Testing the acceptability and feasibility of the lower-risk gambling guidelines in Finland

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ABSTRACT

Background: The lower risk gambling guidelines (LRGG) represent an evidence-based collaborative effort to provide clear advice to people on the limits of safe gambling consumption. The guidelines are as follows: 1) Gamble no more than 1% of household income per month; and 2) Gamble no more than 4 days per month; and 3) Avoid regularly gambling at more than 2 types of games. *Methods:* In an online survey study ($N = 778$), we evaluated the feasibility and acceptability of the LRGG among different subpopulations in Finland. *Results:* We found that the guidelines were generally evaluated positively as understandable, sensible, clear, and "just right" in terms of their content. There were some notable differences between subpopulations: Individuals who were at risk of gambling problems evaluated the LRGG more negatively than others, while professionals working in the field of gambling prevention were the most optimistic about the guidelines. Thus, increased level of potentially harmful gambling engagement was linked with a somewhat more pessimistic attitude towards the guidelines. On the other hand, those who had not gambled in the past year viewed the guidelines as too permissive compared with those who had gambled, or those working in gambling prevention. *Discussion:* Overall, our results show clear differences of opinion between the various subpopulations, which appear to be associated with the individuals' level and nature of gambling experience. We conclude that the LRGG can likely be adopted into wider use in Finland.

KEYWORDS

acceptability, feasibility, lower-risk gambling limits, problem gambling, prevention, risk curves

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INTRODUCTION

Over two billion adults globally are estimated to engage in gambling, either offline or online (Tran et al., 2024). However, for a minority of these people, gambling can cause a wide range

of harms, including financial hardship, emotional distress and degraded health, deteriorated relationships, social deviance, as well as study- or work-related problems (Browne et al., 2016, 2017; Langham et al., 2015; Salonen, Hellman, Latvala, & Castrén, 2018). The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5, American Psychological Association, 2013) defines gambling disorder as a severe form of problem gambling, and the same term is used also in the revised version of World Health Organization's International Classification of Diseases (11th revision; ICD-11; World Health Association, 2018).

Worldwide problem gambling prevalence rates range from around 1.29–2.43% (Calado & Griffiths, 2016; Gabellini, Lucchini, & Gattoni, 2022; Tran et al., 2024; Williams, Volberg, & Stevens, 2012), with 8.7% of adults experiencing some form of gambling risk (Tran et al., 2024). Problem gambling is strongly associated with gambling harms. However, at a population level, the burden of gambling-related harm is greater among the individuals not meeting the criteria for problematic gambling, because there are significantly more low risk gamblers in any given population than there are problem gamblers – this is known as the "prevention paradox" (Browne, Volberg, Rockloff, & Salonen, 2020; Browne & Rockloff, 2018; Currie, Miller, Hodgins, & Wang, 2009; Volberg, Zorn, Williams, & Evans, 2021). While problem gambling measures such as the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) are often used as proxies for gambling-related harms (Hodgins et al., 2023), these measures focus more on dependence symptoms than harms (Molander, Wennberg, & Berman, 2023). Thus, while closely related, problem gambling and gambling harms are conceptually distinct.

Problem gambling has significant adverse effects that span beyond the gamblers themselves. These include placing an emotional and financial burden on significant others, whose experienced harms are much alike the harms experienced by those who gamble themselves (Castren, Järvinen-Tassopoulos, & Raitasalo, 2021; Hing et al., 2022; Lind, Castrén, Hagfors, & Salonen, 2022). On a societal level, excessive and harmful gambling generates significant treatment and prevention costs, criminal involvement, and negative impacts on productivity (Abbott et al., 2018; Latvala, Lintonen, & Konu, 2019; Marionneau, Egerer, & Raisamo, 2023; Wardle, 2019).

From a public health perspective, a single and unambiguous strategy for harm minimization is important and potentially impactful, as shown by evidence in nutrition (Puska & Jaini, 2020), smoking (Akter et al., 2023), road safety (Goel et al., 2024; Tavakkoli et al., 2022) and physical exercise (den Braver et al., 2022). In the gambling field, effective policies include population-level restrictions on exposure, availability and advertising, age limits, limitations on product characteristics such as speed and immersivity, as well as mandatory limit-setting and self-exclusion options (Blank, Baxter, Woods, & Goyder, 2021; Currie et al., 2009; Drawson, Tanner, Mushquash, Mushquash, & Mazmanian, 2017; McMahon, Thomson, Kaner, & Bambra, 2019; Ukhova, Marionneau, Nikkinen, & Wardle, 2024; Velasco

et al., 2021). Information and education campaigns are also potentially useful, although research on their population-level effects is scarce (Velasco et al., 2021).

Most information campaigns on gambling have focused on educating individuals on payout odds, the concept of chance and expected value, risks involved in different types of gambling, as well as cognitive distortions related to gambling (Blaszczynski, Ladouceur, Nower, & Shaffer, 2008; Parke, Harris, Parke, Rigbye, & Blaszczynski, 2014; Williams, West, & Simpson, 2012). In many jurisdictions, population-level 'responsible gambling' campaigns have been run to inform the public about limit-setting, moderation, and the importance of self-control strategies (Currie et al., 2020; Flores-Pajot et al., 2021). Often, campaigns entail slogans such as 'gamble responsibly' or 'keep it fun, stay in control' (Mouneyrac, Le Floch, Lemercier, Py, & Roumegue, 2017). However, these types of slogans and guidelines have been found to be vague, open to interpretation, and not grounded in strong empirical evidence. Overall, generic slogans tend to have little communicative or preventive value if they are not personalized and focus too strongly on individual responsibility (Mouneyrac et al., 2017).

Clear, quantitative limits for low- and high-risk gambling engagement are needed to guide consumers, as well as regulatory and ethical policies in monitoring harmful engagement. Such limits can also be applied in primary care settings, across social services, and incorporated within various gambling venues. In the alcohol field, similar low risk drinking limits have had an important and informative impact (Babor, 2010; Giesbrecht & Bosma, 2017; Holmes et al., 2020; Quatremère et al., 2023; Room & Rehm, 2012).

Research has also gone into defining such limits for gambling: The lower risk gambling guidelines (LRGG) represent a global effort, spanning over a decade of empirical work, to provide unambiguous advice to consumers on limits associated with lower risk gambling involvement (Hodgins et al., 2023; Young et al., 2021, 2022; www.gamblingguidelines.ca). They were developed during several phases in collaboration with a large group of Canadian experts and researchers as well as an international expert panel (Currie et al., 2019; Hodgins et al., 2023; Young et al., 2021). The LRGG are collectively based on several systematic reviews, meta-analysis, a Canadian advisory committee, an online survey ($n = 10,000$), as well as qualitative interviews (Allami et al., 2021; Currie et al., 2020; Flores-Pajot et al., 2021; Hodgins et al., 2023; Young et al., 2022).

The LRGGs recommend the following limits, which should be followed concurrently: 1) Gamble no more than 1% of household income per month; and 2) Gamble no more than 4 days per month; and 3) Avoid regularly gambling at more than 2 types of games. To develop these limits, receiver operating characteristic (ROC) curves were created to examine the relationship between gambling involvement (i.e., percentage of monthly household income, gambling frequency per month, and the number of gambling types played in the past year) and gambling-related harms (i.e., financial harms, relationship harms, emotional and psychological harms, and health harms). These curves were

based on data from 11 representative population samples across eight countries (including Finland). To determine the range of possible limits, a lower estimate was calculated using the Youden Index, while a higher one was established by maximizing specificity, ensuring sensitivity remained at or above 0.5. This was done for each gambling involvement indicator - gambling harm measure combination across each dataset. Ranges for each gambling involvement indicator (across datasets) were then analyzed collectively by using modal analysis and calculating the mean of the upper and lower limits (for more details see Hodgins et al., 2023). To determine the final limits, the research team studied how the cumulative change in risk of experiencing gambling-related harms increased incrementally as gambling involvement increased across the ranges established during the ROC analysis. The final quantitative limits were determined by examining the change in risk and testing the acceptability of the range of limits among a sample of 10,000 participants (Young et al., 2022).

The guidelines also note that there are specific at-risk populations for whom the guidelines may not be suitable, including individuals with previous problems with alcohol, cannabis, or other drugs, anxiety or depression, or a family history of gambling problems. Moreover, the guidelines state that some gambling products come with greater risk, such as fast-paced like slot machines and online poker, while other products are less risky, such as slow-paced lotteries (Allami et al., 2021; Russell et al., 2023).

Any guidelines for lower risk limits of gambling consumption need to be empirically supported but also accepted by the public. It is therefore crucial to evaluate to what degree people consider these guidelines as understandable, sensible, feasible, clear, and potentially worth following. Ideally, guidelines should be aligned with people's attitudes and opinions, and they should "make sense" to be widely adopted. Prior evidence already shows that the LRGG are quite well aligned with general views of gambling harm limits, but country- and culture-specific knowledge is still largely lacking. For example, existing results may be sensitive to differences in gambling provision (Rochester & Cunningham, 2023). It is also likely that country-level differences in reporting income at household or individual levels impact the understandability of the guidelines. Furthermore, the acceptability of limits can be subject to individual differences in gambling engagement and risk.

In this paper, we evaluate the feasibility and acceptability of the LRGG among different subpopulations of individuals in a Finnish cultural context. The results will help determine whether the guidelines will be acceptable as they are, whether there are differences in acceptability and feasibility across individuals with different levels of gambling engagement, and if further cultural and contextual sensitivity is required for wider applicability in the Finnish context and beyond.

Finland is a well-suited context to study the feasibility and acceptability of these guidelines. The Finnish gambling field has been in a state of flux, with increasing online gambling participation, declining land-based gambling, and

several public health-oriented policy changes in the past few years. These policy changes have included, for example, the extension of mandatory player identification and limit setting to land-based gambling and reductions in gambling availability (Marionneau, Selin, Impinen, & Roukka, 2024). Currently the Finnish state monopoly on gambling is set to be opened to a licensed market in online environments as of 2026, a policy change that is likely to increase the visibility and availability of gambling online. Culturally appropriate guidelines for lower risk consumption are therefore needed to prepare for this eventuality. Furthermore, Finland is an excellent case study to look at cultural sensitivity as income is generally viewed on personal rather than on a household-level, unlike in the original LRGG model.

MATERIALS AND METHODS

Participants and procedure

To test the feasibility and acceptability of LRGG in the Finnish context, we aimed at recruiting Finnish individuals with experience of different levels of gambling engagement. We posted invitations to participate in an online survey study on LRGG on official social media accounts of the Finnish Institute for Health and Welfare (Facebook, LinkedIn), as well as the institute's official webpage, in two waves. The invitation posts were actively monitored by the institute's communication specialists, and any questions posted on the social media platforms about the study were answered without disclosing the study's fine details. After the first wave of invitations and data collection, male respondents were under-represented (25% vs. 75%). To increase their number, we targeted the second wave of invitations to males specifically. In addition, we distributed printed study invitations (with a QR-code and survey link) at an outpatient treatment facility specializing in gambling issues in Helsinki, and in the newsletter of the Finnish association for substance abuse prevention (EHYT). The data were collected between August and October 2023.

The online survey was built with Qualtrics XM (qualtrics.com) in Finnish. The survey was accessible and visually optimized for tabletop, laptop, and mobile devices. The study had a between-subjects design wherein participants were evenly randomized between two conditions: Participants were shown either the official international lower risk gambling guidelines, or a modified version of the guidelines where the "income" guideline referred to personal (guideline limit 2%, see the Supplementary Materials for further details) instead of household annual income (guideline limit 1%). Henceforth these groups are called "Household income" and "Personal income", respectively. The mean survey completion time was 19.28 min. Repeat participation was deterred (based on browser cookies) and the data were screened for unserious as well as incomplete responses. Responses were considered complete if the participant had reached the final page of the survey. Participants were not compensated.

In total, 1,531 participants opened the survey. After exclusions, the final sample size was 778 participants: 220 males (28.3%), 533 females, 12 others and 13 did not disclose their gender. Age ranged from 19 to 86 (M_{age} = 51.6, SD_{age} = 14.9). Of the participants, 50.4% had at least a bachelor's degree. The median self-reported income categories for household and personal monthly net income were "3,001–4,000€" and "2,001–2,500€", respectively (see Table 1 for details). We aimed a priori for a minimum of 300 respondents per both experimental groups. Assuming a true difference of 0.3 points (for Likert 1–5 scales), with a groupwise standard deviation of 1, and a significance level of 0.05, 300 respondents per group will yield a two-sided t-test (or one-way ANOVA with two groups) power of 95.6%.

The survey consisted of six sequential parts:

1. Introduction. Brief explanation of the survey and its purpose, description of data handling, and informed consent.
2. Questions on demographics (age, gender, income, education), respondent group (details below), and past 12 months' gambling activity.
3. Measures of problematic gambling behaviour (skipped if participants had not gambled in the past 12 months), attitudes towards gambling, and general health.
4. LRGG task instructions, randomization into groups, and LRGG evaluations (details below).
5. Open ended question, and debriefing.
6. Invitation to participate in a qualitative follow-up study, email prompt.

Measures

Independent variables. The demographic covariates collected were age (numeric), gender (male/female/other/do not wish to say; dichotomized post hoc as male/female), education (highest level completed or closest match, ordinal with 7 levels from 1 = "Elementary school or similar", to 7 = "Master's degree or similar"), and income (estimated personal and household income in euros after taxes, ordinal with 7 levels from "0–500" to "Over 3,000" [personal income], and from "0–1,000" to "Over 6,000" [household income]). See Table 1 for descriptive statistics.

The participants also reported which of the following best described them (multiple options could be selected): i) Casual player without experienced harms (n = 417), ii) Player with currently or previously experienced harms (n = 133), iii) Significant other of a player with currently or previously experienced harms (n = 38), iv) Professional player (n = 5), v) Professional in gambling harm prevention (n = 54), vi) Working in gambling but not employed by gambling companies (n = 17), vii) Gambling company worker (n = 5), viii) None of the above (n = 155). Due to a low number of observations for some categories, we used four mutually exclusive "Respondent group" categories in our analyses. We excluded participants who had selected multiple options, except for the "Professional" category, which included any participant who had selected that option (to increase number of observations). The Respondent group categories were: Casual players without experienced harms ("Casual, no problems", n = 368), Players with currently or previously experienced harms ("Gambling problems", n = 112), Professional in gambling harm prevention ("Professional", n = 54), and None of the above (named as such, n = 151).

The severity of gambling problems was measured using the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001, where items are evaluated from 0 = "never" to 3 = "almost always" and the scores are summed. The scores were categorized as 0 = "No problems" (n = 516); 1–2 = "Low-risk gambler" (n = 96); 3–7 = "Moderate-risk gambler" (n = 71); and 8 and above = "Problem gambler" (n = 95). To simplify our analyses and visualizations, the categories were further collapsed into "At risk gamblers" (moderate-risk gamblers + problem gamblers, n = 166) and "Not at-risk gamblers" (no problems + low-risk gamblers, n = 612). In exploratory analyses, we also collapsed the categories such that "Not at-risk gamblers" only included the

Table 1. Demographic variables

	Male (n = 220)	Female (n = 533)
Education		
Basic education diploma	8 (3.6%)	34 (6.4%)
Post-secondary qualification	20 (9.1%)	26 (4.8%)
Vocational upper secondary qualification or equivalent	55 (25%)	111 (20.8%)
High school diploma	31 (14.1%)	87 (16.3%)
Bachelor's degree	47 (21.4%)	134 (25.1%)
Master's degree	46 (20.9%)	133 (24.9%)
Doctorate (e.g., PhD)	13 (5.9%)	8 (1.5%)
Mean age (SD)	53.1 (15.9)	51.4 (14.4)
PGSI		
No problem (0 points)	133 (60.4%)	367 (68.8%)
Low-risk gambling (0–2 points)	33 (15%)	60 (11.2%)
Moderate-risk gambling (3–7 points)	23 (10.4%)	44 (8.2%)
Problem gambling (8+ points)	31 (14.1%)	62 (11.6%)
Household income (after taxes)		
0–1,000 €	19 (8.6%)	29 (5.4%)
1,001–2,000 €	31 (14.1%)	111 (20.8%)
2,001–3,000 €	50 (22.7%)	118 (22.1%)
3,001–4,000 €	36 (16.4%)	87 (16.3%)
4,001–5,000 €	35 (15.9%)	79 (14.8%)
5,001–6,000 €	20 (9.1%)	66 (12.3%)
More than 6,000 €	29 (13.2%)	43 (8.1%)
Personal income (after taxes)		
0–500 €	6 (2.7%)	11 (2.1%)
501–1,000 €	14 (6.4%)	43 (8.1%)
1,001–1,500 €	19 (8.6%)	88 (16.5%)
1,501–2,000 €	39 (17.7%)	121 (22.7%)
2,001–2,500 €	48 (21.8%)	121 (22.7%)
2,501–3,000 €	40 (18.2%)	74 (13.9%)
More than 3,000 €	54 (24.5%)	75 (14.1%)

Note. For categorical variables, the number of observations is reported separately for both genders, percentages are reported within gender. Participants who did not wish to report their gender (n = 12) or reported their gender as "other" (n = 13), are omitted.

"No problems" category (i.e., no problems [Not at risk gamblers] vs. low-risk gamblers + moderate-risk gamblers + problem gamblers [At risk gamblers]). Using this categorization we observed the same pattern of results but marginally weaker effects. Thus, below we report the results based on the former dichotomized categories with the more severe PGSI categories as "At risk gamblers".

Participants additionally completed scales measuring attitudes towards gambling and general well-being, reported their previous 12 month's gambling activity across various types of games, and answered an open-ended question on the usability of the guidelines and the study in general. The data for these measures will be reported separately. However, the data on past 12 month's gambling activity is used in some analyses to determine whether the participant had gambled at all or not. For this analysis, we also subset the data by including only "not at-risk gamblers" (based on PGSI-category; $n = 500$) and created a "Gambler status" variable indexing whether the participant had gambled at all during the past 12 months ($n = 392$) or not ($n = 108$).

LRGG task and dependent variables (DVs). Half-way through the survey (cf. Fig. S1 in the Supplementary Materials), the participants were introduced to the lower risk gambling guidelines, after which they were evenly randomized into the Household income- and Personal income experimental groups. All participants were briefly told that the LRGG were an empirically driven international effort to provide clear guidance towards safer gambling limits, and that their task was to evaluate them. The participants were also informed that the guidelines include an amendment stating that they may not be suitable for individuals with previous problems with alcohol, cannabis or other drugs, anxiety or depression, or a family history of gambling problems or substance use.

After the LRGG introduction, the participants were shown all three guidelines on the same page: 1) Gamble no more than [1% of monthly household net income; *Household income group*]/[2% of your personal monthly net income; *Personal income group*]; 2) Gamble no more than 4 days per month; 3) Avoid regularly gambling at more than 2 types of games. The first guideline was accompanied by a table showing how much one could gamble each month at various levels of income[1] and the third guideline was followed by a short list of example game types.

Perceived acceptability and feasibility of the guidelines

Participants were then asked to evaluate the guidelines as a combined set, on a set of nine questions tapping the perceived acceptability and feasibility of the guidelines. These items were inspired by the theoretical framework of Sidani and Braden (1998) relating to intervention studies. The same items (and some additional items) have previously been used as a psychometric scale in an intervention study

(Castrén et al., 2019), where the subscale of *acceptability* comprised perceptions of appropriateness, convenience, effectiveness, risks, and adherence towards the intervention, while the subscale of *feasibility* comprised practicality of application, and clarity of the intervention protocol. In the current study, the items were translated, slightly modified, and renamed, but their conceptual similarity to Castrén et al. (2019) was retained. We formed a uniform scale comprising the following items: perceived 1) Clarity, 2) Understandability, 3) Effectiveness, 4) Preparedness (to follow), 5) Unwanted consequences (reverse coded), 6) Long- and 7) Short-term benefit, 8) Applicability, and 9) Sensibility of the guidelines (see the Supplementary Materials for full list of items and their verbal labels; items 1–3 reflect feasibility and items 4–9 reflect acceptability; Cronbach's alpha for the uniform scale was 0.87, though the results are presented primarily item-wise). The items were evaluated on Likert 1–5 scales where higher scores indicated more positive evaluations of the LRGG (the verbal labels "positive" and "negative" are used in the visualizations for all items, though the exact verbal labels were item-specific).

Further evaluations of the guidelines

After evaluating the LRGG as a combined set of three guidelines on the nine items described above, the participants were asked to evaluate each guideline separately (and overall) on the following questions, which were designed for the present study as further conceptual measures of acceptability and feasibility of the LRGGs, though the items themselves do not directly refer to the terms "acceptability" and "feasibility":

1) *Are the guidelines suitable for most people who gamble?* (1 = "Much too restrictive", 3 = "Just right", 5 = "Much too permissive"),
2) *Would the guidelines be effective in reducing gambling harm?* (1 = "Definitely not", 3 = "Don't know", 5 = "Definitely"),
3) *Would you follow the guidelines if you had to gamble less?* (1 = "Definitely not", 3 = "Don't know", 5 = "Definitely").

Participants were also asked to indicate what they thought would be a suitable limit, separately for each guideline:

4) *What would be a suitable limit for the first guideline (income)?* ("Less than 1%", "1% (proposed limit)" [household income group]/"2% (proposed limit)" [personal income group], "3%", "4%", "5%", and "More than 5%").
5) *What would be a suitable limit for the second guideline (days)?* ("0–2", "3", "4 [proposed limit]", "5", "6", and "7 or more".)
6) *What would be a suitable limit for the third guideline (game types)?* ("0–1", "2 [proposed limit]", "3–4", "5–6", "7–8", and "More than 8".

Statistical analysis

All analyses and visualizations were conducted using the R platform for statistical computing (v. 4.2.1, R Core Team,

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[1]As per the example in https://gamblingguidelines.ca/lower-risk-gambling-guidelines/what-are-the-guidelines/.

2013). The results are based on ordinary least squares (OLS) modelling (one- and multiway ANOVAs), and, for the visualizations, calculations of 95% confidence intervals for item- and group-wise mean values. Variance Inflation Factor (VIF) values, or Generalized VIF values for factor predictors with more than two levels, were calculated for all fitted models to evaluate multicollinearity. Model effect sizes were evaluated using adjusted r^2-values. All fitted OLS models satisfied the assumption of linearity, and the error terms were normally distributed and homoscedastic. The data collection procedure with forced answers ensured there were no missing values in the data.

Ethics

Informed consent was obtained from all participants, and the study was approved by the Institutional review board (IRB) of The Finnish Institute for Health and Welfare (THL).

RESULTS

Perceived acceptability and feasibility of the guidelines

Figure 1 displays responses to the Likert-questions on perceived 1) Clarity, 2) Understandability, 3) Effectiveness, 4) Preparedness (to follow the guidelines), 5) Unwanted consequences, 6) Long- and 7) short-term benefit, 8) Applicability, and 9) Sensibility, separately for the two experimental groups and genders. Items 1–3 reflect "feasibility" and items 4–9 reflect "acceptability" of the guidelines. The average across all items is shown at the bottom, alongside the mean and 95% confidence intervals for all items. Higher scores indicate a more positive attitude towards the

guidelines. Figure 2 focuses on PGSI-categories as well as the subset of "not at-risk gamblers" who either had or had not gambled in the past 12 months. Figure 3 visualizes the results separately for each Respondent group category ("Casual, no problems", "Gambling problems", "Professional", "None of the above").

As depicted in Figs 1–3, overall, the evaluations are positive with average ratings across all items at 3.61 (SD = 0.82) out of 5. The lowest average ratings were given for the perceived effectiveness of the guidelines ($M = 2.75$, SD = 1.12), while the average highest ratings were given for their clarity ($M = 4.17$, SD = 0.95) and understandability ($M = 4.27$, SD = 0.94).

To statistically evaluate these effects, we first fit a three-way factorial ANOVA with Group (household income/personal income), Gender (male/female), and PGSI-category (at risk/not at risk), and their factorial interactions, as the predictors, and the average scale scores as the DV). None of the interactions were statistically significant (all $Fs < 1.01$ and $ps > 0.1$) but had high variance inflation factor values (VIFs between 5.3 and 23.01). Thus, the interaction terms were dropped from the model, which resulted in low VIF values (<1.004). In a model including only the main effects of Group, Gender, and PGSI-category as predictors, PGSI-category was statistically significant ($B = 0.36$, $t = 4.97$, $p < 0.001$) while Gender ($B = 0.09$, $t = 1.48$, $p = 0.13$) and Group ($B = 0.095$, $t = 1.62$, $p = 0.1$) were not (model adjusted $r^2 = 0.035$). The participants in the "not at risk" PGSI-category evaluated the guidelines more positively than participants in the "at risk" category (see Figs 1 and 2).

Next, we fit a three-way factorial ANOVA with Group, Gender, and Gambler status ("not at risk, has gambled", $n = 392$, vs. "not at risk, has not gambled", $n = 108$), and their interactions, as predictors, with the average scale scores as the
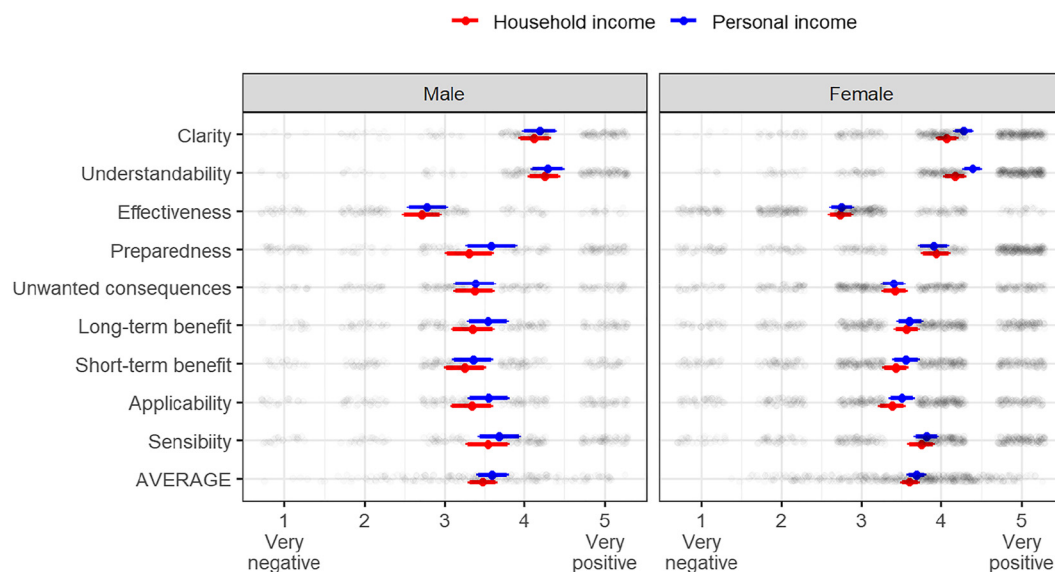

Fig. 1. Visualizations for Likert-questions on the acceptability and feasibility items for the LRGG, separately for the two experimental groups and genders

Note. The average across all items is shown at the bottom, with mean and 95% confidence intervals for all items. Higher scores reflect a more positive attitude towards the guidelines.
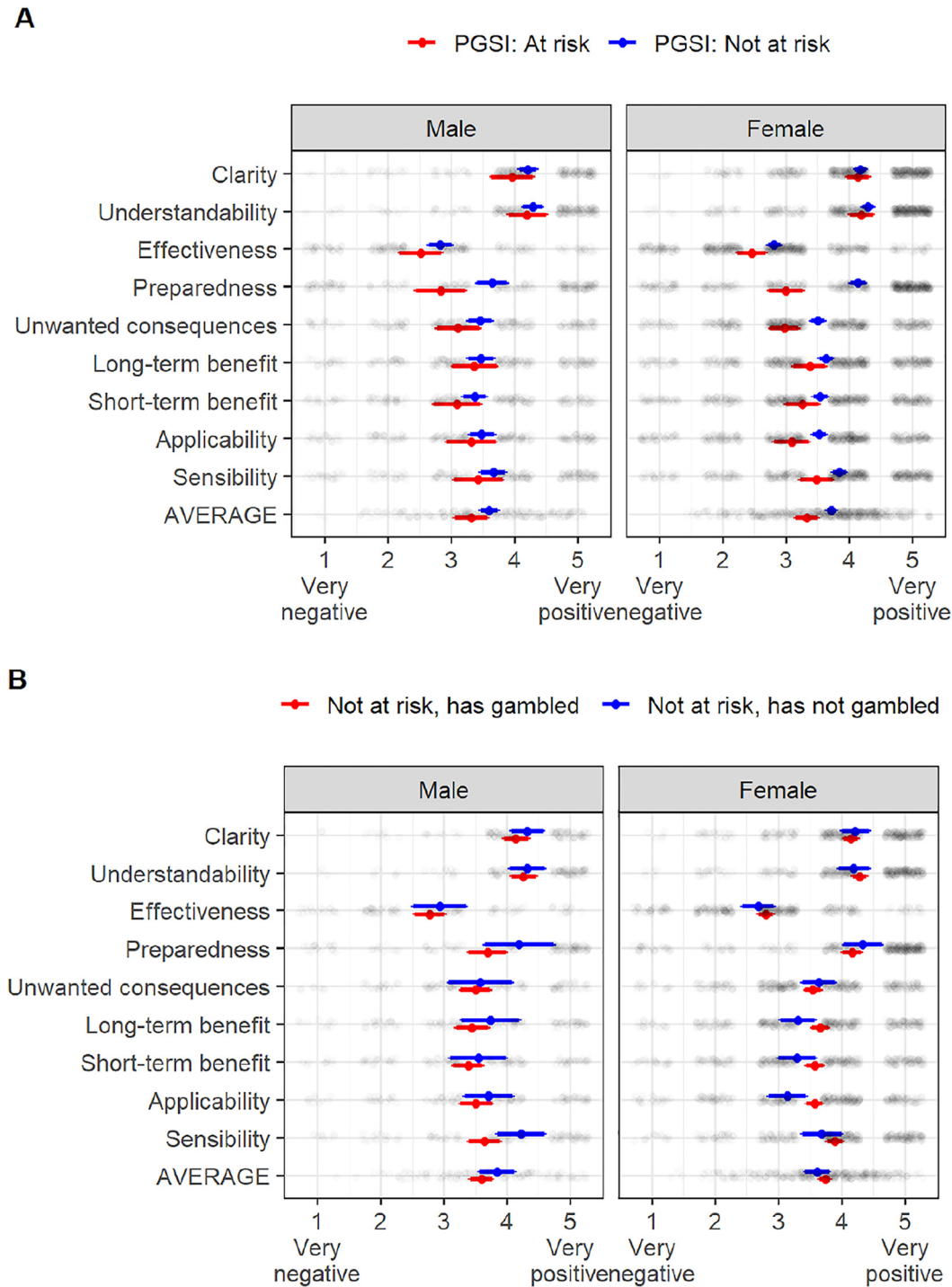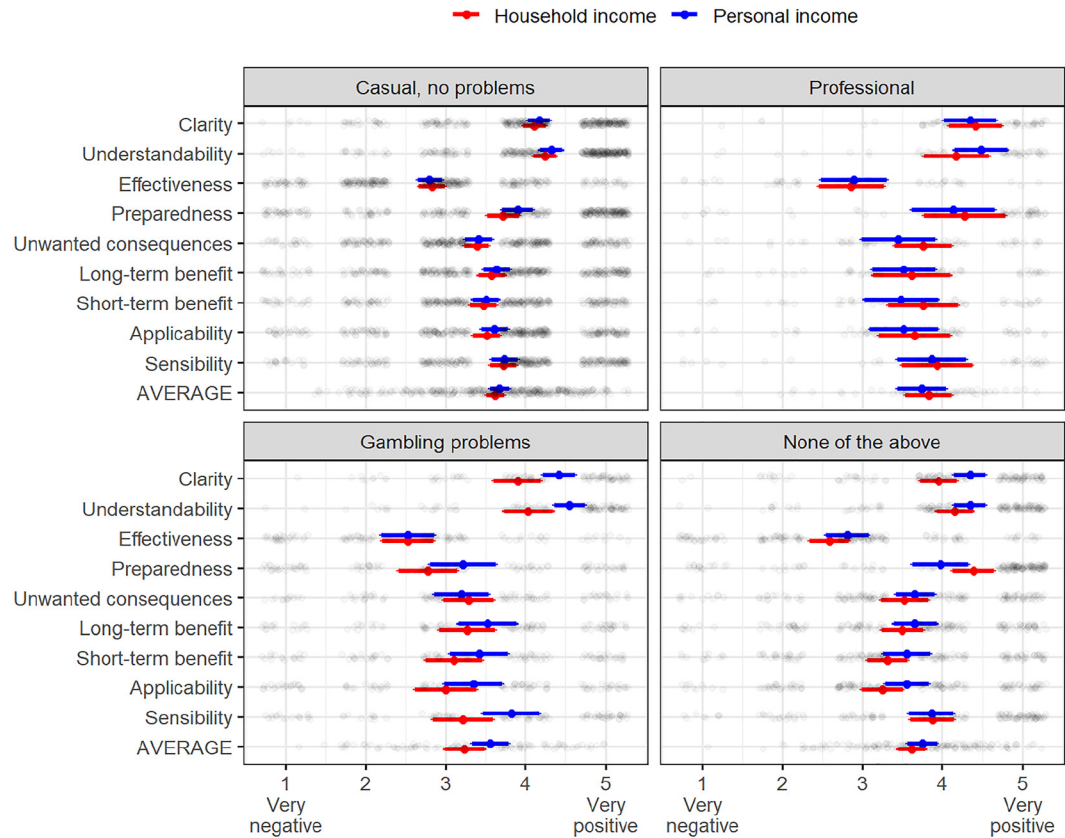
Fig. 2. Visualizations for **A)** Likert-questions on the acceptability and feasibility items for the LRGG, separately for the two genders and PGSI-categories (Not at risk [0–2 points] vs. At risk [3+ points], and **B)** Gambler status for not at-risk gamblers (Has gambled vs. Has not gambled

Note. The average across all items is shown at the bottom row, with mean and 95% confidence intervals for all items. Higher scores reflect a more positive attitude towards the guidelines.

DV. The model VIF values were acceptable (<8.3), but none of the effects were statistically significant (all $Fs < 3.51$, $ps > 0.061$, model adjusted $r^2 < 0.001$; see Fig. 3).

Finally, we fit a three-way factorial ANOVA with Group, Gender, and Respondent group (four levels: i) Casual, no problems, ii) Gambling problems, iii) Professional, iv) None

of the above), and their interactions, as predictors, with average scale scores again as the DV. There were no significant interactions and the model had high generalized variance inflation factor values (GVIFs between 3.79 and 1168.9), and thus the interactions were dropped, resulting in acceptable GVIF values (<1.008). Without interactions, Respondent

Fig. 3. Visualizations for Likert-questions on the acceptability and feasibility items for the LRGG guidelines, separately for the two genders and Respondent group (Casual, no problems; Professional; Gambling problems; and None of the above)
Note. The average across all items is shown at the bottom, with mean and 95% confidence intervals for all items. Higher scores reflect a more positive attitude towards the guidelines.

group was statistically significant ($F(3, 679) = 4.04$, $p = 0.007$), but Group ($B = 0.09$, $t = 1.51$, $p = 0.13$) and Gender ($B = 0.04$, $t = 0.61$, $p = 0.54$) were not (model adjusted $r^2 = 0.015$). Tukey-adjusted *post hoc* comparisons showed that the "Gambling problems" group evaluated the guidelines more negatively than the other groups (Gambling problems vs. Casual, no problems: $B = -0.25$, $t = -2.85$, $p = 0.02$; Gambling problems vs. Professional: $B = -0.38$, $t = -2.82$, $p = 0.02$; Gambling problems vs. None of the above: $B = -0.30$, $t = -2.97$, $p = 0.01$). See Fig. 4.
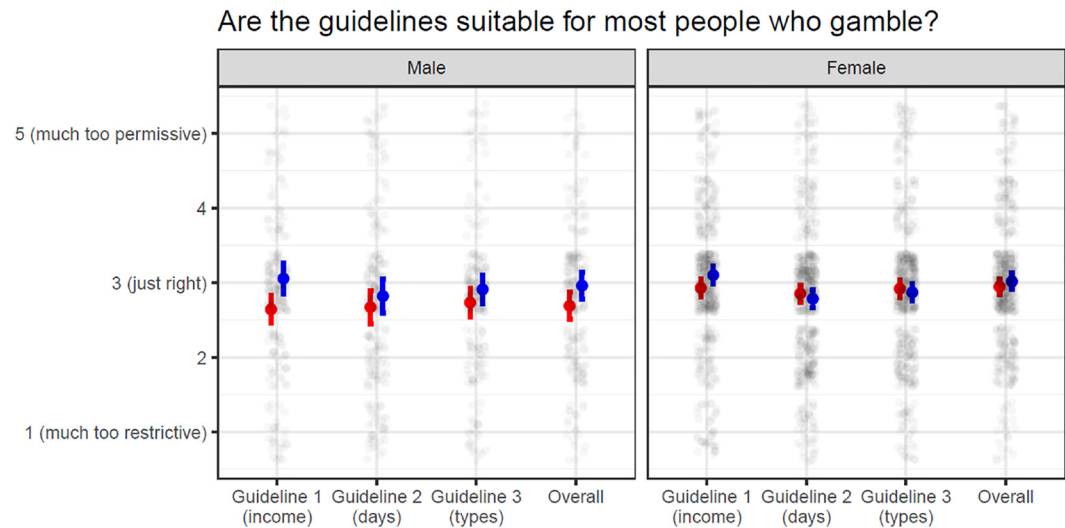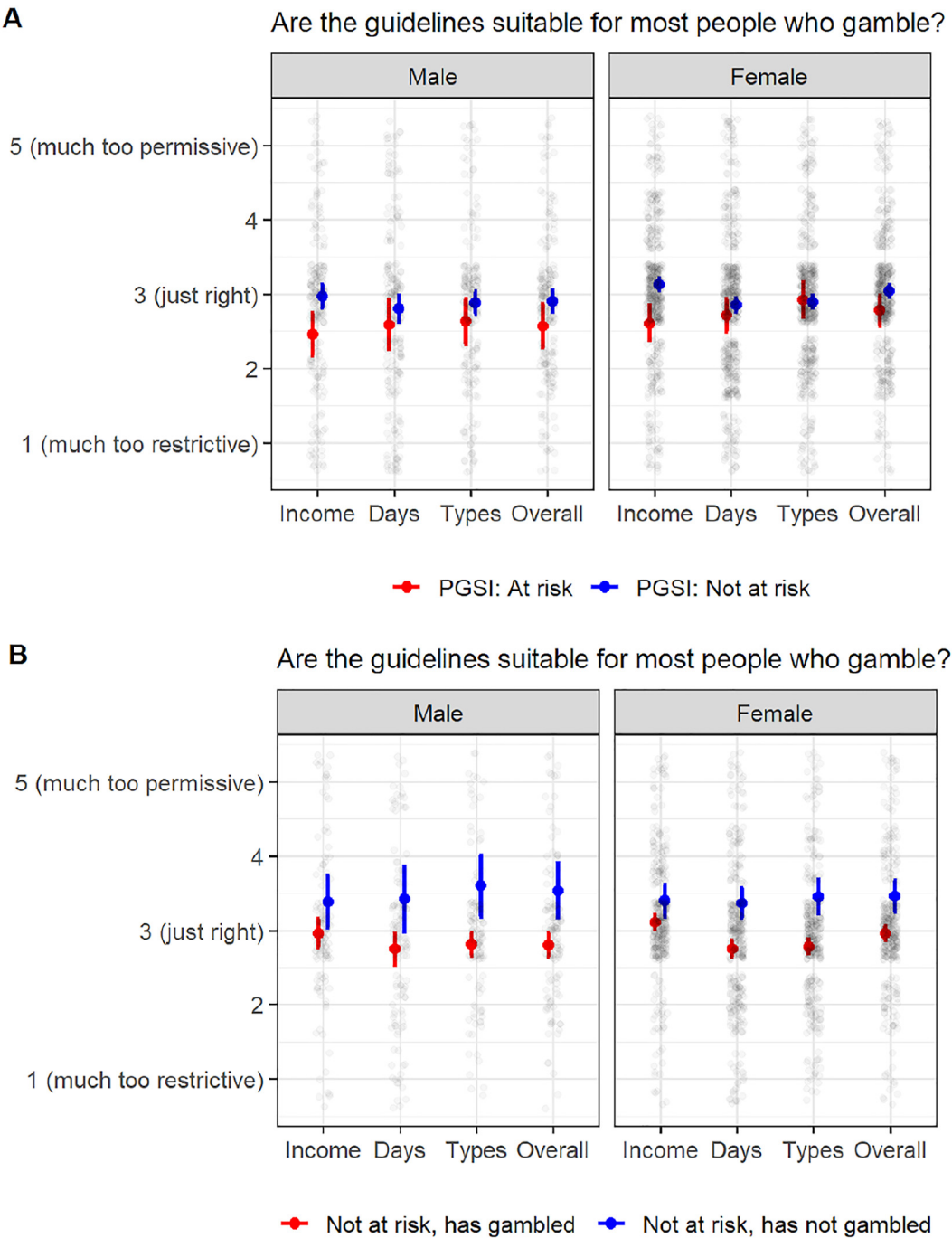

Fig. 4. Responses to the question "Are the guidelines suitable for most people who gamble?" separately for the two experimental groups and genders, with means and 95% confidence intervals

Further evaluation of the guidelines

Responses to the further guideline evaluations are depicted in Figs 4–6. All guidelines were generally evaluated as suitable for most people who gamble (the mean ratings for all guidelines were near 3 ["just right"]). In terms of perceived effectiveness and willingness to follow, the guidelines were generally evaluated somewhat positively (ratings were about 3.5 out of 5).

The effects are described based on visual inspection of the figures and the non-overlapping 95% confidence intervals, which indicate statistical significance at (at least) the $p < 0.05$ level. For evaluations of suitability ("Are the

Fig. 5. Responses to the question "Are the guidelines suitable for most people who gamble?" separately for **A)** the two genders and PGSI-categories (At-risk vs. Not at-risk), and **B)** Gambler status for not at-risk gamblers (Has gambled vs. Has not gambled)
Note. The average across all items is shown at the bottom row, with mean and 95% confidence intervals for all items. Higher scores reflect a more positive attitude towards the guidelines. Income, Days, and Types refer to the Lower Risk Gambling Guidelines 1, 2 and 3.
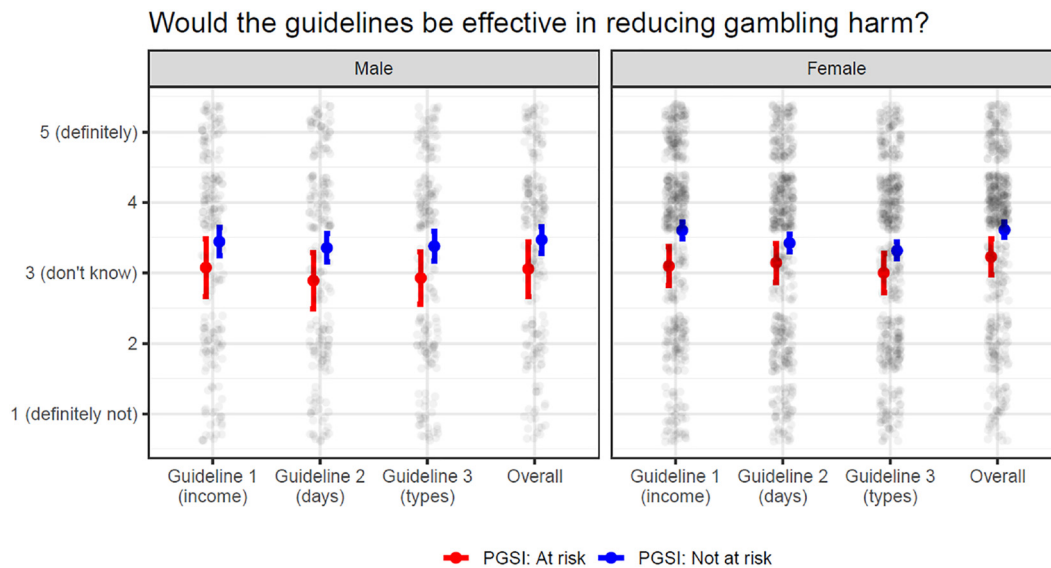
Fig. 6. Responses to the question "Would the guidelines be effective in reducing gambling harm?" separately for the two experimental groups and PGSI-categories (at risk vs. not at risk), with means and 95% confidence intervals

guidelines suitable for most people who gamble?"), Figs 5 and 6 show that the "Household income" group (vs. the "Personal income" group), and the PGSI "at risk" group (vs. the "not at risk" group) evaluated the first guideline (income) as more restrictive. When using Gambler status as a predictor (in a subset of the data with only "not at risk gamblers"), Fig. 7 shows that the participants who had not gambled during their past 12 months evaluated the suitability of all guidelines as much more permissive than those who had gambled.

In terms of perceived effectiveness of the guidelines ("Would the guidelines be effective in reducing gambling harm?"), clearest effects were observed for the PGSI "not at-risk" group, who were significantly more optimistic than the "at-risk" group regarding the effectiveness of the guidelines in reducing gambling harm (Fig. 7).

We did not find strong effects between Respondent groups for evaluations of the question on suitability of the guidelines. The "Professionals" group (those working in the field of gambling harm prevention) estimated the effectiveness of the guidelines as slightly higher than other groups. By contrast, the "Gambling problem" group estimated the effectiveness of the guidelines to be somewhat low (see Fig. 7). We observed a similar pattern in terms of willingness to follow the guidelines, with Professionals reporting higher willingness and the Gambling problems group reporting lower willingness.

For all three guidelines (income, days, and types), the mode and median values across participants matched the suggested guideline limits for the question on perceived suitable guideline limit. For the guideline on income, which was subject to the experimental manipulation, the mode and median values likewise matched the suggested guideline limit in both experimental groups. The results show that the suggested guidelines were well in line with participants'

views of what guidelines should be. See the Supplementary Materials (Figs S2–S7) for visualizations.

DISCUSSION

In this study we evaluated the acceptability and feasibility of the Lower Risk Gambling Guidelines in Finland. We aimed to determine if the translated guidelines are clear, sensible, understandable, and potentially usable in a Finnish context, and whether there are any differences of opinion between respondents with different levels of involvement in gambling or the gambling industry. We also tested whether the first guideline ("Gamble no more than 1% of monthly household net income") is viewed differently when it refers to personal instead of household income, as Finnish people are arguably more accustomed to evaluating their finances based on personal income.

Our results showed that, across most measures, the guidelines are evaluated positively: they were understandable, sensible, clear, and "just right" in terms of what they suggested, though the participants were somewhat pessimistic about the guidelines' perceived effectiveness when measured on the items based on the work of Sidani and Braden (1998) and Castrén et al. (2019). Views on appropriate limits were also aligned with those suggested in the LRGG. There were minor differences between the household and personal income groups, none of which reached statistical significance. Thus, even in the Finnish cultural context, participants viewed the guidelines equally positively, on average, regardless of whether they referred to household or personal income. While this should not necessarily be taken as evidence in support of the original LRGG formulation (household income), our finding does suggest that individuals are likely able to evaluate their
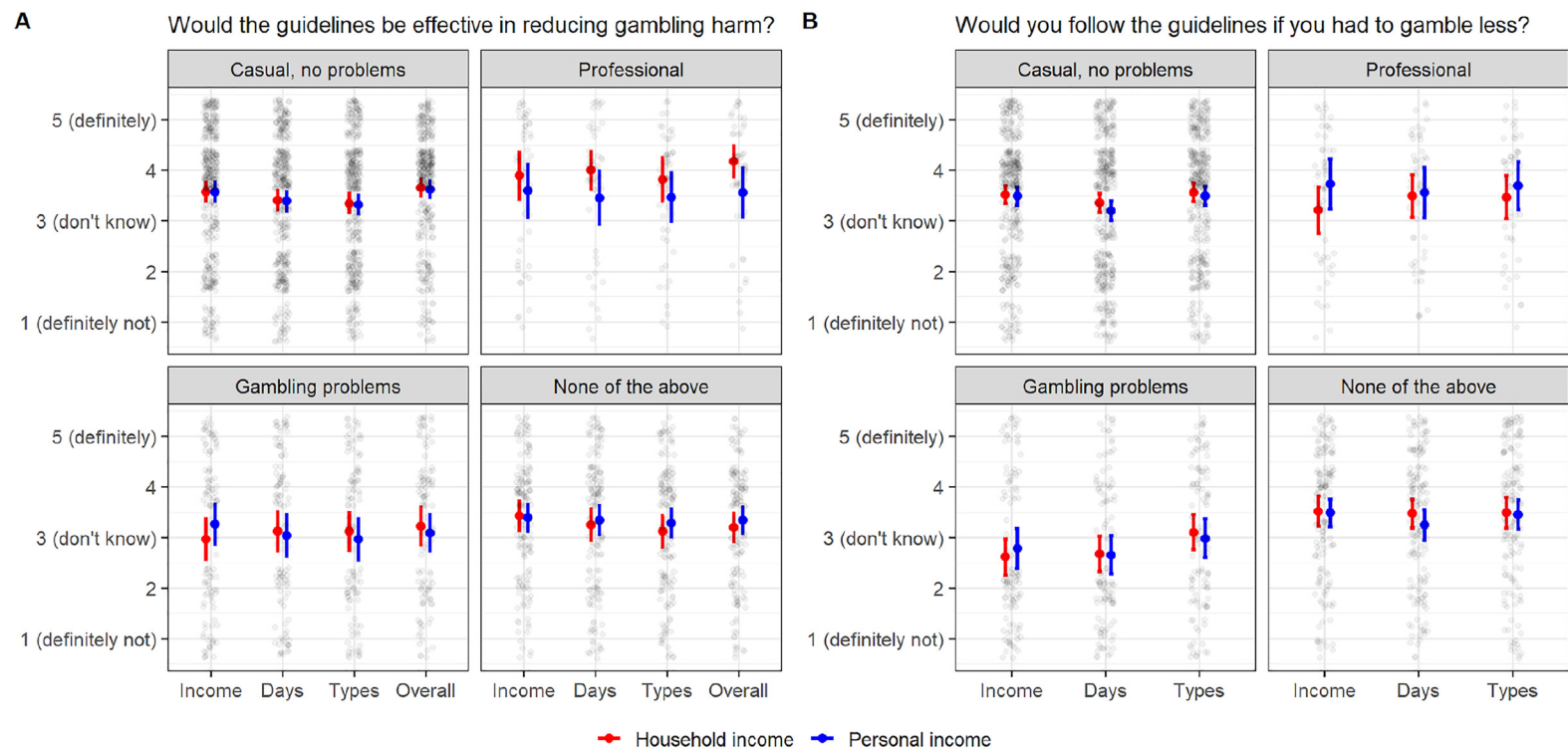
Fig. 7. Responses to the question "Would the guidelines be effective in reducing gambling harm?" (panel **A**) and "Would you follow the guidelines if you had to gamble less?" (panel **B**) separately for the Experimental- (household vs. personal income) and Respondent group categories

Note. Average across all items is shown at the bottom row, with mean and 95% confidence intervals for all items. Higher scores reflect a more positive attitude towards the guidelines. Income, Days, and Types refer to the Lower Risk Gambling Guidelines 1, 2 and 3.

gambling spending in reference to both household and individual spending.

Participants in the "at risk" PGSI group were significantly more pessimistic about the guidelines. Among participants in the "not at risk" PGSI group, those who had not gambled viewed the guidelines as being "too permissive" compared with those who had gambled. In terms of respondent group, participants who self-identified as problem gamblers (besides their PGSI-scores), were the most pessimistic about the guidelines' overall acceptability and feasibility. Professionals working in the field of gambling prevention, on the other hand, were the most optimistic about the guidelines. Thus, it appears that some level of engagement in gambling, particularly "at risk" level engagement, is linked with a more pessimistic attitude towards the guidelines – perhaps because they are viewed as too restrictive considering the players' own gambling preferences. On the other hand, those with no gambling experience viewed the guidelines as "too permissive" (or closer to that evaluation range), which contrasts with those working in the field of gambling prevention who felt the guidelines were "just right". Thus, there are clear differences of opinion between the various groups measured, which appear to be associated with the individuals' level and nature of experience in gambling.

Overall, the results indicate that the LRGG can be adopted into wider use in Finland. Prior research into the Finnish gambling culture has highlighted widespread normalization and cultural acceptance of gambling, visible also in high total consumption (e.g., Egerer & Marionneau, 2019). However, recent public health-oriented reforms in the Finnish gambling field have translated into declining consumption levels in land-based gambling (Marionneau et al., 2024). At the same time, the globalization of gambling markets, including product development, have worked to standardize and instrumentalize gambling experiences across cultures (see Cosgrave, 2022; McGee & Bunn, 2023). This development has also affected countries operating monopolistic gambling regimes – with state monopolies adopting increasingly commercial practices similar to those of private competitors (Järvinen-Tassopoulos, 2022). As such, it is likely that informational tools such as the LRGG can have a wide applicability globally.

Our results strongly suggest that different respondent groups react to the guidelines differently, which should be considered when the guidelines are promoted. People who are at risk of developing gambling problems are a clear target audience for the LRGG and could potentially benefit the most from them. However, as those in the 'at risk' PGSI group are more pessimistic about the guidelines than those who are not at risk, it is crucial to reach these individuals already before any risk develops, as a form of early intervention. Furthermore, the promotion of the guidelines in the at-risk group needs strong empirical backing to be convincing.

For the LRGG to function efficiently, specific gambling risk groups should be identified for possible targeted promotion of the guidelines. Recent systematic reviews and meta-analyses on problem gambling predictors underscore the significance of several demographic- and personality-related factors. These include young age, male gender, lack of socioeconomic affluence, poor academic performance, comorbid conditions like depression, substance misuse, impulsivity, and sensation seeking (Dowling et al., 2017; Raybould, Larkin, & Tunney, 2021). Our current study did not differentiate or fully disentangle the effects of most of these variables, instead focusing primarily on PGSI-scores, gender, and respondent group. Still, when promoting the LRGG, vulnerable individuals such as those described above, should be given special attention, as the guidelines may not be as suitable for them.

More research is also still needed on the acceptability of the guidelines in different population groups. Moreover, gambling activities themselves such as playing online, playing fast paced games (e.g., EGMs), time spent gambling and the number of game types played, are highly significant predictors of gambling harm – even more so than demographic- or personality factors (Allami et al., 2021). Offshore gambling, particularly the large number of player accounts in different online gambling sites, is a timely concern in Finland and in several other countries; however, the LRGG do not include any information about this. These factors are associated with increased gambling involvement (i.e., increased frequency of play and increased expenditure) and thus increased risk to players, which the LRGG do note, but that should nonetheless be made clear during their promotion.

The number of gambling accounts is also a crucially important question in license-based systems. The current legislative reform in Finland will dismantle the online monopoly and introduce a licensing system as of 2027. Guidelines such as the LRGG are likely to be even more essential under multi-operator systems where a single customer view may not be available, and individuals will need to be able to track their own gambling activity to an even more important degree than under a monopoly system. Information tools are an important part in a multilevel and multi-actor approach to gambling harm reduction and prevention. While system-level interventions such as limiting the availability and visibility of gambling are likely to be the most effective approaches to prevent harm, targeted tools and interventions are also needed (see Blank et al., 2021; Velasco et al., 2021).

Limitations

Despite our efforts to obtain a representative sample of the population, more females than males participated in the study. We mitigated the gender imbalance by performing additional gender-weighted analyses, as well as by using stratified subsampling equally across genders. The results of these additional analyses were essentially the same as the ones reported in the main text, which demonstrates their robustness. Based on a Finnish population-based study, there is evidence indicating that low socio-economic status is linked with lower response rate, which may cause bias while

studying gambling among socio-economically vulnerable individuals (Kontto, Tolonen, & Salonen, 2020). Individuals who are concerned about health or gambling related issues may have been more likely to respond than those less concerned. This could have skewed the results towards more favorable evaluations of the LRGG and should be noted if and when the guidelines are adopted into wider use. The survey was offered only in Finnish, and thus Swedish-speaking nationals, or the immigrant population, were not targeted (though non-Finnish speaking individuals represent only a small minority of the Finnish population). Our analyses do not account for individual differences in preferences for game type, gambling mode or venue, or the average duration of players' gambling sessions. In terms of attitudes towards gambling, our preliminary findings indicate a marginal effect whereby positive attitudes towards gambling are linked with more pessimistic attitudes towards the LRGG – these analyses, however, will be reported elsewhere.

In conclusion, we found strong evidence for a generally positive view towards the LRGG translated to Finnish, with some clear differences between respondent groups. Special care should be taken during the guidelines' promotion, with focus on vulnerable at-risk groups for whom the guidelines may be less suitable. Some groups (e.g., at-risk individuals) may benefit more from the guidelines than others, which should be reflected in targeted promotion efforts.

SUPPLEMENTARY MATERIAL

REFERENCES

Abbott, M., Binde, P., Clark, L., Hodgins, D., Johnson, M., Manitowabi, D., … Williams, R. (2018). *Conceptual framework of harmful gambling: An international collaboration* (3rd ed.). Ontario Problem Gambling Research Centre (OPGRC). https://doi.org/10.33684/CFHG3.en.

Akter, S., Islam, M. R., Rahman, M. M., Rouyard, T., Nsashiyi, R. S., Hossain, F., & Nakamura, R. (2023). Evaluation of population-level tobacco control interventions and health outcomes: A systematic review and meta-analysis. *JAMA Network Open*, 6(7). https://doi.org/10.1001/jamanetworkopen.2023.22341 e2322341–2322341.

Allami, Y., Hodgins, D. C., Young, M., Brunelle, N., Currie, S., Dufour, M., … Nadeau, L. (2021). A meta-analysis of problem gambling risk factors in the general adult population. *Addiction*, 116(11), 2968–2977. https://doi.org/10.1111/add.15449.

American Psychological Association (2013). Diagnostic and statistical manual of mental disorders. *Text Revision*, 2013 https://cir.nii.ac.jp/crid/1573950399819987840.

Babor, T. (2010). *Alcohol: No ordinary commodity: Research and public policy.* https://books.google.com/books?hl=fi&lr=&id=PEgfRmJYKisC&oi=fnd&pg=PR13&dq=+Alcohol:+No+ordinary+commodity.+Research+and+public+policy.+Oxford+University+Press.+%5BGoogle+Scholar%5D&ots=rr8e-DmDjE&sig=oSgFA1En4qnSbSGydnMD7eFri4I.

Blank, L., Baxter, S., Woods, H. B., & Goyder, E. (2021). Interventions to reduce the public health burden of gambling-related harms: A mapping review. *The Lancet Public Health*, 6(1), e50–e63. https://doi.org/10.1016/S2468-2667(20)30230-9.

Blaszczynski, A., Ladouceur, R., Nower, L., & Shaffer, H. (2008). Informed choice and gambling: Principles for consumer protection. *The Journal of Gambling Business and Economics*, 2(1), 103–118. https://doi.org/10.5750/jgbe.v2i1.527.

Browne, M., Greer, N., Rawat, V., & Rockloff, M. (2017). A population-level metric for gambling-related harm. *International Gambling Studies*, 17(2), 163–175. https://doi.org/10.1080/14459795.2017.1304973.

Browne, M., Langham, E., Rawat, V., Geer, N., Li, E., Rockloff, M., … Best, T. (2016). *Assessing gambling-related harm in Victoria: A public health perspective.* https://responsiblegambling.vic.gov.

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au/documents/69/Research-report-assessing-gambling-related-harm-in-vic.pdf.

Browne, M., & Rockloff, M. J. (2018). Prevalence of gambling-related harm provides evidence for the prevention paradox. *Journal of Behavioral Addictions*, 7(2), 410–422. https://doi.org/10.1556/2006.7.2018.41.

Browne, M., Volberg, R., Rockloff, M., & Salonen, A. H. (2020). The prevention paradox applies to some but not all gambling harms: Results from a Finnish population-representative survey. *Journal of Behavioral Addictions*, 9(2), 371–382. https://doi.org/10.1556/2006.2020.00018.

Calado, F., & Griffiths, M. D. (2016). Problem gambling worldwide: An update and systematic review of empirical research (2000–2015). *Journal of Behavioral Addictions*, 5(4), 592–613. https://doi.org/10.1556/2006.5.2016.073.

Castren, S., Järvinen-Tassopoulos, J., & Raitasalo, K. (2021). Money used in gaming is associated with problem gambling: Results of the ESPAD 2019 Finland. *Journal of Behavioral Addictions*, 10(4), 932–940. https://doi.org/10.1556/2006.2021.00076.

Castrén, S., Mäkelä, N., Haikola, J., Salonen, A. H., Crystal, R., Scheinin, M., & Alho, H. (2019). Treating gambling disorder with as needed administration of intranasal naloxone: A pilot study to evaluate acceptability, feasibility and outcomes. *BMJ Open*, 9(8), e023728. https://doi.org/10.1136/bmjopen-2018-023728.

Cosgrave, J. (2022). Gambling ain't what it used to be: The instrumentalization of gambling and late modern culture. *Critical Gambling Studies*, 3(1), 12–23. https://doi.org/10.29173/cgs81.

Currie, S. R., Brunelle, N., Dufour, M., Flores-Pajot, M.-C., Hodgins, D., Nadeau, L., & Young, M. (2020). Use of self-control strategies for managing gambling habits leads to less harm in regular gamblers. *Journal of Gambling Studies*, 36(2), 685–698. https://doi.org/10.1007/s10899-019-09918-0.

Currie, S. R., & the Low Risk Gambling Guidelines Scientific Working Group. (2019). A research plan to define Canada's first low-risk gambling guidelines. *Health Promotion International*, 34(6), 1207–1217. https://doi.org/10.1093/heapro/day074.

Currie, S. R., Miller, N., Hodgins, D. C., & Wang, J. (2009). Defining a threshold of harm from gambling for population health surveillance research. *International Gambling Studies*, 9(1), 19–38. https://doi.org/10.1080/14459790802652209.

den Braver, N. R., Garcia Bengoechea, E., Messing, S., Kelly, L., Schoonmade, L. J., Volf, K., … Woods, C. B. (2022). The impact of mass-media campaigns on physical activity: A review of reviews through a policy lens. *European Journal of Public Health*, 32(Supplement_4), iv71–iv83. https://doi.org/10.1093/eurpub/ckac085.

Dowling, N. A., Merkouris, S. S., Greenwood, C. J., Oldenhof, E., Toumbourou, J. W., & Youssef, G. J. (2017). Early risk and protective factors for problem gambling: A systematic review and meta-analysis of longitudinal studies. *Clinical Psychology Review*, 51, 109–124. https://doi.org/10.1016/j.cpr.2016.10.008.

Drawson, A. S., Tanner, J., Mushquash, C. J., Mushquash, A. R., & Mazmanian, D. (2017). The use of protective behavioural strategies in gambling: A systematic review. *International Journal of Mental Health and Addiction*, 15(6), 1302–1319. https://doi.org/10.1007/s11469-017-9754-y.

Egerer, M., & Marionneau, V. (2019). Cultures and spaces of convenience gambling. *Nordic Studies on Alcohol and Drugs*, 36(2), 125–139. https://doi.org/10.1177/145507251880779.

Ferris, J. A., & Wynne, H. J. (2001). *The Canadian problem gambling index*. ON: Canadian Centre on substance abuse Ottawa. http://jogoremoto.pt/docs/extra/TECb6h.pdf.

Flores-Pajot, M.-C., Atif, S., Dufour, M., Brunelle, N., Currie, S. R., Hodgins, D. C., … Young, M. M. (2021). Gambling self-control strategies: A qualitative analysis. *International Journal of Environmental Research and Public Health*, 18(2), 586. https://doi.org/10.3390/ijerph18020586.

Gabellini, E., Lucchini, F., & Gattoni, M. E. (2022). Prevalence of problem gambling: A meta-analysis of recent empirical research (2016–2022). *Journal of Gambling Studies*, 39(3), 1027–1057. https://doi.org/10.1007/s10899-022-10180-0.

Giesbrecht, N., & Bosma, L. M. (Eds.) (2017). *Preventing alcohol-related problems: Evidence and community-based initiatives*. American Public Health Association. https://doi.org/10.2105/9780875532929.

Goel, R., Tiwari, G., Varghese, M., Bhalla, K., Agrawal, G., Saini, G., … Mohan, D. (2024). Effectiveness of road safety interventions: An evidence and gap map. *Campbell Systematic Reviews*, 20(1), e1367. https://doi.org/10.1002/cl2.1367.

Hing, N., Russell, A. M., Browne, M., Rockloff, M., Tulloch, C., Rawat, V., … King, D. L. (2022). Gambling-related harms to concerned significant others: A national Australian prevalence study. *Journal of Behavioral Addictions*. https://doi.org/10.1556/2006.2022.00045.

Hodgins, D. C., Young, M. M., Currie, S. R., Abbott, M., Billi, R., Brunelle, N., … Nadeau, L. (2023). Lower-risk gambling limits: Linked analyses across eight countries. *International Gambling Studies*, 23(2), 328–344. https://doi.org/10.1080/14459795.2022.2143546.

Holmes, J., Beard, E., Brown, J., Brennan, A., Meier, P. S., Michie, S., … Buykx, P. F. (2020). Effects on alcohol consumption of announcing and implementing revised UK low-risk drinking guidelines: Findings from an interrupted time series analysis. *Journal of Epidemiology and Community Health*, 74(11), 942–949. https://doi.org/10.1136/jech-2020-213820.

Järvinen-Tassopoulos, J. (2022). State-owned gambling operation in a global competitive environment. In *The global gambling industry: Structures, tactics, and networks of impact* (pp. 27–40). Wiesbaden: Springer Fachmedien Wiesbaden.

Kontto, J., Tolonen, H., & Salonen, A. H. (2020). What are we missing? The profile of non-respondents in the Finnish gambling 2015 survey. *Scandinavian Journal of Public Health*, 48(1), 80–87. https://doi.org/10.1177/1403494819849283.

Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2015). Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC Public Health*, 16(1), 80. https://doi.org/10.1186/s12889-016-2747-0.

Latvala, T., Lintonen, T., & Konu, A. (2019). Public health effects of gambling–debate on a conceptual model. *BMC Public Health*, 19, 1–16. https://doi.org/10.1186/s12889-019-7391-z.

Lind, K., Castrén, S., Hagfors, H., & Salonen, A. H. (2022). Harm as reported by affected others: A population-based cross-sectional Finnish gambling 2019 study. *Addictive Behaviors*, *129*, 107263. https://doi.org/10.1016/j.addbeh.2022.107263.

Marionneau, V., Egerer, M., & Raisamo, S. (2023). Frameworks of gambling harms: A comparative review and synthesis. *Addiction Research & Theory*, *31*(1), 69–76. https://doi.org/10.1080/16066359.2022.2113071.

Marionneau, V., Selin, J., Impinen, A., & Roukka, T. (2024). Availability restrictions and mandatory precommitment in land-based gambling: Effects on online substitutes and total consumption in longitudinal sales data. *BMC Public Health*, *24*(1), 809. https://doi.org/10.1186/s12889-024-18325-z.

McGee, D., & Bunn, C. (2023). Introduction: Towards a sociology of sports gambling. In *Gambling and sports in a global age* (pp. 1–9). Emerald Publishing Limited.

McMahon, N., Thomson, K., Kaner, E., & Bambra, C. (2019). Effects of prevention and harm reduction interventions on gambling behaviours and gambling related harm: An umbrella review. *Addictive Behaviors*, *90*, 380–388. https://doi.org/10.1016/j.addbeh.2018.11.048.

Molander, O., Wennberg, P., & Berman, A. H. (2023). The gambling disorders identification test (GDIT): Psychometric evaluation of a new comprehensive measure for gambling disorder and problem gambling. *Assessment*, *30*(1), 225–237. https://doi.org/10.1177/10731911211046045.

Mouneyrac, A., Le Floch, V., Lemercier, C., Py, J., & Roumegue, M. (2017). Promoting responsible gambling via prevention messages: Insights from the evaluation of actual European messages. *International Gambling Studies*, *17*(3), 426–441. https://doi.org/10.1080/14459795.2017.1350198.

Parke, A., Harris, A., Parke, J., Rigbye, J., & Blaszczynski, A. (2014). Facilitating awareness and informed choice in gambling. *The Journal of Gambling Business and Economics*, *8*(3), 6–20. https://doi.org/10.5750/jgbe.v8i3.971.

Puska, P., & Jaini, P. (2020). The North Karelia project: Prevention of cardiovascular disease in Finland through population-based lifestyle interventions. *American Journal of Lifestyle Medicine*, *14*(5), 495–499. https://doi.org/10.1177/1559827620910981.

Quatremère, G., Guignard, R., Cogordan, C., Andler, R., Gallopel-Morvan, K., & Nguyen-Thanh, V. (2023). Effectiveness of a French mass-media campaign in raising knowledge of both long-term alcohol-related harms and low-risk drinking guidelines, and in lowering alcohol consumption. *Addiction*, *118*(4), 658–668. https://doi.org/10.1111/add.16107.

Raybould, J. N., Larkin, M., & Tunney, R. J. (2021). Is there a health inequality in gambling related harms? A systematic review. *BMC Public Health*, *21*(1), 1–17. https://doi.org/10.1186/s12889-021-10337-3.

Rochester, E., & Cunningham, J. A. (2023). Applying the Canadian low-risk gambling guidelines to gambling harm reduction in England. *Journal of Gambling Studies*, *40*(1), 21–28. https://doi.org/10.1007/s10899-022-10186-8.

Room, R., & Rehm, J. (2012). Clear criteria based on absolute risk: Reforming the basis of guidelines on low-risk drinking. *Drug and Alcohol Review*, *31*(2), 135–140. https://doi.org/10.1111/j.1465-3362.2011.00398.x.

Russell, A. M., Browne, M., Hing, N., Rockloff, M., Newall, P., Dowling, N. A., … Salonen, A. H. (2023). Electronic gaming machine accessibility and gambling problems: A natural policy experiment. *Journal of Behavioral Addictions*, *12*(3), 721–732. https://doi.org/10.1556/2006.2023.00044.

Salonen, A. H., Hellman, M., Latvala, T., & Castrén, S. (2018). Gambling participation, gambling habits, gambling-related harm, and opinions on gambling advertising in Finland in 2016. *Nordic Studies on Alcohol and Drugs*, *35*(3), 215–234. https://doi.org/10.1177/1455072518765875.

Sidani, S., & Braden, C. J. (1998). *Evaluating nursing interventions: A theory-driven approach*. Sage. https://books.google.com/books?hl=fi&lr=&id=tEtwq21YjYEC&oi=fnd&pg=PP9&dq=+Sidani+S,+Braden+CJ.+Evaluating+nursing+interventions:+a+theory-driven+approach.+Thousand+Oaks:+SAGE+Publications,+1998.&ots=cfqVboVhel&sig=secLElHBIsu_tpQG44KlnDgkkFM.

Tavakkoli, M., Torkashvand-Khah, Z., Fink, G., Takian, A., Kuenzli, N., De Savigny, D., & Cobos Muñoz, D. (2022). Evidence from the decade of action for road safety: A systematic review of the effectiveness of interventions in low and middle-income countries. *Public Health Reviews*, *43*, 1604499. https://doi.org/10.3389/phrs.2022.1604499.

Team, R. C. (2013). *R: A language and environment for statistical computing*.

Tran, L., Wardle, H., College-Frisby, S., Marionneau, V., Saxena, S., Livingstone, C., … Degenhardt, L. (2024). The prevalence of gambling and problematic gambling: A systematic review and meta-analysis. *The Lancet Public Health*. https://doi.org/10.1016/S2468-2667(24)00126-9.

Ukhova, D., Marionneau, V., Nikkinen, J., & Wardle, H. (2024). Public health approaches to gambling: A global review of legislative trends. *The Lancet Public Health*, *9*(1), e57–e67. https://doi.org/10.1016/S2468-2667(23)00221-9.

Velasco, V., Scattola, P., Gavazzeni, L., Marchesi, L., Nita, I. E., & Giudici, G. (2021). Prevention and harm reduction interventions for adult gambling at the local level: An umbrella review of empirical evidence. *International Journal of Environmental Research and Public Health*, *18*(18), 9484. https://doi.org/10.3390/ijerph18189484.

Volberg, R. A., Zorn, M., Williams, R. J., & Evans, V. (2021). Gambling harm and the prevention paradox in Massachusetts. *ADDICTA: The Turkish Journal on Addictions*, *8*(3). https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=21487286&AN=155883161&h=AGiDdA8yGl1cPWQrcfTvSymEgSF4lctAHHDeICQGKi59Ln%2FbNs7a5cqBp3qQDaUH2FOC%2BgceGUj%2BeF3sCVFcPA%3D%3D&crl=c.

Wardle, H. (2019). Perceptions, people and place: Findings from a rapid review of qualitative research on youth gambling. *Addictive Behaviors*, *90*, 99–106. https://doi.org/10.1016/j.addbeh.2018.10.008.

Williams, R. J., Volberg, R. A., & Stevens, R. M. (2012). *The population prevalence of problem gambling: Methodological influences, standardized rates, jurisdictional differences, and worldwide trends*. Ontario Problem Gambling Research Centre. https://opus.uleth.ca/handle/10133/3068.

Williams, R. J., West, B. L., & Simpson, R. I. (2012). *Prevention of problem gambling: A comprehensive review of the evidence and identified best practices*. https://opus.uleth.ca/handle/10133/3121.

World Health Association (2018). *International classification of diseases 11th revision (ICD-11)*. World Health Organization.

Young, M. M., Hodgins, D. C., Brunelle, N., Currie, S., Dufour, M., Flores-Pajot, M. C., … Nadeau, L. (2021). Developing lower-risk gambling guidelines. *Canadian Centre on Substance Use and*

Addiction. https://responsiblegambling.vic.gov.au/documents/425/Developing-low-risk-gambling-guidelines-GHC2018.pdf.

Young, M. M., Hodgins, D. C., Currie, S. R., Brunelle, N., Dufour, M., Flores-Pajot, M.-C., & Nadeau, L. (2022). Not too much, not too often, and not too many: The results of the first large-scale, international project to develop lower-risk gambling guidelines. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-022-00896-w.