potentially increased the survey response rate by enabling the use of reminder letters to non-responders. In all survey waves, the questionnaires ended with an open question, providing an opportunity for the respondents to express thoughts on the survey theme in general. In addition to providing contact information to representatives of the research group, the project description in the questionnaire form included encouragement to contact primary health care services if the questions caused concern regarding the respondent's own mental health (Herberts et al., 2012). Data management (handling, storage and protection) followed the general guidelines of Åbo Akademi University and The Finnish Institute for Health and Welfare.

The systematic review studies were based on secondary data, which signifies that some ethical aspects relevant for empirical studies which concern e.g. direct data collection and handling, are less relevant. However, aspects concerning research ethics are naturally considered. For example, the screening of abstracts for inclusion in the review was performed by two researchers in order to limit bias related to single author screening as well as balancing the researchers' interpretation and reporting on the findings of earlier studies.

The author of this thesis has no potential conflicts of interest in relation to the research theme and has not collaborated with the gambling industry during the work with this thesis.

9. Results of the sub-studies

9.1 Results of the cross-sectional survey studies

The first survey study (Study I) focused on the associations between problem gambling and socio-demographic factors, mental health problems, problematic alcohol use, and gambling form among male and female past-year gamblers. The second survey study (Study II) focused on differences between problem gambling and problematic alcohol use when considering their associations to structural and functional (psychosocial) aspects of social networks and relationships while controlling for socio-demographic variables. The first study only included past-year gamblers (n = 2984) of which 51.8% (n = 1546) were women. The second sample consisted of 57.1% women (n = 2632).

9.1.1. Problem gambling, mental health problems, problematic alcohol use and gambling form

In the first study, the prevalence of problem gambling was 5.3% (n = 158) as per the Lie-Bet tool categorization. A higher prevalence of problem gambling was found among male past-year gamblers: 7.6% (n = 110) than female past-year gamblers 3.1% (n = 48) ($x^2_{(1)} = 30.69$, $p = .001$).

Problematic alcohol use was more common among male (32.7%) than female past-year gamblers (16.9%, $x^2_{(1)} = 110.06$, $p < .001$), while psychological distress was more frequently reported among women (23.4%) than men (18.1%, $x^2_{(1)} = 12.04$, $p < .001$). Among female gamblers, 75.2% had participated in land-based gambling only during the past year, 21.5% in both land-based and online gambling, and 3.2% in online gambling only. Among male gamblers, 62.4% had engaged in land-based gambling only during the past year, 31.4% in both land-based and online gambling, and 6.1% in online gambling only. This difference in distribution was significant between male and female past-year gamblers ($x^2_{(2)} = 58.67$, $p < .001$).

Considering the factors of interest, the logistic regression analyses showed that for male past-year gamblers, psychological distress (OR 2.40, 95% CI 1.52-3.80) and gambling both online and offline (OR 1.80, 95% CI 1.14-2.84) or only online (OR 3.85, 95% CI 1.95-7.57) was associated with an increased risk of problem

gambling. The logistic regression analysis also evidenced a significant risk association for speaking another language than Finnish or Swedish (OR 4.81, 95% CI 1.10-21.05). The difference in problem gambling distribution between age groups was also significant for male past-year gamblers, as the group encompassing 50 to 64-year-olds was less likely to report possible problem gambling (OR 0.48, 95% CI 0.23-0.97) compared to the youngest age group.

For female past-year gamblers, the analyses showed that reported problematic alcohol use (OR 2.31, 95% CI 1.18-4.49) and participation in both land-based and online gambling (OR 2.22, 95% CI 1.15-4.30) were significantly associated with problem gambling.

Occupational status and educational level were not found to be significantly associated with problem gambling for neither gender.

9.1.2. Problem gambling, problematic alcohol use and psychosocial factors

The whole sample was included in the second study (n = 4624) with the frequency of problem gambling therefore somewhat lower at 3.5% (n = 160). The frequency of problematic alcohol use was 20.0% (n = 926). Of the respondents, 33 people fulfilled criteria for experiencing problems in relation to both gambling and alcohol use.

For problem gambling, the Pearson's chi-square test showed significant differences in distribution for the structural social tie variables marital status and social contacts with neighbours, and the psychosocial variables trust in people in one's neighbourhood, general trust and experienced loneliness. When comparing respondents with and without problematic alcohol use, Pearson's chi-square test showed significant differences in distribution for all variables measuring structural and functional aspects of social ties.

For problem gambling, no structural aspects of social ties were significantly associated with problem gambling in Models 2 or 3. Model 3 highlighted that higher levels of experienced loneliness (seldom, OR 1.68, 95% CI 1.00-2.84, often, OR 3.02, 95% CI 1.77–5.16) and a lower level of trust in people in one's neighbourhood (OR 1.92, 95% CI 1.21–3.05) significantly raised the likelihood of problem gambling in the study sample.

For problematic alcohol use, Model 3 showed that for structural aspects of social ties, being divorced significantly increased the likelihood of exhibiting

problematic alcohol use within the study sample (OR 1.37, 95% CI 1.03-1.82), while being widowed significantly decreased the probability (OR 0.37, 95% CI 0.20-0.68). Of the functional aspects of social ties, a higher level of experienced loneliness (seldom OR 1.57, 95% CI 1.28-1.94, often OR 1.99, 95% CI 1.58-2.50) and a lower level of neighbourhood trust (OR 1.38, 95% CI 1.07-1.76) were significantly associated with problematic alcohol use.

Post-hoc regression analyses of interaction effects between social tie variables and socio-demographic variables showed no significant interaction effects between the psychosocial variables significantly associated with problem gambling and the socio-demographic variables. However, some of the interaction analyses were not possible to perform due to the small number of individuals in some of the categories.

Several significant interactions between social tie indicators and socio-demographic factors emerged for problematic alcohol use. Marital status (being unmarried) interacted significantly with gender (OR 0.41, 95 % CI 0.27–0.64), which indicated that in this sample being unmarried presented a risk factor among women. Trust in people in one's neighbourhood interacted significantly with age group (30–59 years, OR 0.47, 95 % CI 0.28–0.80 and 60–80 years, OR 0.46, 95 % CI 0.25–0.87): being in the youngest age group and experiencing a low level of trust in one's neighbourhood significantly increased the probability of exhibiting problematic alcohol use. Neighbourhood trust was also significantly linked with language (the group of respondents speaking a language other than Finnish or Swedish, OR 0.08, 95 % CI 0.01–0.82), i.e. a low level of neighbourhood trust increased the likelihood of being in the group with problematic alcohol use among native speakers. General trust interacted with age group (OR 0.54, 95 % CI 0.32–0.92): experiencing low levels of general trust was a risk factor for problematic alcohol use in the youngest (15–29 years) and oldest (60–80 years) age groups in the sample.

9.2 Results of the systematic review studies

Study III depicted the gambling research field in the Nordic countries during the period 2000-2015. After screening the records identified in the systematic searches (n = 5548), 183 scientific publications in international journals, 109 publications from Nordic scientific journals, 18 doctoral theses, 56 reports, 7 books and 9 other publications fulfilled the study inclusion criteria.

9.2.1. Nordic gambling research 2000-2015

Structural descriptors of the reviewed articles

Of the international and Nordic research publications (*n* = 310), 44.1% were published in the period 2000-2010, while the remaining 55.9% were published between 2011 and 2015. For the gray literature publications (*n* = 72), 62.5% were published between 2003 and 2010. The most common publication forums for the international publications were: Journal of Gambling Studies (16.4%, *n* = 30); International Gambling Studies (9.3%, *n* = 17); Journal of Gambling Issues (8.7%, *n* = 16); Nordic Studies on Alcohol and Drugs (4.4%, *n* = 8); Addiction Research & Theory (4.4%, *n* = 8). The most commonly featured national journals were Hyvinvointikatsaus, Yhteyskuntapolitiikka, Psykologia (all Finnish), Psykolog Nyt (Norwegian), Janus (Finnish), and Tidsskrift for Norsk psykologforening (Norwegian).

When a Nordic affiliation was determined for the first author of records identified in the international and Nordic databases (*n* = 232), most authors had a Finnish (*n* =70), Norwegian (*n* = 57) or Swedish affiliation (*n* = 55). Of the 246 records that could be assigned a center for the first author, the majority of the affiliations were universities (71.1%, *n* = 175), followed by national public health institutes and other research institutes (18.3%, *n* = 45), other institutions (6.1%, *n* = 15) or university hospitals (4.5%, *n* = 11). The research institutions with most publications included in the mapping study were University of Helsinki (Finland), University of Bergen (Norway), The Finnish Institute for Health and Welfare (Finland), Norwegian Institute for Alcohol and Drug Research (Norway) and University of Gothenburg (Sweden). First author affiliation information was rarely available in the gray literature records.

Regarding international and national studies with a specific country in focus (*n* = 286), i.e. the country of the study sample(s) or the context when presenting e.g. a regulatory gambling framework, 28.7% (*n* = 82) of the studies were focused on some aspect of gambling in a Finnish context. Sweden was in focus in 20.6% (*n* = 59) of the studies, followed by Norway (19.6%, *n* = 56), Denmark (17.5%, *n* = 50) and Iceland (3.1%, n = 9). Eight articles focused on two or more Nordic countries, while fifteen records focused on one/several Nordic countries together with other countries in a comparative or cross-cultural framing. Considering the gray literature, the same order of the countries in focus was found.

When considering the *h*-index of the first author most frequently published for each country, the authors from Iceland (9) and Denmark (14) evidenced higher values than their neighboring authors (range 4-8). The mean metrics of the most published authors for the countries – the number of authors being between 2 for Iceland and 8 for Finland and Sweden – ranged between 5 (Iceland) and 8 (Norway and Sweden). The Google Scholar metrics were difficult to determine due to missing profiles for many researchers. Half of the international and national publications (n = 151) had a female first author. The broad research topics identified for the most frequently published first authors in each country are presented in Study III.

Content-related descriptors of the reviewed articles

The majority of the publications with information that enabled a coding of study focus (*n* = 255) focused on the population prevalence – and incidence (three studies) – of gambling activities and problem gambling mainly (38.8%, *n* = 99). Policy and regulation were the focus of 13.3% (*n* = 34) of the studies. Subjective experiences regarding gambling/problem gambling was the focal point in 9.0% (*n* = 23) of the studies, while screening and diagnosis (including evaluations of instruments but also neurobiological screening) was the focus of 7.5% (*n* = 19) of the included studies. Cognitive processes and mental models (primarily in a laboratory setting) were featured in 4.7% (*n* = 12) of the records. Media discourse analyzes and similar studies comprised 3.1% (*n* = 8) of the studies, while theoretical discussion on conceptual underpinnings was the focus of 3.5% of the studies (*n* = 9). Twenty studies (7.8%) focused on treatment development and evaluation, while 3.1% (*n* = 8) focused on support services. A mixed study focus was coded for 9.0% (*n* = 23) of the records. Regarding the gray literature, a similar pattern was seen: 37.3% (*n* = 25) were coded as having a prevalence and/or incidence focus; while 13.4% focused on policy and regulation (*n* = 9); 9.0% on services (*n* = 6); 7.5% on subjective experiences (*n* = 5); 1.5% on conceptual underpinnings (*n* = 1); 3.0% on screening and diagnosis (*n* = 2); 3.0% on prevention (*n* = 2); 1.5% on treatment development (*n* = 1) and 23.9% were coded as having a mixed focus (*n* = 16).

Regarding study design, the information for 247 international and national publications enabled coding, of which 26.7% (*n* = 66) analyzed larger population samples and cohorts, and 13.0% (*n* = 32) applied cross-sectional study designs

limited in representativeness or size (e.g. self-selected samples). Review/synthesis design or presentation of case studies was featured in 28.3% (*n* = 70) of the studies. Observational ethnographical studies or experimental observation studies in a clinical setting were applied in 11.7% (*n* = 29) of the articles, and interview approaches in 6.9% (*n* = 17). Problem gambling treatment/service intervention evaluation trials were the focal point of 4.9% of the studies (*n* = 12). A mixed-methods design or multiple research approaches were applied in 7.3% (*n* = 18) of the records. Longitudinal design was coded for 1.2% (*n* = 3) of the publications, stemming from the Swedish Swelogs project. For the gray literature studies (66 records provided data), 34.8% (*n* = 23) were coded as applying review approaches and 22.7% (*n* = 15) were based on analyses of larger population samples. Interview approaches were applied in 9.1% (*n* = 6) of the gray literature studies, limited cross-sectional samples analysed in 7.6% (*n* = 5), register data utilized in one study and longitudinal data in one. Mixed approaches were applied in 22.7% (*n* = 15), with articles reporting on multiple focus areas – e.g. prevalence, prevention and treatment/services.

Discipline was coded for 271 of the studies, of which 27.7% were classified as representing social sciences including media and the humanities (*n* = 75), 25.1% as public health (*n* = 68), and 19.6% as medicine (*n* = 53). Remaining records were coded as representing behavioral sciences (10.7%, *n* = 29), law, economy and political sciences (8.5%, *n* = 23), and 8.5% (*n* = 23) as representing multiple disciplines. For the 69 gray literature publications that could be coded for discipline, 49.3% (*n* = 34) represented public health, 24.6% (*n* = 17) social sciences, 11.6% (*n* = 8) multiple disciplines, 10.1% (*n* = 7) political science, economy and law, 2.9% (*n* = 2) medicine, and 1.4% (*n* = 1) behavioral sciences.

A tag cloud illustrating the terms most commonly used in the titles and abstracts of the international publications and theses, capturing key characteristics of the research field, can be viewed in Study III. In addition to gambling-related terms, the terms most frequently featured were “problem”, “pathological”, “addiction” and “treatment”, illustrating a dominating focus on problematic aspects of gambling. Other terms (“prevalence”, “associated”) could be viewed as representing methodological characteristics of the field.

In the international and Nordic database records utilizing empirical data (or reviewing these studies) and providing information on the study participants’

age (*n* = 154), 32.5% (*n* = 50) studied adolescent samples. Adult samples were studied in 25.3% (*n* = 39) of the articles, mixed age group samples (not necessarily population samples) in 22.7% (*n* = 35), and population-level data in 19.5% (*n* = 30) of studies. Of the gray literature publications that could be coded for age (*n* = 26), 15 focused on population-level data, 12 included adolescents, and one study reported on older adults. No publications included in the mapping focused exclusively on children. Of the records reporting on study participants' gender (*n* = 141), 94.3% (*n* = 133) included both men and women, while 5.0% (*n* = 7) of records reported male only samples. One study analysed an all-female sample. Several studies focused on problem gambling from a gender perspective. All 26 gray literature publications coded for sample gender were coded as being mixed.

9.2.2. Psychosocial aspects featured in Nordic gambling research 2000-2019

Study IV presented an overview of how psychosocial phenomena have been featured in Nordic gambling research during the time period January 2000-July 2019. Twenty-one publications fulfilled the review inclusion criteria and focused on psychosocial factors or themes in relation to gambling participation or problem gambling. Loneliness and experienced social support emerged as the two most frequently featured psychosocial phenomena. The heterogeneity in research design and outcome measures applied in the studies meant that the review presented a narrative evidence synthesis rather than a meta-analysis. It should be noted that one of the included articles in the review is Study II featured in this thesis (Nordmyr et al., 2016). Details on the included studies are available in Study IV.

Research design of the included studies

Six of the studies applied interview, observation or narrative methods while the remaining 15 studies applied various statistical approaches. Most studies applying statistical methods utilized representative cross-sectional population survey data. Four publications utilized data from longitudinal or follow-up studies (Kristiansen et al., 2015; Lyk-Jensen, 2010; Sagoe et al., 2017;

Samuelsson et al., 2018). Regarding the measurement of psychosocial phenomena, several standardized instruments and scales were used alongside single-item questions. Among the studies applying a qualitative design, individual and focus group interview approaches, ethnographic observations and elicited written data methods were applied. Further information on utilized measurements and analyses can be viewed in Study IV, which also details information on study quality assessment showing that the majority of included studies were rated as being of good quality.

Less researched psychosocial themes

The results highlight several psychosocial phenomena where the evidence is limited to a single study; family cohesion (Hanss et al., 2015), family satisfaction (Svensson & Sundqvist, 2019), childhood and adolescence experiences related to feeling solitary and left out and feeling understood (Lyk-Jensen, 2010); neighbourhood trust and general trust (Nordmyr et al., 2016, Study II in this thesis). Three studies, all applying interview or narrative methods, reported on sense of belonging and related features (Svensson, 2011; Matilainen & Raento, 2014; Kristiansen et al., 2015).

Experienced loneliness, gambling activities and problem gambling

The studies on experienced loneliness applying statistical methods showed mixed results. In a Finnish population study (Castrén, Basnet, Salonen et al. 2013) loneliness was associated with problem gambling (but not gambling disorder) in regression analysis. In another cross-sectional Finnish study (Nordmyr et al., 2016, Study II in this thesis), loneliness was also associated with problem gambling in regression analysis. Sirola et al. (2019) found that excessive gambling prevalence was higher among young Finns who reported higher levels of loneliness, with moderating effects of loneliness also identified in one of the included samples. On the other hand, another Finnish study did not show loneliness to be associated with at-risk or problem gambling in the most comprehensive models applied in the study (Edgren et al., 2016). Further, no associations between loneliness and gambling or risk-problem gambling among Norwegian youth emerged in the study by Hanss et al. (2015), and Sagoe et al. (2017) did not find loneliness at age 17 or age 19 to be associated with gambling. Loneliness was not either associated with risk or problem gambling at age 19,

while loneliness at age 17 was associated with lower odds of risk-or problem gambling in the sample (Sagoe et al., 2017). In one Finnish population study loneliness was not included in regression analyses predicting gambling expenditure in order to avoid multi-collinearity (Castrén et al., 2018).

Several studies applying qualitative approaches featured loneliness in their results. A Swedish interview and observation study (Lalander, 2006) exploring social dimensions of gambling machine environments specifically mentioned loneliness (gambling perceived as a way of avoiding loneliness) in the results section under the theme *The gamblers and the staff/owners of restaurants*. In the group interview data analysed by Pöysti & Majamäki (2013), an emerged theme was *Social and situational pathways*, with issues such as loneliness and relationship problems perceived as risk pathways that may lead to problem gambling by recreational gamblers in Finland and France. Interview data from the longitudinal Swedish Swelogs study showed that important life events (e.g. relationship breakdown) and lack of support were identified as factors increasing the risk for increased gambling participation and problems, highlighting loneliness as a key factor (Samuelsson et al., 2018).

Social support, gambling activities and problem gambling

The results from statistical analyses concerning social support – either from parents, peers or other people, e.g. teachers – were likewise mixed. In a Finnish study (Räsänen, Lintonen, Tolvanen, & Konu, 2016a), social support from parents and school staff decreased gambling among boys and girls, whereas social support from friends increased boys' gambling (no association found for girls). Utilizing the same data, Räsänen, Lintonen, Tolvanen and Konu (2016b) mirrored these results for both genders with regard to support from school personnel and parents, and the association between boys gambling and support from friends. In this study, however, social support from friends was negatively associated with gambling among girls. In another study (Oksanen et al., 2019), weaker social support from close people was associated with competent gambling among young Finns, while higher social support was associated with entertainment gambling. In another Finnish study, no direct associations were found between social support from close people and problem gambling, while high levels of social support moderated the association between peer group identification and problem gambling (Savolainen et al., 2019). Conversely, social support was not associated with gambling among young Swedes (Fröberg et al.

2013) in one study, and not associated with problem gambling in a Finnish study (Nordmyr et al, 2014, Study II in this thesis). A Swedish longitudinal population study did not either find social support to be a predictor specifically for the incidence of online gambling (Svensson & Romild, 2011).

With regard to longitudinal Swedish interview data, factors increasing gambling included life events and lack of supportive network, while support from significant others also appeared as a predictor of decreased gambling (Samuelsson et al., 2018).

10. Discussion

The results of this thesis highlight the complexity of problem gambling with regard to the social circumstances of the individual in a Nordic and Finnish context – with special attention placed on the less researched psychosocial perspective focusing on a person's experiences and expectations related to their social networks and interpersonal relationships. The thesis also highlights gaps in the Nordic gambling research field. The key findings are briefly summarised in Table 2.

Table 2. A summary of the main findings of Studies I-IV.

Study	Research question	Results
I	What are the associations between problem gambling and socio-demographic factors, mental health problems, problematic alcohol use and gambling form (online, offline/land-based, mixed) among male and female past-year gamblers in a Finnish population sample?	Among male past-year gamblers, problem gambling was significantly associated with psychological distress, gambling both online and offline or only online, speaking another language than Finnish or Swedish and age (50 to 64-year-olds showing lower risk compared to youngest age group). For female past-year gamblers, problem gambling was associated with problematic alcohol use and participating in both land-based and online gambling
II	When focusing on the psychosocial risk factors and related risk profiling, are there differences between problem gambling and problematic alcohol use in a Finnish population sample?	No differences emerged. Identical functional (psychosocial) aspects of social networks – loneliness and low level of trust in people in one's neighbourhood were associated with both problem gambling and problematic alcohol use.
II	When focusing on the social context and related risk profiling, are there differences between structural and functional aspects of social networks and relationships and their association to problem gambling and problematic alcohol use?	No structural aspects of social ties were significantly associated with problem gambling, while marital status was associated with problematic alcohol use. Identical functional (psychosocial) aspects – loneliness and low level of trust in people in one's neighbourhood – were associated with both problem gambling and problematic alcohol use. No interaction effects between social tie variables and socio-demographic variables were found for problem gambling, while interaction effects were found for problematic alcohol use.
III	How are Nordic gambling publications from the period 2000-2015 distributed between the Nordic countries and research institutions?	For records identified in international and Nordic bibliographical databases, most authors had a Finnish, Norwegian or Swedish affiliation. The majority of affiliations were universities, followed by national public health institutes. The institutions with most publications featured in the mapping study were: University of Helsinki (FIN); University of Bergen (NO); The Finnish Institute for Health and Welfare (FIN); Norwegian Institute for Alcohol and Drug Research

		(NO); University of Gothenburg (SWE). Author affiliations were rarely available for gray literature.
III	What research disciplines, methodological approaches and study focus have been featured in gambling research in the Nordic countries during the period in question?	For records identified in international and Nordic databases, approximately 50% represented social sciences and humanities and public health sciences; about 20% represented medicine. Half of gray literature represented health sciences, around 25% social sciences. Approximately 40% of international and national publications analyzed larger population samples/cohorts or other cross-sectional samples; around 28% applied review/ synthesis design or presented case studies. For gray literature, review approaches, analyses of larger population samples and mixed approaches were most common. For study focus, about 40% of records identified in international and Nordic databases looked at population prevalence and incidence of gambling/problem gambling, 13% focused on policy and regulation. The gray literature focused mostly on prevalence and/or incidence studies and policy and regulation, with many studies also having a mixed focus. Records from international and Nordic databases utilizing empirical data analysed adolescent (33%), adult (25%), mixed age group samples (23%) and population-level data (19.5%). In the gray literature, population-level data and adolescent samples were most common. Most samples included both genders.
III	What knowledge gaps and developmental needs can be identified within the field, and what are the implications and related recommendations for policy and research?	The results point to gaps concerning for example research applying interview approaches focusing on subjective experiences, research with a longitudinal design, research with an interdisciplinary approach, research on treatment or service evaluation trials and development, prevention program development, theoretical discussion on conceptual underpinnings of problems. Studies on older adults are rare, and no studies looking at children were included.
IV	What psychosocial factors, outcomes or themes are featured in Nordic articles published in international journals between the years 2000-2019?	Loneliness and social support emerged as the most commonly featured themes. Several psychosocial phenomena where the evidence is limited to a single study or only to qualitative evidence were also identified.
IV	How are these psychosocial factors or themes associated with various gambling-related factors?	Studies on loneliness and social support applying statistical methods showed mixed results: some did not identify significant associations to gambling or problem gambling, in other studies associations were found but the causal and directional nature of the connections are unclear due to the cross-sectional nature of the data. Four studies (one longitudinal) applying qualitative approaches featured loneliness and/or social support in the results, highlighting these as perceived risks (or supportive factors) by study participants and/or researchers.

10.1 Methodological considerations

Detailed descriptions of the strengths and limitations of the four included studies in this thesis can be viewed in the appended articles, where some general points are raised with regard to for example the lack of explanatory potential in survey studies due to their cross-sectional nature (Hutchinson, 2003; Polit et al., 2001).

In addition to general limitations of the applied methods, overarching spatio-temporal effects on study findings should also be strongly acknowledged when considering the results of this thesis. The focus on the social context of the Nordic welfare states (Esping-Andersen, 1990) is regarded as justified both in relation to mapping the research field and to the study of social circumstances and under-researched psychosocial risk factors in relation to gambling or problem gambling. However, the transferability of review results to other contexts outside the Nordic region is cautioned. It can be noted that e.g. the findings of three studies included in Study IV where a comparative framing was applied highlighted differences in associations between psychosocial phenomena and gambling-related factors between Nordic and non-Nordic countries.

While the social context of the Nordic countries was highlighted in the introduction, it should also be noted that there are differences between countries specifically in relation to the gambling environment and related cultures and understandings. These differences appear both when comparing Nordic countries with non-Nordic countries (e.g. Littler & Jarvinen-Tassopoulos, 2018, Marionneau, 2014; Pöysti & Majamäki, 2013) and when considering countries within the Nordic context (e.g. Nordic Welfare Centre, 2017, Örnberg, 2006). Also, changes in the gambling culture and environment and related views on gambling and problem gambling continually take place (Binde, 2014; Örnberg & Tammi, 2011).

Considering the Finnish context highlighted in Studies I-II, the findings are similarly time and context sensitive. The findings should be considered in relation to within-country developments in the gambling field over time and e.g. related views on gambling and related problems by various stakeholders (Tammi, 2008). For Finland, noteable changes in the gambling landscape that have taken place since Studies I-II were conducted encompass for example the raising of the minimum age limit for gambling from 15 to 18 years (Raisamo, Warpenius et al., 2015) and an increase in online gambling prevalence (Salonen et al., 2020). This means that also here the transferability of survey study results,

especially the results of Study I, to other contexts is cautioned and that the results could differ if the study was replicated today.

In addition to these aforementioned considerations, the following discussion centers on focal points of the included studies, i.e. gambling and problem gambling as the outcome of interest in health research, psychosocial factors as determinants of health and ill-health and challenges in data synthesis in review studies.

10.1.1 Gambling as an outcome in health research

The gambling-related themes of interest and associated methods for studying these and operationalizing specific features of interest vary in health research.

Measuring gambling activities

A lack of research concerning a reliable and valid way of collecting self-report data on gambling participation has previously been highlighted by Williams and colleagues (2017). Questions regarding gambling participation utilized in studies may cover type of gambling, means of access (online, offline), gambling provider, frequency of gambling participation, gambling expenditure, and time spent gambling (Williams et al., 2017). The questions included in the survey questionnaire utilized for studies I and II were limited to gambling type, form and frequency of participation during the past 12 months – a less comprehensive set of questions than those applied in more extensive gambling-focused surveys. Williams, et al. (2017) noted that general issues related to the reliability and validity of retrospective self-reporting with regard to e.g. recall and honest disclosure also apply to gambling questions given that the topic may be perceived as sensitive by some respondents. The authors emphasised survey features which increase reliability and validity of results, including some of which are fulfilled in Studies I and II of this thesis, such as ensuring respondent confidentiality and anonymity and embedding gambling themes into larger health surveys, while other beneficial features such as asking for gambling activities in a shorter time frame (such as past week) or providing memory aids were not applied (Williams et al., 2017).

The fact that Study I only analysed data among past-year gamblers can be viewed as a limitation, as non-gamblers are not included in the analyses. This leads to

e.g. higher problem gambling prevalence rates than if all survey respondents were included. However, as one aim of Study I was to analyse the associations between problem gambling and past-year participation in different forms of gambling with a focus on online versus offline mode of access, this approach was employed for this specific study.

The operationalization of problem gambling

In Studies I and II, the Lie/Bet screening tool was utilized to indicate possible problem gambling among respondents. Dowling et al. (2019) have reviewed the diagnostic accuracy of 20 brief screening instruments for problem gambling, including the Lie/Bet screening instrument. The Lie/Bet instrument was one of ten instruments meeting the criteria for satisfactory diagnostic accuracy for problem gambling, and one of two reviewed instruments meeting the criteria for satisfactory measurement accuracy when the analyses were limited to low bias study samples. However, it was highlighted in the review that the tool is less useful for detecting at-risk gambling or more occasional harm among adults (but received some support for adolescent samples). This should be noted for Studies I-II, i.e. the Lie/Bet tool may not be ideal for identifying persons experiencing problems more occasionally. Also, the instrument applies a lifetime perspective, as opposed to a current (past-year) timeframe. While the screening instrument does not pinpoint persons fulfilling clinical criteria for pathological gambling, this was not an aim of the studies. Dowling et al. (2019) concluded that continued use of the Lie/Bet in detecting problem gambling in both general population and non-gambling clinical contexts is supported.

It is worth noting that the medicalization of problems related to gambling and the emergence of the behavioural addiction concept, which reflect perceived commonalities to problems related to substance use, (Grant et al., 2010; Griffiths, 1996; Karim & Chaudhri, 2012; Rash et al., 2016) have prompted the development of many instruments resembling those applied in the measurement of problems related to substance use. This development has been debated and criticised with regard to the risk of an overpathologization of various activities (Billieux et al., 2015; Petry, 2006). The Lie/Bet screen (Johnson et al., 1997; Johnson et al., 1998), utilized in Studies I-II of this thesis to identify persons experiencing commonly featured problems in relation to gambling, is—as many

other instruments – based on DSM clinical diagnostic criteria (Dowling et al., 2019).

Identifying problem gambling in survey studies

The survey study data utilized in this thesis was not focused exclusively on gambling, which carries both methodological pros and cons. Research has shown that studies focusing exclusively on gambling are limited by an underrepresentation of non-gamblers among participants as well as problem gambling prevalence rates being significantly higher in comparison to surveys with a health focus incorporating gambling-related questions but not highlighting this theme (Williams & Volberg, 2009; Williams & Volberg, 2010; Williams & Volberg, 2012). Hence, the fact that the survey data utilized in Studies I and II stem from a study which focused more generally on mental health and not gambling or problem gambling specifically can be viewed as a strength, albeit the questions regarding gambling and problem gambling are less comprehensive than in a gambling survey. On the other hand, the fact that around half of survey recipients chose not to participate may in part be attributed to the fact that the survey focused on mental health –a sensitive subject potentially associated with negative attitudes (Hutchinson, 2003). This can affect the overall profile of survey participants and non-participants.

The profile of non-participants in gambling-focused survey research in Finland has recently been highlighted (Kontto et al., 2019), identifying for example that low income and educational levels correlate with non-response. While no similar analysis of non-respondents has been conducted for the Western Finland Mental Health Survey, it can be noted that response rates were higher among women than men (53% versus 40%), and highest in the age group encompassing 61-70 year olds at 63% (Herberts et al., 2012). This can be considered in light of research evidence which indicate that problem gambling is more prevalent among younger men. Response rates in survey research have declined, but research (Galea & Tracy, 2007) shows that this may not necessarily have a substantial influence on results.

The fact that the survey employed an anonymous mail-in approach can be considered a strength as sensitive parts of a questionnaire (e.g., problem gambling) are best self-administered (Williams & Volberg, 2012). General issues and limitations concerning self-reporting in survey research – e.g. interpretation and understanding of various questions and items, perceived sensitivity of

questions and conscious false reporting - should be considered when interpreting the results of survey studies (Hutchinson, 2003; Polit et al., 2001). This applies to included survey instruments and items concerning gambling activities and problem gambling, but also questions regarding mental health and substance use and related problems.

Other screening instruments utilized in the survey studies

The CAGE screening tool (Ewing, 1984) utilized to identify individuals experiencing problematic alcohol use in Studies I and II, has demonstrated high test-retest reliability and adequate correlations with other screening instruments (Dhalla & Kopec, 2007). However, its use in general population samples has been questioned, especially with regard to female respondents (Aalto et al., 2006; Cherpitel, 2002; Dhalla & Kopec, 2007). As the alcohol consumption patterns in the Finnish population (Härkönen et al., 2017; Lindeman et al., 2013; Lindeman et al., 2014) result in a relatively high indicated frequency of problematic alcohol use, analyses were replicated raising the cut-off score from 2 to 3 in Study I. These control analyses did not result in a different outcome.

The GHQ-12 instrument indicating psychological distress (Goldberg & Hillier, 1979) was developed to screen for mental health problems in community samples. Like the Lie/Bet and CAGE instruments, the GHQ-12 is not a diagnostic tool, but appears effective in identifying mental health problems among respondents (Pevalin, 2000). When evaluated in Finnish population samples, the GHQ-12 emerged as a valid and reliable measure for screening for psychological distress, suggesting it is useful also in association studies looking at mental health and different outcomes in addition to screening in clinical contexts (Elovanio et al., 2020; Holi et al., 2003).

Conducted analyses – applying logistic regression analyses

Some points should also be raised regarding the conducted analyses and the related categorization of respondents. Logistic regression analyses (Polit et al., 2001; Pampel, 2000) as a method encompasses categorizations of both independent and dependent variables, which can be perceived as artificial and static. Further, the relatively low number of people experiencing problem gambling on the population level means that some formed categories were

limited in size, affecting the possibilities of conducting some analyses. For example, in the case of Study II, some post-hoc regression analyses of interaction effects were not possible to carry out for problem gambling due to the small number of respondents in some of the categories. In the case of Study I, this should be considered in relation to the findings regarding language group (the number of persons with another mother tongue than the national languages Finnish or Swedish reporting problem gambling was relatively low). The small group size is evidenced in the comparatively large confidence intervals generated.

10.1.2. Capturing the psychosocial factors in health research

In the same way as the operationalisation and measurement of problem gambling or mental health problems present various challenges, the operationalisation of social networks and relationships and related psychosocial risk factors exhibit some limitations. An overall challenge regarding psychosocial phenomena highlighted in Study IV is that the psychosocial concept is often applied in a very broad sense, encompassing factors not considered to be of a psychosocial nature in the thesis at hand. As an example, in the review focusing on psychosocial risk factors and problem gambling by Sharman and colleagues (2019), the psychosocial concept encompassed amidst others gender, mental and physical ill-health, as well as gambling form. Meanwhile, some of the articles applying statistical methods in Study IV used headings which did not reveal their inclusion of psychosocial factors. This reflects discussions by Martikainen et al. (2002, p.1091) who noted that unspecified use of the psychosocial concept degrades its usefulness, as it at times" *refers to everything and nothing in particular*".

In the systematic review (Study IV), the fact that a wide array of instruments and single-item questions were used in the included studies applying statistical methods meant that the scope of comparability and conclusions drawn were limited. This increases the initial challenge related to the low number of studies focusing on problem gambling and psychosocial phenomena. The cross-sectional nature of the majority of studies also challenges the interpretation of the role and direction of psychosocial pathways as risk or protective factors versus consequences of gambling or problem gambling.

In Study II, the validated Oslo 3-item Social Support Scale (Brevik & Dalgard, 1996) was utilized, while a single-item question was also used to assess experienced loneliness. While the use of this single-item question for the direct measure of experienced loneliness among adults is supported (Office for National Statistics, 2018), indirect measurement would ideally also be utilized, which was not the case in Study II. Also, questions regarding respondents' experiences of generalized interpersonal trust and trust in people in one's neighbourhood were single-item questions. Similar questions have been utilized in large-scale international and national surveys (OECD, 2017). In the OECD report (2017), it is however noted that the reliability and validity of measures of generalised trust appear stronger compared to limited trust measures (where there is also less research), such as trust in neighbours.

It can be questioned whether psychosocial factors – arising from an interaction and reciprocity between the individual and their social network and relationships and reflected in the lived experience of a person – can be adequately captured within the framework of quantitative survey research. This highlights the value of considering different data sources when studying psychosocial phenomena. In Study IV a number of important studies applying interview and/or observational methods serve to highlight the inherent complexity of psychosocial phenomena and also to nuance their perceived role.

10.1.3. Synthesizing evidence from the gambling research field

While the systematic approaches applied in review studies III and IV – encompassing comprehensive bibliographic search strategies following earlier recommendations put forth by Curran, et al. (2007) and Daudt et al. (2013), can be considered rigorous overall, there are various limitations to consider in relation to the study results. Lockwood and Tricco (2020) noted that the framework by Arksey & O'Malley (2005), on which Daudt and colleagues recommendations are based, constitute a framework rather than a detailed guide. General limitations in relation to mapping or scoping reviews (Grant & Booth, 2009; Lockwood and Tricco, 2020) include the broad, descriptive nature of these studies which can be perceived as oversimplifying the area under study or masking variation between included studies. While mapping or scoping reviews can identify research gaps, they do not answer questions regarding intervention or policy effectiveness and nor do they encompass quality appraisal

of included studies or synthesis or meta-analysis of the content of the included studies (Grant & Booth, 2009; Lockwood & Tricco, 2020).

In study III, general search terms were applied in a broad range of databases in order to identify a wide range of relevant studies. However, it is always important to acknowledge that specialized niches of research might be under-represented in the search results and subsequent study results. Also, study screening and selection is based on manifest information provided in screened titles, abstracts and key words, which can potentially lead to the exclusion of relevant studies due to the content of the bibliographical information provided. Limitations related to journal indexing and the *h*-index (Bornmann & Daniel, 2009) should also be considered. Finally, assessment and data coding relating to the records from the Google Scholar searches and also some of the national databases were not straightforward due to lack of information and/or dissimilar publication characteristics to international research publications. Hence, the evidence presented regarding the publications identified in international databases can be considered more robust. As screening procedures and data coding performed by a single researcher has been evidenced to result in a higher number of errors (Buscemi et al., 2006), double screening and coding was performed in the review process which can be considered a strength.

The articles included in Study IV stem from the mapping review data set (III), complemented with search updates in the ten international bibliographical databases for the time period January 2016 to July 2019. Hence, the same limitations vis-à-vis database searches and screening procedures that apply to Study III also apply to Study IV. The screening of international publications identified in the mapping review for inclusion in Study IV can be regarded as thorough, with all studies potentially considering factors or themes of interest (or where the content seemed unclear) manually screened in full text format. Still, relevant studies may have been overlooked in the process. As database searches were not limited to specific study designs, studies applying various interview or narrative approaches were identified and screened for inclusion. Also for this review, study screening and coding was undertaken by two researchers.

The quality assessment utilizing the recognized NICE checklists (National Institute for Health and Care Excellence, 2012a; National Institute for Health and Care Excellence, 2012b,) showed an overall good quality rating for the included

studies, which indicated that the exclusion of three studies with a higher level of perceived limitations was unlikely to drastically alter the review results.

10.2. Problem gambling – a health problem requiring multidimensional psychosocial approaches

10.2.1 Social risk factors and problem gambling: Socio-demographic factors and social circumstances of the individual

Study I focused on the associations between gambling form, self-rated psychological distress and problematic alcohol use among past-year gamblers – also controlling for socio-demographic factors. In line with both earlier and subsequent research, Finnish and international alike, problem gambling was more common among men than women in the surveyed sample (e.g. Abbott et al., 2018; Castrén, Basnet, & Pankakoski et al., 2013; Castrén, Basnet, Salonen et al. 2013; Raisamo, Mäkelä et al., 2015; Salonen et al., 2020). However, the results highlight how the risk profiles varied between male and female gamblers. Separate analyses had not been undertaken for men and women in many population-based gambling studies up to the time of Study I, and this was considered a way to somewhat nuance the findings of a population representative cross-sectional study.

Gambling access and activities

Factors related to gambling exposure, environment and types contribute to problem gambling development and maintenance (Abbott et al., 2018). At the time Study I was performed, the implications of the expansion of online gambling was an issue of interest in the research field and was therefore one of the focal points of the study. Regarding the associations between gambling form (online, offline, mixed) and problem gambling, the results differed for male and female past-year gamblers. More male gamblers than female gamblers gambled only online or both online and offline. For male past-year gamblers, gambling both online and offline or only online was associated with an increased risk of problem gambling compared to only gambling offline. Among women, participation in both land-based and online gambling was significantly associated with problem gambling (compared to gambling offline only or online

only). The findings were overall in line with earlier Finnish studies with a higher prevalence rate of online gambling among men and associations between online gambling and problem gambling (Castrén, Basnet, & Pankakoski et al., 2013; Castrén, Basnet, Salonen et al. 2013). It is, however, important to note that the gambling landscape has changed rapidly since Study I was undertaken, with a rise in online gambling (Salonen et al., 2020). Thus, if the study was reconducted, results would likely differ due to these contextual changes. In the recent finding of Salonen et al. (2020), at-risk or problem gambling among the Finnish participants was more prevalent among those who had gambled both online and offline. Similarly, a 2015 publication showed that Australian mixed-mode gamblers (gambling online and offline) exhibited the highest problem gambling rate (Gainsbury et al., 2015). Papineau et al. (2018) found that online gambling is associated with various negative impacts, and when combined with offline gambling the burden of impacts in terms of both the number and intensity of impacts increase. These aforementioned studies did not, however, conduct separate analyses for men and women. Another Finnish study concluded that at-risk and problem gambling are associated with online gambling only among females (Edgren et al., 2017). This finding and the findings from Study I in this thesis highlight the interaction of gender and gambling forms in relation to problem gambling. The mechanisms involved in the associations between problem gambling and online gambling can be connected to certain types and forms of gambling (online gambling, slot machine gambling, scratch tickets and betting), which enhance gambling in terms of frequency and involvement (Castrén et al., 2018). Hence, it is important to consider different gambling types in addition to mode of access (Gainsbury et al., 2014; Gainsbury et al., 2015; Heiskanen & Toikka, 2016). Gainsbury (2015, p. 189) concluded that, while aspects of online gambling such as accessibility and an immersive interface can be problematic, "…*Internet gambling does not cause gambling problems in, and of, itself. However, use of Internet gambling is more common among highly involved gamblers, and for some Internet gamblers, this medium appears to significantly contribute to gambling problems".*

Mental health problems and problematic alcohol use

The results of Study I are in line with the earlier Finnish studies referred to in the thesis introduction (Castrén, Basnet, & Pankakoski et al., 2013; Castrén, Basnet, Salonen et al. 2013) regarding associations between problem gambling and

problematic alcohol use and mental health problems. However, in Study I the analyses were conducted separately for male and female past-year gamblers, which revealed links between problematic alcohol consumption and problem gambling among women and psychological distress and problem gambling among men. Interestingly, this result differentiates from earlier review results of Merkouris, Thomas, Shandley et al. (2016) where problem gambling among males tended to be associated with problematic substance use and problem gambling among females associated with psychological distress. No causal inferences can be drawn based on the survey study results. Psychological distress or mental health problems as well as substance misuse constitute gambling-related harms (Langham, et al., 2016; Wardle et al., 2018). Less research has studied the mechanisms and causal links between gambling and mental health problems or problems related to substance use (Yakovenko & Hodgins, 2018). Alcohol use frequency (but not psychological distress) was identified as an early risk factor contributing to problem gambling development (Dowling et al., 2017) among adolescents and young adults. A recent Swedish study highlighted, however, that mental health or substance use problems constitute a risk for developing problem gambling for women, while men experience mental health problems after problem gambling onset (Sundqvist & Rosendahl, 2019). It should be highlighted that evidence also points to inter-individual variation in causal links (Holdsworth, Haw et al., 2012; Hartmann & Blaszczynski, 2016).

Socio-demographic factors

In Study I, the results showed that being in the youngest age group was associated with a higher risk of problem gambling compared to being in the group of 50- to 64-year-olds among men. This finding is in line with earlier research showing higher problem gambling rates in younger age groups (Abbott et al., 2004; Castrén, Basnet, & Pankakoski et al., 2013), albeit it can be noted that an earlier Finnish study by Castrén, Basnet, Salonen et al. (2013) did not evidence younger age as a significant factor when controlling for other variables. In Study I, this association to younger age only appeared among male past-year gamblers. Likewise, associations between problem gambling and speaking another language than Finnish or Swedish were only significant for male past-year gamblers. This result can cautiously be linked to previous research concerning minority status or ethnic background discussed in the article

introduction, where it was emphasized that several mechanisms can be involved in the process where problem gambling manifests as more prevalent among persons not belonging to the ethnic majority population (e.g. Abbott et al., 2004; Abbott et al., 2018). One of these mechanisms could potentially be the psychosocial factors highlighted in this thesis. In a rapid review, Wardle et al. (2019) looked at studies analyzing gambling-related harm among migrants. Here, one smaller cross-sectional study of a convenience sample (Hum & Carr, 2018) showed a significant association between loneliness and problem gambling only for culturally and linguistically diverse students (but not among their Australian peers). In a review focusing specifically on gambling activities among culturally diverse older adults, social network and related support were highlighted as enabling factors, with excerpts from included narrative studies mentioning e.g. feelings of belonging (Luo & Ferguson, 2017). However, it is important to note that in Study II, self-reported problem gambling among Finnish-speakers was higher compared to Swedish-speakers, but the risk associated with speaking another language was not statistically significant when considering all factors in the logistic regression model. The difference in prevalence rates between Swedish- and Finnish-speakers may reflect other research findings from Finland where the Swedish-speaking minority tends to show better health and wellbeing outcomes compared to the Finnish-speaking majority, differences at least in part thought to be explained by differences in social capital (e.g. Hyyppä & Mäki, 2001; Nyqvist et al., 2008)

Overall, earlier research has found some variation in the links between educational level and/or socio-economic status as risk factors and problem gambling (Abbott et al., 2018). Educational level and occupational status were not associated with problem gambling for men or women in the performed logistic regression analyses in Study I (and employment status not associated in Study II). The fact that occupational status was associated with problem gambling for women in chi square tests in Study I, with the highest frequency among the unemployed, can be noted. Merkouris, Thomas, Shandley et al. (2016) found in reviewing the evidence in regard to gender that unemployment was associated with problem gambling among women but not men. In Finland, earlier findings have shown differences in problem gambling prevalence rates according to occupational status on the population level (Salonen & Raisamo, 2015), but this analysis did not consider other factors simultaneously. Castrén, Basnet, Pankakoski et al. (2013) found that higher educational level was associated with moderate and less severe problem gambling while also

considering other factors, while in another Finnish study (Castrén, Basnet, Salonen et al. 2013), educational level was not significantly associated when considering other factors of interest. For the sample under study in this thesis, occupational status and educational level appeared to be of less importance when simultaneously considering gambling form, mental health problems and problematic alcohol use as in Study I, and social network and psychosocial factors in Study II.

10.2.2 Psychosocial risk factors and problem gambling: Experiences related to social networks and interpersonal relationships

In the thesis introduction, it was noted how psychosocial factors – arising from an interaction between the individual and their social network and relationships of a person – form one key component of the various social determinants of health and wellbeing.

The focus of Study II was specifically to compare the structural versus psychosocial factors associated with problem gambling. Further, the social risk profile of problem gambling was compared to the one of problematic alcohol use. Key findings from this study emphasise that the psychosocial factors (experienced loneliness and trust in people in one's neighbourhood) play a larger role than the social structural factors when risk profiling for problem gambling and problematic alcohol use, while one structural indicator (i.e. marital status) also showed relevance for problematic alcohol use. This result reflects earlier research findings (De Silva et al., 2005; Ehsan & De Silva, 2015) where experienced aspects of social networks appear to be more relevant for mental health outcomes compared to structural aspects. The results regarding experiences related to one's social network and relationships being associated with gambling and problem gambling are in line with earlier research (Castrén, Basnet, Salonen et al. 2013; McQuade & Gill, 2012; Reith & Dobbie, 2011; Reith & Dobbie, 2013). As in the case of Study I, the causal nature of the findings and the role of social ties as risk or protective factors for problem gambling development or as consequences of problem gambling remain undetermined when considering the cross-sectional nature of the data utilized in Study II.

As noted earlier, many clinicians and researchers today draw parallels between problem gambling and substance-related problems. This is manifested in the diagnostic systems where these two health problems are classified under the same umbrella (APA, 2013; WHO, 2018). While the comparison made and the

results of Study II do not support or refute this perspective, it highlights how both health problems are related to psychosocial factors in the sample surveyed.

10.2.3. The synthesized evidence on problem gambling and psychosocial pathways: The Nordic case

Focusing further on psychosocial factors, Study IV synthesised the current evidence base on psychosocial risks and pathways in relation to gambling activities and problems in the Nordic context for the years 2000-2019. Experiences of loneliness and social support were featured as the most frequently studied psychosocial factors. It can be highlighted that not all studies looked at psychosocial factors in relation to problematic aspects of gambling. It should also be noted that Study II in this thesis was subsequently included as one of 21 studies in the review.

The Nordic evidence on mixed associations and influences of psychosocial factors in relation to gambling participation and problems is in line with earlier research (Holdsworth et al., 2015), highlighting how psychosocial factors may constitute risk and protective factors. They may also predict gambling-related harm, as well as have a mediating/moderating effect on the links between various factors and gambling or problem gambling through functioning as resiliency factors (e.g. social support). A distinction can of course be made between psychosocial factors in relation to problem gambling versus gambling, which need not necessarily be problematic. However, in studies specifically focusing on e.g. youth samples, gambling may be considered a risk behavior in itself.

The interpretation of the results of cross-sectional studies is somewhat aided by the inclusion of longitudinal interview studies in the material. The study by Samuelsson et al. (2018) utilized longitudinal interview data, showing how various personal and contextual factors including supportive relationships related to social network, contributed to changes in gambling activity and problems. The study illustrated the complexity of psychosocial factors, as stated by the authors in the discussion "*We also show that some factors can cause both increased and decreased gambling intensity*" (Samuelsson et al., 2018, p. 523). The occurrence of a particular life event (e.g. relationship breakdown) may cause one person to intensify their gambling, while another person may stop their gambling activities altogether. Life events are complicated to assess if they

encompass multiple phenomena and the more specific effects of psychosocial factors can be difficult to discern.

Inconsistencies or differing results evidenced for similar psychosocial factors (albeit likely operationalized in different ways) are interesting to observe. In one study included in the systematic review, loneliness at age 17 (but not age 19) was associated with risk-or problem gambling in a Norwegian sample (Sagoe et al., 2017). Another study found that support from friends is correlated with increased gambling activities among boys but not girls (Räsänen, Lintonen, Tolvanen & Konu, 2016b). This can be interpreted in light of one of the review studies which examined early risk factors. Dowling (2017) identified social problems as a protective factor for problem gambling (Yücel et al., 2015) with the authors suggesting that youth networks, albeit their positive qualities in terms of e.g. support, can form a risk for problem gambling.

10.2.4 Theoretical perspectives and practical implications in relation to the findings

This thesis is based on a holistic and multi-dimensional view on health, highlighting in particular the social and psychosocial health determinants (Cohen & Wills, 1985; Martikainen et al., 2002; Thoits, 2011). Psychosocial phenomena are relevant from the humanistic caring science perspective, where subjective experiences and meaning form a core focal point in relation to health and illness, while also emphasising broader contextual perspectives (Fagerström et al., 1999; Fagerström, 2019; Eriksson 2000; Eriksson 2015).

Mirroring a socio-ecological framework for health and illness (Dahlgren & Whitehead, 1991), Wardle et al. (2018) presented a socio-ecological framework illustrating both multi-level harm caused by gambling and determinants of harm and problem gambling. The thesis at hand showcases how individual characteristics such as gender can interact with factors on more distal levels, expressed in differences in the associations to problem gambling among men and women past-year gamblers on a group level. McCarthy and colleagues (2019) underlined how a gendered framework can support the development of both policy and interventions aiming to prevent problem gambling that meet needs related to women's experiences and circumstances. Holdsworth, Hing et al. (2012), similarly noted gender as a factor to consider in relation to gambling, and

also the interactions with social influences, with regard to for example sex differences in gambling activity preferences, but also the importance of gender in relation to social networks and related experiences.

With regard to social networks and relationships, the findings of this thesis support the recognition of not only structural factors (e.g. frequency of social contacts) as relevant in relation to gambling and problem gambling, but also psychosocial factors. Considering the complexity of psychosocial phenomena, it is regarded as a strength that the multi-level model of Wardle et al. (2018) supports the recognition of an individual's social networks and related experiences not only in relation to harms caused by gambling, but also as both risk (and in some instances protective) factors to consider in relation to the onset, occurrence or reoccurrence of problem gambling. Currently, social support is the only psychosocial factor (as labelled in this review) specifically mentioned in the model by Wardle et al. (2018) on the level families and social networks.

In the framework of harmful gambling developed by Abbott et al. (2018) presented in the thesis introduction, the authors noted that the effects of gambling on social capital could be further explored. This thesis serves to highlight the effects of psychosocial factors, with parallels to cognitive social capital, on gambling and problem gambling as a relevant theme for further study, in addition to focusing on structural factors such as family and peer gambling involvement and social learning which are currently included in the framework (Abbott et al., 2018).

As highlighted by Wardle and colleagues (2018) and Abbott et al. (2018), a limited focus on individual characteristics with regard to problem gambling overlooks important contextual aspects. The findings of this thesis support and strengthen their notion that prevention should not concentrate exclusively on risk and protective factors on the individual or societal and communal levels, but also encompass risk factors at the inter-personal level as a focal point. The psychosocial approach offers a basis for new multidimensional approaches, encompassing also individual-level social resources, warranting new multi-professional cooperation in the implementation and evaluation of prevention initiatives. However, various challenges are also evident in harnessing the protective potential in psychosocial factors and the difficulty in designing initiatives with a universal application, as the essence of psychosocial

phenomena is the personal experience. Still, Holdsworth et al. (2015) highlighted the promotion of e.g. external social support and internal resilience as a framework on which more integrated prevention and support interventions can be grounded. This can be considered in relation to the field of primary and secondary prevention interventions targeting problem gambling, where most prevention measures focus on awareness/information campaigns, responsible gambling and self-exclusion and similar (Williams, West et al., 2012). Similarly, in more recent reviews (Livingstone et al., 2019; McMahon et al., 2018; Tanner et al., 2017) it has been acknowledged that most of the existing interventions aim to control the gambling environment. On the other hand, the results of this thesis also highlight the availability and accessibility of different gambling forms and types as a relevant area of prevention that can be influenced by policy measures. Abbott (2020) recently noted that universal and targeted policies and programmes that address modifiable risk and protective factors, including those of a social nature, could strengthen interventions focusing specifically on the gambling environment and activities in themselves.

While socioeconomic and political context, such as the Nordic welfare state context, as well as individual-level circumstances and socioeconomic position, unarguably contribute to experiences of health or ill-health (e.g. Marmot et al., 2012), psychosocial factors are increasingly recognized as impacting these effects (Aldabe et al., 2011; Moor et al., 2014; Moor et al., 2017). Findings from these large-scale studies highlight psychosocial factors (including for example social support and interpersonal trust) as a target for prevention interventions due to their direct and indirect impacts on health. This can be related to recent findings based on data from the European Survey Project on Alcohol and Other Drugs (ESPAD), where experienced parental emotional support was identified as a significant protective factor for problem gambling among youth in merged analysis of data from Sweden, Finland and Denmark (Spångberg & Svensson, 2020).

As evidenced in an article included in Study IV, psychosocial aspects can, in addition to e.g. empowerment and agency, also play a role in recovery from problem gambling without formal support or treatment (Samuelsson et al., 2018; Vasiliadis & Thomas, 2018; Pickering et al., 2019). Psychosocial phenomena in relation to recovery also carry implications for treatment and support services. While this thesis did not focus on support and care services as such, the findings support the view that a person's overall experience of various forms and manifestations of ill-health and its underlying causes should ideally be addressed

in a holistic and person-centered manner (Fagerström et al., 1999; Fagerström, 2019). Treatment options for gambling disorder/problem gambling range from pharmacological interventions to various psychological therapies such as cognitive behavioral therapy, motivational interviewing and various self-directed interventions, with cognitive behavioral therapy as the most frequently applied treatment form, evidencing moderate results with regard to long-term beneficial effects (Di Nicola et al., 2020; Petry et al., 2017). Castrén et al. (2015) noted that in Finland, face-to-face, evidence-based services offering e.g. cognitive behavioral therapy treatment for problem gambling have been more limited and not systematically utilized in the public sector, while support services have been more readily obtainable (e.g. Pelirajat'on support groups, Hartikainen & Saarelainen, 2015), although the research on these services is limited. Support group services, chats and therapy programmes (e.g. cognitive behavioral therapy) (Castrén, Pankakoski et al., 2013) are available online through the Peluuri service (Silvennoinen & Vuorento, 2020). The online Peluuri service also offers support to concerned significant others of people experiencing problem gambling as well as to professionals in the social and health care sector. The need to increase social and health care professionals' awareness and recognition of problem gambling and facilitate their support of these clients and patients has previously been highlighted (Castrén et al., 2016; Heiskanen & Egerer, 2018).

When focusing on a psychosocial perspective in relation to support interventions, it can be pointed out that synthesis of the evidence on peer support initiatives is scarcer. A review focusing on Gamblers Anonymous as a support form showed inconsistent results with a need for large-scale randomized controlled trials and analysis of intervention mechanisms highlighted (Schuler et al., 2016). Coman and colleagues (2002) described various group counselling initiatives, emphasising how experiences of mutual support, belonging, caring and encouragement are beneficial in supporting recovery. Merkouris, Thomas, Browning et al. (2016) reviewed factors influencing treatment outcomes, noting that social support was a specific aspect requiring more research but that lack of social support appeared as a factor associated with psychological treatment drop-out. Of the two studies showing positive influences of social support in the review by Merkouris, Thomas, Browning et al. (2016), one of them took place in the Nordic context (Carlbring et al., 2012) and one in the United States (Petry & Weiss, 2009). Binde (2012a, 2012b) also reported on mutual support groups in Sweden, with many participants finding the social aspects positive and helpful for reaching one's

goals, or experiencing the group setting more suitable in comparison to professional treatment services, while others perceived it as an unfavourable option. Concerning psychosocial factors in relation to treatment and support this is also a complex issue, where distinctions need to be made. For example, peer support initiatives where a person experiencing problem gambling engages with others in the same situation is different to including the concerned significant others of people experiencing problem gambling in treatment or support initiatives (Ingle et al., 2008; Jiménez-Murcia et al., 2017).

10.3. The Nordic gambling research field – recent developments and the road ahead

The mapping study (III) identified over three hundred scientific articles published in international or national databases, as well as 72 gray literature publications from various national research fora for the time period 2000-2015. The results highlight limitations and knowledge gaps in the field of Nordic gambling research with regard to both study design and methods, and also the thematic focal points featured. Regarding the country in focus in the included studies (both first author affiliation and country in focus), the majority of articles originated from Finland, Norway and Sweden. However, weighting the author affiliations according to population numbers increased the relative number of records for Iceland and decreased the number for Sweden. The first authors most frequently featured for Denmark and Iceland evidenced *h*-index metrics on the same level as the most featured authors in neighbouring countries. No gender gap (Leslie et al. 2015) appeared among researchers in this field, perhaps due to the multiple disciplines being represented among authors.

The majority of the studies identified were classified as representing public health or social sciences and humanities, closely followed by medicine. Less research was coded as representing behavioral sciences, law, economy and political sciences, or as being interdisciplinary. Corresponding to the disciplines featured, the majority of Nordic gambling studies focused on problematic aspects of gambling, reporting on the prevalence of gambling activities and problem gambling. Consequently, analysis of larger population samples and cohorts as well as cross-sectional studies were mostly featured with regard to methods. Epidemiological research with a primary focus on prevalence studies has been commonplace in the international field of gambling research with a

noteable increase around the turn of the century (Shaffer et al., 2004; Shaffer et al., 2006), whereas studies of problem gambling incidence and causal associations have been scarce. These earlier research findings are reflected in the field of Nordic gambling research.

Along with research applying interview approaches, the exploration of problem gambling through the use of longitudinal designs is warranted to increase the understanding of stability and transition between non-problem and problem gambling and possibilities for developing effective prevention and intervention strategies (Wiebe & Volberg, 2007). In Study III, only three studies with a longitudinal design were included. The first Nordic longitudinal study published in an international scientific forum appeared in 2011 (Svensson & Romild, 2011), based on data from the Swedish Longitudinal Gambling Study where the first wave of data collection was conducted in 2008-2009 (described by Romild, Volberg & Abbott, 2014). While the first publication focused on online gambling incidence, subsequent publications have analysed e.g. the population prevalence and incidence of problem gambling (Abbott, Romild & Volberg, 2018), a gender perspective on gambling involvement (Romild et al., 2016), the incidence of problem gambling among younger adults aged 16-24 compared to those aged 25-44 (Fröberg et al., 2015) and the concerned significant others of people experiencing problem gambling (Svensson et al., 2013). Longitudinal projects and studies undertaken in other Nordic countries have since then started to appear, e.g. Kristiansen and Trabjerg (2017) explored young people's experiences and responses in relation to changes in gambling opportunities in Denmark over a three year period and Molde et al. (2019) investigated the directional relationship between problem gaming and problem gambling in a Norwegian context. In Finland, the Gambling Harms Survey was conducted in 2016-2017, aiming to monitor possible effects of the reform of the gambling monopoly in relation to problem gambling and opinions on gambling marketing (Salonen et al., 2019). These studies provide valuable opportunities for advancing the Nordic evidence-base on the determinants for problem gambling, increasing the opportunities for more efficient preventive efforts based on an enhanced understanding of the mechanisms involved. As noted in the thesis introduction, Dowling et al. (2017) synthesized the limited longitudinal evidence available on early risk factors for the development of problem gambling, with the majority of studies analysing representative samples with follow-up periods over five years. Dowling and colleagues noted that most of the factors featured in the included studies were on the individual level as opposed to social

network/relationship and community levels – this emphasises the need for more research specifically on the psychosocial theme also in longitudinal research.

Considering the target group of the included studies based on empirical data, a third focused on adolescent samples and the rest on adult samples, mixed age group samples and population samples. Only one study focused specifically on older adults, while no publications focused exclusively on children. International research on preventive interventions targeting children has been reviewed by Kourgiantakis et al. (2016). The results highlighted a lack of research focusing on targeted interventions aiming to reduce risks in children of parents with problem gambling, although some universal prevention programmes do exist. It has been recommended that universal prevention interventions in e.g. a school-setting, ideally should target children 10 years and older, albeit the efficacy of programmes is somewhat unclear (Keen, Blaszczynski & Anjoul, 2017). Further, there are also risks and problems relating to gambling among older adults (Ariyabuddhiphongs, 2012; Subramaniam et al., 2015; Thompson & McNeilly 2016). While only one Nordic publication focused on older adults up to 2015, studies with an interest in this topic are on the increase (e.g. Heiskanen & Matilainen, 2020). Among this group, the role of psychosocial factors should also be considered (e.g. Elton-Marshall et al., 2018). Few studies focus on prevention of problem gambling specifically in relation to the needs and experiences of older adults, and likewise many treatment and support studies do not emphasise this age group (Matheson et al., 2018). Here, the emerging longitudinal evidence base could also be useful for considering gambling and problem gambling from a holistic, life-span perspective, encompassing also psychosocial factors highlighted in this thesis.

The limited focus on the translation of available evidence into prevention and service-focused research initiatives mirrors findings by Markham and Young (2016) who highlighted the need for a shift of focus from problem gambling prevalence and assessment to prevention and harm minimization efforts and treatment and support intervention evaluation. This finding regarding a need for more research in the development of service and care alternatives has been elaborated on earlier in this discussion, highlighting how psychosocial factors should be recognized in this process. Additional research could be conducted with a caring science backdrop encompassing a multidimensional view on health and a humanistic health science perspective, with a focus on subjective

experiences in relation to problem gambling and recovery. Such research would be useful for further delineating the mechanisms involved in the pathways in and out of patterns of problematic gambling activities.

Aspects of gambling research not addressed in the mapping study but of interest also include issues related to industry funding and cooperation discussed by for example Livingstone and Adams (2016) and Cowlishaw and Thomas (2018). Also, while the regulatory gambling settings in the Nordic countries fall outside of the scope of this thesis, this could be another focal point, given the associations between regulatory system (e.g. privately operated versus government-operated gambling) and the focus of gambling research (Baxter et al., 2019).

11. Conclusions

This thesis encompasses both survey and systematic review studies focusing on the Finnish and Nordic setting, highlighting several key findings with regard to the links between social factors and problem gambling, with special emphasis on psychosocial factors. Additionally, it provides an overview of Nordic gambling research, emphasizing several research gaps.

Firstly, this thesis adds to the less researched topic of psychosocial factors in relation to gambling and problem gambling. While acknowledging the limitations of a single cross-sectional study, the results show how psychosocial factors appear as more significant in relation to problem gambling compared to structural factors related to social network and relationships in the studied Finnish population sample. This result is in line with earlier research highlighting differences in the importance of psychosocial versus structural aspects of social networks and relationships for other health outcomes. The survey study is included as one of 21 studies in a systematic review collating the limited Nordic evidence base on psychosocial factors in relation to gambling and problem gambling, with social support and loneliness as the most frequently featured psychosocial phenomena. While the utilized conceptualization of psychosocial factors can be debated, and the research base needs to be further advanced, the results identify evidence on psychosocial factors being connected to gambling and problem gambling. However, the role and direction of psychosocial pathways is not always easy to discern. Here, a smaller number of important studies applying interview, narrative or observational approaches serve to highlight the inherent complexity of psychosocial phenomena and also to nuance their perceived role in relation to gambling and problem gambling.

Echoing earlier multi-level frameworks for health, Wardle et al. (2018), presented a socio-ecological framework illustrating gambling-related harm on multiple levels and portrayed how determinants of harm and problem gambling are found on these interrelated levels. The thesis at hand supports this multi-level model, highlighting interactions between different levels, where for example socio-demographic factors such as gender can interact with factors on more distal levels, expressed in differences in the associations to problem gambling among men and women. Further, the findings of this thesis support the recognition of not only structural factors related to an individual's social

networks and relationships in this model, but also related psychosocial experiences – and that these need not only be harms caused by gambling but can also present as risk (but also in some instances protective) factors to consider in relation to the onset, occurrence or reoccurrence of problem gambling.

The findings support the notion that prevention efforts should also recognize inter-personal risk and protective factors. This is relevant as earlier research has shown that psychosocial factors can directly and indirectly influence the effects of macro-level socioeconomic and political context as well as individual-level circumstances and socioeconomic position on health. While this thesis did not focus on support and care services as such, the findings suggest that a person's overall experience of various forms of ill-health and underlying causes should ideally be addressed in a holistic and person-centered manner. More research on the specific role of psychosocial factors in support or treatment interventions as well as the role of natural recovery from problem gambling is warranted. Here, a humanistic caring science perspective could be valuable.

Secondly, the results of this thesis contribute to identifying gaps in the research field regarding the related areas of disciplinary perspective, thematic focus and study methods. Overall, the results emphasise a need for a shift in the focus of Nordic gambling research from cross-sectional prevalence studies to the translation of evidence into prevention- and service-focused research initiatives – similarly observed when looking at the international research field on this topic.

Methodologically, less research has utilised interview and narrative research approaches, which would be useful for further exploring the subjective experiences related to problem gambling, concerning for example psychosocial factors. A lack of longitudinal projects was also identified in the overview, albeit the number of longitudinal Nordic projects and publications focusing on gambling are increasing. Also, in relation to the limited evidence base on treatment and support services, more research with a systematic approach (e.g. randomized controlled trials) could be useful. Further, evaluated prevention initiatives have primarily focused on gambling regulation, with for example early prevention trials targeting children in a school context not reported on in the included Nordic publications.

Applied research methods and the thematic focus of studies is naturally guided by a disciplinary perspective. Hence, while Nordic gambling research alongside

social sciences research have employed a health science framework, health science research with a more humanistic perspective such as that of caring science would add valuable contributions to both theory and health and social care practice, alongside the major epidemiological evidence base.

12. Sammanfattning

Spelproblem i en nordisk kontext – Från sociala faktorer till psykosociala perspektiv, Johanna Nordmyr

Nyckelord: spel om pengar, spelproblem, psykosociala stöd- och riskfaktorer, befolkningsbaserad sambandsstudie, systematisk litteraturöversikt, hälsovetenskaper, vårdvetenskap, Finland, Norden

Introduktion

Spel om pengar är en aktivitet som kan ha en positiv eller negativ inverkan på en persons hälsa och upplevda välbefinnande. Denna avhandling fokuserar i första hand på problematiska aspekter av spel om pengar, där spelproblem "*karaktäriseras av svårigheter i att begränsa de pengar och/eller den tid som spenderas på spel om pengar och som leder till diverse negativa konsekvenser för den som spelar, personer i dennes närhet eller samhället*" (Neal et al., 2005, s.125, fri översättning). Ur ett bredare perspektiv kan de negativa effekterna av spelproblem ses på både individuell, interpersonell och samhällelig nivå (Latvala et al., 2019; Langham et al., 2016).

Den årliga förekomsten av spelproblem i Norden har tidigare legat på ungefär samma nivå eller något lägre än den globala förekomsten på 2.3% som framkom i en översikt av standardiserade prevalenser (Williams, Volberg et al., 2012). I den senaste nationella undersökningen kring spel om pengar utförd i Finland år 2019 var den årliga förekomsten 3.0% (Salonen et al., 2020). När det gäller tidigare forskning kring riskfaktorer kopplade till spelproblem framkommer relevanta faktorer på olika nivåer. Dessa omfattar både bredare kulturella fenomen (såsom attityder till spel om pengar i en viss kulturell kontext), spelmiljö och olika typer och former av spel, samt interpersonella nätverk (t.ex. spelande i ens familj och bekantskapskrets) och faktorer på individnivå såsom upplevd psykisk hälsa (Abbott et al. 2013; 2015; 2018). Inom detta begränsade forskningsområde har studier betonat vikten av att beakta en persons sociala relationer och nätverk och upplevelserna av dessa i förhållande till spel om pengar och relaterade problem (t.ex. Castrén, Basnet, Salonen et al. 2013; Matilainen & Raento, 2014; McComb & Sabiston 2010; Suissa 2015; Reith & Dobbie 2011; Reith & Dobbie, 2013).

Förståelsen av och synen på spelproblem har implikationer dels för förebyggande arbete och dels för utveckling av insatser för att stöda personer som upplever spelproblem. Här kan en holistisk syn på hälsa och ett multinivå perspektiv på faktorer som inverkar på hälsa och mående bidra till kunskapsutvecklingen. I denna avhandling ligger huvudfokus på sociala riskfaktorer för spelproblem, med målsättning att särskilt bidra till kunskapen rörande vilken roll psykosociala faktorer (Cohen & Wills, 1985; Martikainen et al., 2002; Thoits, 2011), så som interpersonella relationer och socialt stöd, spelar för uppkomst och förekomst av spel om pengar och relaterad problematik.

Syfte och forskningsfrågor

Det övergripande syftet med avhandlingen är att identifiera och syntetisera evidensen rörande sociala riskfaktorer för spel om pengar och spelproblem i en finländsk och nordisk kontext, med särskilt fokus på psykosociala faktorer, samt att presentera en översikt av nordisk spelforskning.

De fyra delstudierna besvarar följande forskningsfrågor:

- Vilka samband finns mellan spelproblem, socio-demografiska faktorer, psykisk ohälsa (psykisk belastning), problematisk alkoholanvändning samt spelform (online, offline, bägge spelformer) bland män och kvinnor som ägnat sig åt spel om pengar under det senaste året i ett finländskt befolkningsbaserat sampel? (Studie I)
- Finns det skillnader mellan spelproblem och problematisk alkoholanvändning när det gäller samförekomst av och samband med olika psykosociala faktorer i ett finländskt befolkningsbaserat sampel? (Studie II)
- Finns det skillnader i samförekomsten av och sambanden mellan strukturella och funktionella (psykosociala) aspekter av sociala nätverk och relationer och spelproblem respektive problematisk alkoholanvändning? (Studie II)
- Hur är de nordiska spelpublikationerna från perioden 2000-2015 fördelade mellan de nordiska länderna och forskningsinstitutionerna? (Studie III)
- Vilka forskningsdiscipliner, metodologiska angreppssätt och studiefokus har förekommit i spelforskningen i de nordiska länderna under perioden ifråga? (Studie III)
- Vilka kunskapsluckor och utvecklingsbehov kan identifieras inom det nordiska forskningsfältet och vilka är implikationerna och rekommendationerna för policy och forskning? (Studie III)

- Vilka psykosociala faktorer eller teman är i fokus i nordiska spelpublikationer publicerade i internationella journaler mellan åren 2000-2019? (Studie IV)
- Vilka samband finns mellan dessa psykosociala faktorer eller teman och spel om pengar och spelproblem? (Studie IV)

Teoretiskt perspektiv

Avhandlingen utgår från en holistisk och mångdimensionell syn på hälsa i enlighet med Världshälsoorganisationens definition (WHO, 2014) och ett humanistiskt perspektiv på hälsa såsom det perspektiv vårdvetenskapen företräder. Hälsa och ohälsa betraktas vidare ur ett multinivå perspektiv, där faktorer på olika nivåer interagerar för att forma hälsoutfall hos den enskilde personen (Bircher & Kuruvilla, 2014; Dahlgren & Whitehead, 1991). När det gäller spelproblem har Wardle et al. (2018) föreslagit en socioekologisk modell som illustrerar hur negativa effekter av spelande förekommer på olika nivåer men även hur risk- och skyddsfaktorer på olika nivåer påverkar problemutveckling. I modellen åskådliggörs sociala nätverk och relationer som en relevant nivå att beakta i förhållande till negativa effekter av spel om pengar. I denna avhandling förstås psykosociala faktorer som funktionella eller upplevelsemässiga aspekter av sociala nätverk och relationer – exempelvis upplevelser av ensamhet eller socialt stöd – i motsats till strukturella faktorer såsom antal personer i ens nätverk eller hur frekvent man umgås med dessa (Cohen & Wills, 1985; Martikainen et al., 2002; Thoits, 2011). Betydelsen av psykosociala faktorer för hälsa och välbefinnande som de förstås i denna avhandling framkommer i olika inriktningar inom hälsovetenskaperna. Inom vårdvetenskapen utgör en persons sociala nätverk och relationer samt relaterade upplevelser av exempelvis tillit och tillhörighet en del av personens livsvärld (Dahlberg & Segesten, 2010). Beroende på omständigheter kan dessa upplevelser fungera som en salutogen hälsoresurs (Eriksson, 2000, p. 120), eller som något som riskerar bidra till ohälsa och försämrat välbefinnande.

Metoder

Delstudier I och II baseras på data från den upprepade enkätstudien Enkät om psykisk hälsa i Västra Finland insamlat år 2011 (Herberts et al., 2012). Ett randomiserat, stratifierat urval (n = 10 000), motsvarande befolkningen i åldern

15-80 år i studieregionen identifierades för varje undersökningsomgång av Myndigheten för digitalisering och befolkningsdata (tidigare Befolkningsregistercentralen). De utsända enkätformulären fylldes i och returnerades anonymt per post. Svarsprocenten år 2011 var 46.2% (n = 4624). I Studie II analyserades hela samplet medan Studie I fokuserade på respondenter som hade ägnat sig åt någon typ av spel om pengar under det senaste året (n = 2984).

I både Studie I och II mättes spelproblem med det validerade Lie/Bet screening-instrumentet (Johnson et al., 1997; Johnson et al., 1998). I Studie I analyserades samband mellan spelproblem och sociodemografiska faktorer (kön, språk, åldersgrupp, sysselsättning, utbildningsnivå), problematisk alkoholanvändning (CAGE instrumentet, Ewing, 1984; Ewing, 2000), samt psykisk belastning (General Health Questionnaire, GHQ-12, Goldberg & Hillier, 1979; Goldberg & Huxley, 1980). Även samband med deltagande i olika typer av spel om pengar undersöktes, där deltagarna indikerade i vilket format de deltagit i spelen (online/offline). I Studie II analyserades samband mellan spelproblem respektive problematisk alkoholanvändning (CAGE instrumentet, Ewing, 1984; Ewing, 2000) och strukturella samt funktionella (psykosociala) aspekter av sociala nätverk och relationer: civilstånd; frekvens i umgänget med vänner och grannar; deltagande i föreningsliv; upplevt socialt stöd (Brevik & Dalgard, 1996); upplevd ensamhet; tillit till personer i ens grannskap samt generell tillit till människor. Analyserna omfattade även sociodemografiska faktorer (kön, språk, åldersgrupp och sysselsättning).

Pearson's chi-square test och logistiska regressionsanalyser utfördes i Studie I och II. Logistiska regressionsanalyser användes för att analysera sambandet mellan de beroende variablerna (spelproblem i Studie I, spelproblem samt problematisk alkoholanvändning i Studie II) och de oberoende variablerna (Oddskvoter, 95% konfidensintervall). I Studie I utfördes analyser skilt för män och kvinnor. I Studie II utfördes analyserna i en stegvis process (Pampel, 2000) med tre modeller, och även post-hoc analyser med fokus på interaktionseffekter utfördes.

Studie III och IV utgjorde systematiska kartläggnings- och översiktsstudier där rekommendationer för multidisciplinära systematiska översikter beskrivna av Curran et al. (2007) samt Daudt et al. (2013) efterföljdes. I Studie III utfördes systematiska sökningar i tio internationella bibliografiska databaser, nio nordiska databaser samt i SweMed+ databasen och DART-Europe E-theses portalen. Handsökning av fem nordiska vetenskapliga journaler utfördes också. I Google Scholar utfördes sökningar på engelska samt de nordiska språken för

att identifiera grå litteratur. För att inkluderas i kartläggningsstudien skulle artikeln fokusera på spel om pengar i en nordisk kontext eller i ett nordiskt land och vara publicerad på engelska eller något av de nordiska språken under perioden 1.1.2000-31.12.2015. Olika typer av studier avseende metoder och studiefokus inkluderades i kartläggningen. Screening och beslut angående inkludering av artiklar baserades på den manifesta informationen tillgänglig i identifierade publikationers abstrakt, titlar och nyckelord. Screening och kodning utfördes av två forskare. I Studie III kodades strukturell information om publikationerna i tillägg till publikationstitel och -årtal: författarnamn, första författarens kön, land och institutionstillhörighet; forskningscenter; typ av publikation. Innehållsmässigt kodades relevant information om: land (studiesampel/ kontext); samplets åldersgrupp och kön; metodologisk ansats; fokusområde; vetenskaplig disciplin. Därtill utfördes bland annat en enkel innehållsanalys (Potter & Wetherell, 1994) baserat på informationen i publikationernas titlar, abstrakt och nyckelord.

I Studie IV genomfördes en screening av publikationerna identifierade i de tio internationella vetenskapliga databaserna i Studie III för inkludering. Databassökningarna uppdaterades även för perioden januari 2016-juli 2019. För att inkluderas i översikten skulle artiklarna beskriva originalstudier som omfattade faktorer eller teman som bedömdes vara psykosociala i enlighet med definitionen som tillämpas i denna avhandling. Studier där interpersonella konflikter orsakade av spelproblem enbart ingick som kriterier i instrument för screening eller diagnosticering av spelproblem och spelberoende inkluderades inte i översikten. För de inkluderande artiklarna kodades information om studiedesign samt huvudresultat – teman i studier där kvalitativa forskningsansatser tillämpats eller resultat av de mest omfattande analyserna i studier där statistiska analyser utförts. Studiernas kvalitet utvärderades med utgångspunkt i intern och extern validitet.

Resultat och sammanfattande slutsatser

Sammanfattningsvis bidrar denna avhandling med kunskap kring temat sociala och psykosociala faktorer i relation till spel om pengar och spelproblem i en finländsk och nordisk kontext. Avhandlingen belyser även kunskapsluckor och mindre utforskade teman inom den nordiska forskningen kring spel om pengar. Resultaten av avhandlingens delstudier sammanfattas i Tabell 3.

Tabell 3. En sammanfattning av resultaten av Studier I-IV.

Studie	Forskningsfråga	Resultat
I	Vilka samband finns mellan spelproblem, socio-demografiska faktorer, psykisk ohälsa (psykisk belastning), problematisk alkoholanvändning samt spelform (online, offline, bägge spelformer) bland män och kvinnor som ägnat sig åt spel om pengar under det senaste året i ett finländskt befolkningssampel?	För män som ägnat sig åt spel om pengar under det senaste året var spelproblem signifikant associerat med psykisk belastning, spel om pengar både online och offline, spel om pengar enbart online, annat modersmål än svenska eller finska samt ålder (50-64-åringar uppvisade lägre risk jämfört med den yngsta åldersgruppen 15-29 år). För kvinnor var spelproblem signifikant associerat med problematisk alkoholanvändning samt spel om pengar både online och offline.
II	Finns det skillnader mellan spelproblem och problematisk alkoholanvändning när det gäller samband med psykosociala faktorer i ett finländskt befolkningssampel	Inga skillnader framkom. Identiska funktionella (psykosociala) aspekter av sociala nätverk – ensamhet och låg nivå av tillit till grannar – var associerade med både spelproblem och problematisk alkoholanvändning.
II	Finns det skillnader i sambanden mellan strukturella och funktionella (psykosociala) aspekter av sociala nätverk och relationer och spelproblem respektive problematisk alkoholanvändning?	Inga strukturella aspekter av sociala nätverk och relationer var signifikant associerade med spelproblem (civilstånd associerat med problematisk alkoholanvändning). Identiska funktionella (psykosociala) aspekter – ensamhet och låg nivå av tillit till grannar – var associerade med både spelproblem och problematisk alkoholanvändning. Interaktionseffekter mellan psykosociala faktorer och sociodemografiska faktorer framkom inte för spelproblem (effekter framkom för problematisk alkoholanvändning).
III	Hur är de nordiska spelpublikationerna från perioden 2000-2015 fördelade mellan de nordiska länderna och forskningsinstitutionerna?	Bland publikationer identifierade i internationella och nordiska databaser hade de flesta en finländsk, norsk eller svensk institutionstillhörighet. Merparten av institutionerna var universitet, följt av nationella folkhälsoinstitut. Institutionerna med flest publikationer var Helsingfors universitet; Universitetet i Bergen; Institutet för Hälsa och Välfärd; Statens Institutt for Rusmiddelforskning; Göteborgs universitet. Författarnas institutionstillhörighet fanns sällan tillgänglig i den granskade informationen för den grå litteraturen.
III	Vilka forskningsdiscipliner, metodologiska angreppssätt och studiefokus har förekommit i spelforskningen i de nordiska länderna under perioden ifråga?	Bland artiklar identifierade i internationella och nordiska databaser representerade ca 50% samhällsvetenskaper och humaniora samt folkhälsovetenskap; ca 20% representerade medicin. Hälften av grå litteratur publikationer representerade folkhälsovetenskap och ca 25% samhällsvetenskaper och humaniora. Ca 40% av artiklar identifierade i internationella och nordiska databaser analyserade större populationssampel/kohorter eller andra sampel från tvärsnittsstudier; ca 28% tillämpade översikts/syntesmetod eller presenterade fallstudier. För den går litteraturen var

		översiktsmetoder, analys av större befolkningssampel samt tillämpandet av olika metoder vanligast. Gällande tematik fokuserade ca 40% av artiklar identifierade i internationella och nordiska databaser på prevalens och incidens av spel om pengar/spelproblem på befolkningsnivå, 13% fokuserade på policy och reglering. Den grå litteraturen fokuserade mest på prevalens och/eller incidens samt policy och reglering, medan många studier också hade ett blandat fokus. I studier identifierade i internationella och nordiska databaser omfattandes empiriska data analyserade ungdomar (33%), vuxna (25%), blandade åldersgrupper (23%), befolkningsnivå data (19.5%). I den gråa litteraturen var befolkningsnivådata och ungdomssampel vanligast förekommande. De flesta sampel inkluderade både kvinnor och män.
III	Vilka kunskapsluckor och utvecklingsbehov kan identifieras inom det nordiska forskningsfältet och vilka är implikationerna och rekommendationerna för policy och forskning?	Resultaten uppmärksammar en brist på studier med fokus på subjektiva upplevelser där intervjumetoder tillämpas, forskning med longitudinell design, interdisciplinär forskning, utvärderingsstudier kring vård- och stödinsatser, utveckling och utvärdering av preventionsprogram samt konceptuell diskussion kring spelproblem. Få studier har fokuserat på målgrupperna äldre och barn.
IV	Vilka psykosociala faktorer, utfall eller teman har förekommit i nordiska spelpublikationer publicerade i internationella journaler mellan åren 2000-2019?	Upplevd ensamhet och upplevt socialt stöd framkom som de psykosociala fenomen som det rapporterades mest frekvent kring i de inkluderade studierna. Andra psykosociala fenomen med mer begränsad forskningsevidens identifierades.
IV	Hur är dessa psykosociala faktorer eller teman associerade med spel om pengar och spelproblem?	Studier där ensamhet och/eller socialt stöd ingick, där statistiska metoder tillämpats visade blandade resultat. I vissa studier identifierades inga signifikanta samband med spel om pengar eller spelproblem, i andra studier återfanns signifikanta samband – orsakssamband och riktning i kopplingar förblir dock oklara. Fyra studier (en longitudinell) där intervjumetoder tillämpats belyste ensamhet och/eller socialt stöd i resultaten, där dessa kunde utgöra både uppfattade risk- eller stödfaktorer.

En rad begränsningar bör noteras vid beaktande av de fyra studiernas resultat. Här kan bland annat nämnas det faktum att studier I-II utgjorde tvärsnittsstudier med begränsade möjligheter att fastställa kausala samband (Hutchinson, 2003; Polit et al., 2001), samt den tillämpade operationaliseringen av spelproblem och psykosociala fenomen. Spatiotemporala effekter av tid och plats bör också beaktas – studierna fokuserar på en finländsk och nordisk kontext, vilket medför att relevansen för en icke-nordisk välfärdskontext kan vara begränsade, samt att

utveckling inom den finländska spelmiljön (t.ex. Tammi, 2008; Raisamo, Warpenius et al., 2015; Salonen et al., 2020) innebär att resultat kan se annorlunda ut vid replikering (framförallt avseende Studie I). Gällande kartläggningsstudien finns en rad begränsningar kopplade till metoden, såsom kartläggningens deskriptiva natur och att de inkluderade publikationernas innehåll inte syntetiseras (Grant & Booth, 2009; Lockwood & Tricco, 2020). Begränsningar med översiktsmetodik gäller även exempelvis risken att missa relevant litteratur trots omfattande sökstrategier samt svårigheter i syntetisering av data pga. varierande metoder i inkluderade studier.

Med grund i befintliga socioekologiska hälsomodeller har Wardle et al. (2018), presenterat en socioekologisk multinivå modell där negativa effekter orsakade av spel om pengar ses på olika nivåer, men även determinanter för problem återfinns på dessa nivåer. Avhandlingen stöder denna modell och belyser interaktionen mellan olika nivåer, där t.ex. sociodemografiska faktorer såsom kön interagerar med faktorer på andra nivåer och uttrycks i skillnader i samband med spelproblem för män och kvinnor. Vidare så understöder denna avhandling uppmärksammandet av inte bara strukturella faktorer kopplade till en persons sociala nätverk och relationer i modellen, utan även relaterade psykosociala upplevelser – och att dessa inte enbart behöver utgöra konsekvenser av spelproblem utan även kan utgöra riskfaktorer (alternativt skyddsfaktorer) i förhållande till utvecklingen av spelproblem.

Medan den använda konceptualiseringen rörande psykosociala faktorer kan diskuteras, och forskningsfältet bör utvecklas framöver, så pekar resultaten på att psykosociala faktorer är en relevant faktor att beakta i förhållande till spelproblem i den nordiska välfärdskontexten. Trots de givna begränsningar som en enskild sambandsstudie medför, så verkar psykosociala faktorer vara viktigare att beakta i förhållande till spelproblem jämfört med strukturella faktorer kopplade till socialt nätverk och relationer såsom frekvensen i sociala kontakter. Detta resultat ligger i linje med tidigare forskningsresultat där samma resultat framkommit för andra former av hälsoproblem i både finländsk och internationell kontext. Frågor kvarstår dock rörande eventuell kausalitet i kopplingarna mellan psykosociala fenomen och spelproblem. Även översiktsstudien belyser hur riktningen i psykosociala kopplingar kan vara svår att urskilja. Här fyller studier där kvalitativa forskningsansatser tillämpats en viktig funktion i att belysa komplexiteten och nyansera resultaten av sambandsstudier.

Resultaten stöder tesen att förebyggande arbete mot spelproblem även bör omfatta risk- och skyddsfaktorer på interpersonell nivå, ej enbart faktorer på individ- eller samhällsnivå. Här kan påpekas att preventiva ansatser i huvudsak har fokuserat på regleringsfrågor på makronivå eller spelegenskaper och den enskilda spelaren på mikronivå (Williams et al., 2012; McMahon, et al., 2018). Psykosociala faktorer kan influera de effekter socioekonomisk och politisk kontext samt individuell socioekonomisk status och omständigheter har på hälsa (Aldabe et al., 2011; Moor et al., 2014; Moor et al., 2017).

Resultaten av denna avhandling bidrar även till att identifiera luckor i det nordiska forskningsfältet kring spel om pengar. Överlag understryker resultaten behovet av ett fokusskifte inom nordisk spelforskning – där man går från prevalensstudier med tvärsnittsdesign till tillämpningen av evidens i preventions- och övriga breda hälsointerventionsfokuserade forskningsinitiativ – i likhet med det internationella forskningsfältet. Sett till forskningsmetoder har få studier med olika kvalitativa forskningsansatser genomförts, vilket skulle vara värdefullt för vidare forskning kring subjektiva upplevelser relaterade till spelproblem, gällande exempelvis psykosociala perspektiv och faktorer. En brist på longitudinella projekt identifierades i forskningskartläggningen, denna typ av projekt och antalet publikationer kring dem har dock ökat efter år 2015. Vidare har evaluerade preventionsinitiativ i första hand fokuserat på spelreglering och exempelvis tidiga interventionsinsatser med barn som målgrupp saknas det forskning om.

Den nordiska forskningen kring spel om pengar, som vid sidan av den samhällsvetenskapliga forskningen tillämpat ett folkhälsovetenskapligt ramverk, kunde dra nytta av hälsovetenskaplig inriktning med starkare humanistiskt perspektiv såsom det i vårdvetenskapen. Medan denna avhandling inte fokuserade på stöd- och vårdtjänster, understöder resultaten synen att en persons övergripande upplevelser av varierande former av ohälsa och underliggande orsaker borde adresseras på ett holistiskt och personcentrerat sätt. Mer forskning behövs med fokus dels på systematisk utvärdering av stöd- och vårdinsatser, dels med fokus på olika psykosociala faktorers roll i stöd- och vårdinsatser. Detta kunde ge värdefulla bidrag till både teoribildning samt hälso- och socialvårdspraxis, vid sidan av den omfattande epidemiologiska evidensbasen.

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