



## Experiences of responsible gambling tools among non-problem gamblers: A survey of active customers of an online gambling platform



Ekaterina Ivanova<sup>a,\*</sup>, Jonas Rafi<sup>a</sup>, Philip Lindner<sup>a,b</sup>, Per Carlbring<sup>a,c</sup>

<sup>a</sup> Department of Psychology, Stockholm University, 106 91 Stockholm, Sweden

<sup>b</sup> Centre for Dependency Disorders, Stockholm Health Care Services, Stockholm County Council, Friskvårdsvägen 4, floor 2, S:t Göran, 112 81 Stockholm, Sweden

<sup>c</sup> Department of Psychology, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark

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### ABSTRACT

**Introduction:** Responsible gambling (RG) tools, aiming at helping gamblers to avoid gambling-related harms, are common in online gambling platforms. Gambling industry, policy makers, and researchers have warned that RG tools can potentially disturb recreational gamblers, channeling them to less protective operators. No evidence exists to support these concerns, and they can hinder the development of effective RG tools. The current study aimed to investigate the recreational gamblers' experiences of RG tools.

**Methods:** A total of 10,200 active customers of an online gambling service were invited to complete an online survey and rate their overall reactions, attitudes, disturbance and irritation towards RG tools, as well as their inclination to abandon a gambling service due to overexposure to RG tools.  $N = 1223$  surveys were completed.

**Results:** Non-problem gamblers had positive experiences of RG tools. Moderate-risk gamblers had more positive overall reaction and less irritation to previous experiences of RG tools compared to non-problem gamblers. Problem gamblers had least positive attitudes, most disturbance and most irritation towards RG pictures. Non-problem gamblers had lowest rates of having abandoned a service because of perceived overexposure to RG tools (5.2% compared to 25.9% of problem gamblers), with a significant between-group difference (OR [95% CI] = 7.17 [3.61–14.23],  $p < .001$ ).

**Conclusions:** Non-problem gamblers were not particularly disturbed by RG tools and were not at risk of abandoning online gambling services because of overexposure to RG tools. The study found no grounds for limiting the design and implementation of RG tools due to fears of disturbing recreational gamblers.

### 1. Introduction

Responsible gambling tools (RG tools) aim to help users of gambling services avoid the possible harms of engaging in gambling activities (Blaszczynski, Ladouceur, & Shaffer, 2004) and are relatively common in online gambling platforms (Gainsbury, 2012; Lucar, Wiebe, & Philander, 2013; Marionneau & Järvinen-Tassopoulos, 2017; Williams, West, & Simpson, 2012). Common features include the possibilities to set limits on how much time or money one may spend on the platform (Broda et al., 2008; Ladouceur, Blaszczynski, & Lalonde, 2012; Nelson et al., 2008), of receiving feedback on one's activity on the platform (Auer & Griffiths, 2015, 2016), of taking online self-tests (Jonsson, Munck, Volberg, & Carlbring, 2017), and of freezing one's account (Dragičević, Tsogas, & Kudic, 2011).

Although it has been shown that consumers generally tend to have

positive attitudes towards RG tools (Forsström, Jansson-Fröjmark, Hesser, & Carlbring, 2017; Gainsbury, Parke, & Suhonen, 2013), concerns have been raised regarding the possible disturbance that RG tools may cause to recreational gamblers not at risk of developing gambling problems. Williams et al. (2012) assert that it is necessary to cause inconvenience to non-problem gamblers to protect those at risk. The importance of not intervening in the case of recreational gamblers has been stressed in governmental inquiries (Productivity Commission, 2010a, 2010b; SOU 2017:30, 2017). The authors of the Reno-model – a framework for the design and implementation of RG tools – warn of the potential harms that RG tools could cause to non-problem gamblers and encourage stakeholders to be aware of them (Blaszczynski et al., 2004; Ladouceur, Blaszczynski, Shaffer, & Fong, 2016). Although not disturbing recreational gamblers by RG tools has been described as preferable by other researchers (Auer, Littler, & Griffiths, 2015; Gainsbury,

\* Corresponding author.

E-mail addresses: [ekaterina.ivanova@psychology.su.se](mailto:ekaterina.ivanova@psychology.su.se) (E. Ivanova), [jonas.rafi@psychology.su.se](mailto:jonas.rafi@psychology.su.se) (J. Rafi), [philip.lindner@psychology.su.se](mailto:philip.lindner@psychology.su.se) (P. Lindner), [per.carlbring@psychology.su.se](mailto:per.carlbring@psychology.su.se) (P. Carlbring).

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Aro, Ball, Tobar, & Russell, 2015; Monaghan, 2008, 2009), there is little empirical evidence to suggest that RG tools do in fact inconvenience non-problem gamblers and make them more likely to abandon gambling services with extensive consumer protection programs.

Generally, gamblers' attitudes to RG tools seem to be positive (Gainsbury et al., 2013; Ladouceur et al., 2012; Nisbet, Jackson, & Christensen, 2016), including that the presence of RG tools communicates the integrity of the gambling service and decreases anxiety connected to the possibility of winning someone else's money (Wood & Griffiths, 2008). The results of a survey of 10,838 online gamblers from 96 different countries suggest that implementation of RG tools can enhance consumers' favorable attitudes towards a gambling operator (Gainsbury et al., 2013), which contradicts the notion of gamblers' being prone to abandon a gambling provider due to the presence of RG tools. Only a small fraction of gamblers in earlier studies indicated that they have been disturbed by RG tools (Gainsbury et al., 2015; Monaghan, 2008; Monaghan & Blaszczyński, 2010) and little is known about the relationship between degree of gambling problems and attitudes towards RG. A study conducted with Swedish customers showed that the most common source of frustration was the need to restrict their gambling activity; this is an expected adverse effect of RG tools because gambling responsibly implies being able to set limits on one's gambling (Griffiths, Wood, & Parke, 2009). The second and third most common sources of frustration were the voluntary nature of the limits in the RG tool in question (as opposed to mandatory) and the fact that RG tools let the user's winnings compensate for the wagered money distorting the picture of how much money was invested in gambling, both points indicating a demand for stricter RG tools (Griffiths et al., 2009). A recent survey of Norwegian gamblers found a more positive attitude towards a global limit setting among low-risk compared to high-risk gamblers (Auer, Reiestad, & Griffiths, 2018). A Swedish longitudinal study found that unregulated Internet operators had the highest proportion of problem gamblers among their customers compared to the regulated market (Svensson & Romild, 2011), suggesting that recreational gamblers are not the category at highest risk of abandoning the legal gambling market, that is often obliged to implement RG tools. As higher gambling involvement is associated with more severe gambling problems (Binde, Romild, & Volberg, 2017), non-problem gamblers are expected to have a relatively low absolute frequency of exposure to RG tools.

The current study examines, for the first time, whether the long-held assumption that RG tools cause inconvenience for non-problem gamblers holds true. The findings have important implications for gambling policy and RG tools dissemination.

## 2. Materials and methods

### 2.1. Procedure

The current study was approved by the Regional Ethical Committee in Stockholm, Sweden (2017-1926-32). The survey was conducted as part of a collaboration between Stockholm University and Ålands Penningautomatförening (Paf), a publicly governed gambling operator in the Åland Islands (Finland), which runs the online gambling platform [paf.com](http://paf.com) providing slot-games, poker, betting, casino games, and bingo. After development and pilot-testing of the survey (see Section 2.3), data collection began on 20 February 2018 and closed on March 1st 2018, with one reminder sent out on 26 February 2018 to 8826 customers. The questionnaire was distributed by email from [paf.com](http://paf.com) to the email address connected to the customer's user account. In the email, customers were informed of the purpose of the survey, the collaboration between Paf and Stockholm University, the option of ceasing their participation at any time, and the possibility of winning a gift card from [verkkokauppa.com](http://verkkokauppa.com) (see Appendix A). The gift card could not be exchanged for money and could not be used to buy gambling services. One 50-euro gift card was raffled for every group of 100 respondents.

The customers were also provided contact information to Paf's customer support. The pilot and the finalized questionnaire included detailed information about the project, the handling of personal data, the ethical approval, the right to stop participating, and contact information to the project team at Stockholm University and Paf's customer support (see Appendix B). The content of the reminder was identical to the initial mailing. Prior to completing the questionnaire, customers could agree to participate (whereupon they were enrolled in the study) or not (their answers were deleted). The winners of gift cards were chosen randomly and contacted by email.

### 2.2. Participants

Participants were chosen from active customers at [paf.com](http://paf.com). Customers were considered active if they had made a deposit to their gambling account in the past 12 months and had made a bet in the past 30 days. All customers were 18 years or older, as per legislation requirements. The exploratory questionnaire (see Section 2.3) was distributed to Swedish-speaking customers in Finland (200 customers), and the pilot and finalized questionnaires were distributed to Finnish-speaking customers in Finland. Customers were not contacted if they self-excluded from the platform or had frozen at least one gambling category at [paf.com](http://paf.com). Also, customers who had opted out from all outbound communication and the ones who were excluded from their gambling account because of a violation of the terms of use or due to conditions in current legislation (such as legislation against money laundering) were not contacted for the study. The customers who were flagged by the gambling operator's player tracking system focusing on identifying behaviors potentially related to gambling problems were not contacted for the study. Respondents scoring 3 to 7 on the Problem Gambling Severity Index (PGSI) (Wynne, 2003), a scale measuring the severity of gambling problems (see 2.3 Questionnaire for details), were contacted by email by Paf's customer support. They were informed of their indicated level of problem gambling and were encouraged to stop gambling (preferably by shutting down their account) and to seek help. The respondents who scored 8 or more on the PGSI received an e-mail about the indicated level of gambling problems, about their account being shut down and information about different ways of getting help.

### 2.3. Questionnaire

The development of the questionnaire included an exploratory stage, a pilot stage, and a finalizing stage; the final questionnaire can be found in Appendix B. During the exploratory stage, a short questionnaire was distributed to 200 Swedish-speaking active users at [paf.com](http://paf.com). It contained verbal descriptions of RG tools common in online gambling environments as well as pictures showing what information about RG tools might look like on an online gambling platform. For each description and each picture, respondents were asked to provide three reactions as short-text answers. There was an option to give voluntary comments on the structure and content of the questionnaire. The mailing resulted in 14 completed questionnaires. The answers and voluntary comments suggested that it was feasible to ask users of online gambling services about their experiences of RG tools with the help of verbal descriptions and pictures. However, the variety in the provided answers was not considered sufficient to build a questionnaire with fixed response alternatives.

A pilot questionnaire was then created in English, translated into Finnish, and distributed to 200 Finnish-speaking customers in Finland. The pilot questionnaire was open for one week, and no reminders were sent. The pilot questionnaire included three verbal descriptions of RG tools common in online gambling environments and three pictures of what information on RG tools might look like on an online gambling platform. The three verbal descriptions of common RG-tools were: setting a monetary or time limit, possibility to conduct a self-test on symptoms of problem gambling and the possibility to freeze one or

several gambling categories or the whole gambling account. The three pictures of what information in RG tools may look like were: an overview of RG-options available in the platform, a balance of one's spendings and winnings and an offer to conduct a self-test. To compare the customers' experiences of RG tools with their experiences of other content on a gambling platform, the pilot questionnaire also included three verbal descriptions and pictures of other information not related to RG tools but commonly found in online gambling environments (such as bonuses, free spins, and prizes as well as information about new games). For each piece of information that the respondent had experienced on an online gambling platform, as well as for each picture, the respondents were asked to provide their overall reaction (on a 5-step Likert-like scale from Very Negative to Very Positive) and to provide a number of specific reactions by choosing between Like/Dislike, Good/Bad, Pleasant/Unpleasant, Informative/Uninformative, Important/Unimportant, and Helpful/Useless using a 7-point Likert scale. The specific reactions were chosen based on two existing scales: Attitude Towards the Ad (Rossiter & Bergkvist, 2009) and Perceived Relevance of the Ad (Morris, Choi, & Ju, 2016). Respondents were also asked to rate, using a 7-point Likert scale, how Disturbing, Forced, Intrusive, Irritating, Stupid, or Terrible the information was. The questions were based on two existing scales: Perceived Intrusiveness of the Ad (Li, Edwards, & Lee, 2002) and a survey of how irritating an advertisement is perceived (Wells, Leavitt, & McConville, 1971). For the Intrusiveness scale, 3 out of 7 original items were chosen (Disturbing, Forced, and Intrusive), as they correlated least with the entire original scale and were therefore considered to give an amplitude for the measured intrusiveness. The Irritation scale was adjusted by removing the Phony and Ridiculous items, as they were considered too similar to Stupid, and shortening the questionnaire was considered appropriate. The chosen scales (Attitude Towards the Ad, Perceived Relevance of the Ad, Perceived Intrusiveness of the Ad, and the Irritation scale) measure concepts that are considered to be important for consumers' perception of the product in question. Although the scales were developed for studying advertisements, their content is as applicable for studying reactions to a gambling platform. Moreover, promoting RG tools in a gambling platform is not conceptually different from advertising, broadly understood.

The pilot questionnaire also included the PGSI (Wynne, 2003), a validated instrument for self-rating symptoms of problem gambling. The sum of PGSI-scores was interpreted according to standard cut-offs: 0: non-problem gambler; 1–2: low-risk gambler; 3–7: moderate-risk gambler; and 8–27: problem gambler. The participants also provided their age and gender, answered additional questions about their experience of RG tools, estimated their gambling intensity as well as their inclination to abandon an online gambling service due to perceived overexposure to RG tools.

After the responses to the pilot questionnaire were collected, two adjustments were made in one question's phrasing; the content of the final questionnaire was otherwise identical to that of the pilot questionnaire and was distributed to 10,000 customers.

#### 2.4. Statistical analyses

Statistical analyses were conducted using software R, version 3.5.0 (R Core Team, 2017). Experience measures were analyzed based on the following criteria: 1) overall reaction (from Very Negative to Very Positive) (the Overall reaction dimension); 2) attitudes based on the items Like/Dislike, Good/Bad, Pleasant/Unpleasant, Informative/Uninformative, Important/Unimportant, and Helpful/Useless, calculated using a mean value of the single-item responses (the Attitude dimension); 3) perceived intrusiveness, based on the three Intrusiveness items and calculated as their mean value (the Disturbance dimension); and 4) how irritating the content was (the Irritation dimension), based on the three Irritation items and calculated as their mean value. For each of the criteria mentioned above, mean values were calculated across all

verbal descriptions of RG tools, across verbal descriptions of non-RG-related products, across pictures of RG tools, and across pictures of non-RG-related content. For customers who lacked experience of one or more products, the mean value was calculated based on the experiences they had. For example, for respondents who had never experienced an offer to complete a self-test on an online gambling platform and could not provide their reactions or attitudes to the RG tool, the mean values of reactions and attitudes were calculated based on the two other RG tools they had experienced (spending limits and feedback on gambling activity).

Low-risk gamblers, moderate-risk gamblers and problem gamblers were compared to non-problem gamblers with regard to their previous experience of RG tools as well as reactions to RG pictures. This comparison was made using a series of linear multiple regressions, with age, gender and whether they had experience of each of the respective RG tools used as the independent variable in the model. Also, Bayes factors of alternative hypothesis over null hypothesis ( $BF_{10}$ ) were calculated for the between group differences using BayesFactor package (Morey et al., 2018). The prior distribution was set to Cauchy  $r = 0.5$ , and the values were interpreted as reported by Kass and Raftery (1995) with  $BF_{10}$  of 1–3.2 showing that the evidence for the alternative hypothesis is only worth a bare mention,  $BF_{10}$  3.2 to 10 showing substantial evidence,  $BF_{10}$  10 to 100 showing strong evidence, and  $BF_{10} > 100$  showing very strong evidence. The differences in the respondents' experiences of abandoning a gambling service and inclination to do so with regard to level of gambling problems were studied using logistic regression, with age, gender and whether they had experience of each of the described RG tools used as independent variables in the model.

Gamblers' experiences of and reactions to RG tools are expected to influence their behaviors, among other things their inclination to abandon a gambling service due to experienced overexposure to RG tools. Therefore, mediation analyses were conducted using *sem* function in lavaan package (Rosseel, 2012), with previous experience of abandoning a gambling service (binary: yes/no) and inclination to abandon a gambling service in the future (ordinal scale: 0 – very unlikely; 1 – unlikely; 2 – likely; 3 – very likely) used as dependent variables in two separate models. Level of gambling problems, age, gender and whether they had experience of each of the described RG tools were used as independent variables, and the rated experiences of RG tools and reactions to RG pictures were used as mediators. Standard errors were calculated based on expected information matrix.

The results of previous studies do not suggest any difference in experiences of RG tools between problem and non-problem gamblers, and, in order to avoid a bias towards similar results, no adjustment of *p*-values was conducted despite multiple comparisons.

### 3. Results

#### 3.1. Characteristics of respondents

The data collection resulted in 1223 completed questionnaires (12.0% response rate). Table 1 shows characteristics of the respondents on the whole group level as well as divided by the level of gambling problems. A post-hoc power analysis revealed that the sample size was large enough to have 80% power to detect small effect sizes (Cohen's  $d = 0.25$ ) in comparisons between the two smallest groups – non-problem gamblers and problem gamblers. The mean PGSI score was  $M = 3.93$  ( $SD = 4.05$ ). Non-problem gamblers (NPG) were significantly older than respondents with other levels of gambling problems. Groups with different levels of gambling problems varied in their rates of having experienced the game freeze feature. No other between-group differences were detected.

#### 3.2. Experiences of RG-tools

Fig. 1 shows mean scores on the five experience dimensions divided

**Table 1**  
Characteristics of the total sample of the respondents and subgroups based on the levels of gambling problems.

|                                 | Total       | Non-problem gamblers | Low-risk gamblers | Moderate-risk gamblers | Problem gamblers | Between-group statistics      | Pairwise comparisons |
|---------------------------------|-------------|----------------------|-------------------|------------------------|------------------|-------------------------------|----------------------|
| N                               | 1223        | 231 (18.9%)          | 328 (26.8%)       | 471 (38.5%)            | 193 (15.8%)      |                               |                      |
| Age: <i>M(SD)</i>               | 41.6 (12.0) | 44.3 (12.0)          | 41.5 (11.9)       | 41.5 (11.7)            | 38.9 (12.6)      | $F(3,1219) = 7.20, p < .001$  | NPG > LRG/MRG/PG     |
| Gender (% females) <sup>a</sup> | 27.6        | 25.1                 | 28.7              | 27.4                   | 29.5             | $\chi^2(3) = 1.43, p = .700$  | -                    |
| Limits <sup>b</sup>             | 95.6        | 95.2                 | 95.7              | 96.6                   | 93.3             | $\chi^2(3) = 3.70, p = .296$  | -                    |
| Game freeze <sup>b</sup>        | 58.5        | 49.4                 | 52.7              | 63.1                   | 67.9             | $\chi^2(3) = 23.45, p < .001$ | PG/MRG > NPG/LRG;    |
| Self-test <sup>b</sup>          | 57.4        | 55.4                 | 57.3              | 58                     | 58.5             | $\chi^2(3) = 0.54, p = .910$  | -                    |
| Any feature <sup>b,c</sup>      | 96.6        | 96.5                 | 96.3              | 97                     | 95.9             | $\chi^2(3) = 0.65, p = .886$  | -                    |

Note: NPG: non-problem gambler; LRG: low-risk gambler; MRG: moderate-risk gambler; PG: problem gambler.

<sup>a</sup> In the sample, two respondents (0.2%) chose the alternative “other,” and five (0.4%) preferred not to reveal their gender.

<sup>b</sup> This refers to the percentage of respondents that experienced the feature.

<sup>c</sup> This refers to the percentage of respondents that experienced any of the three features.

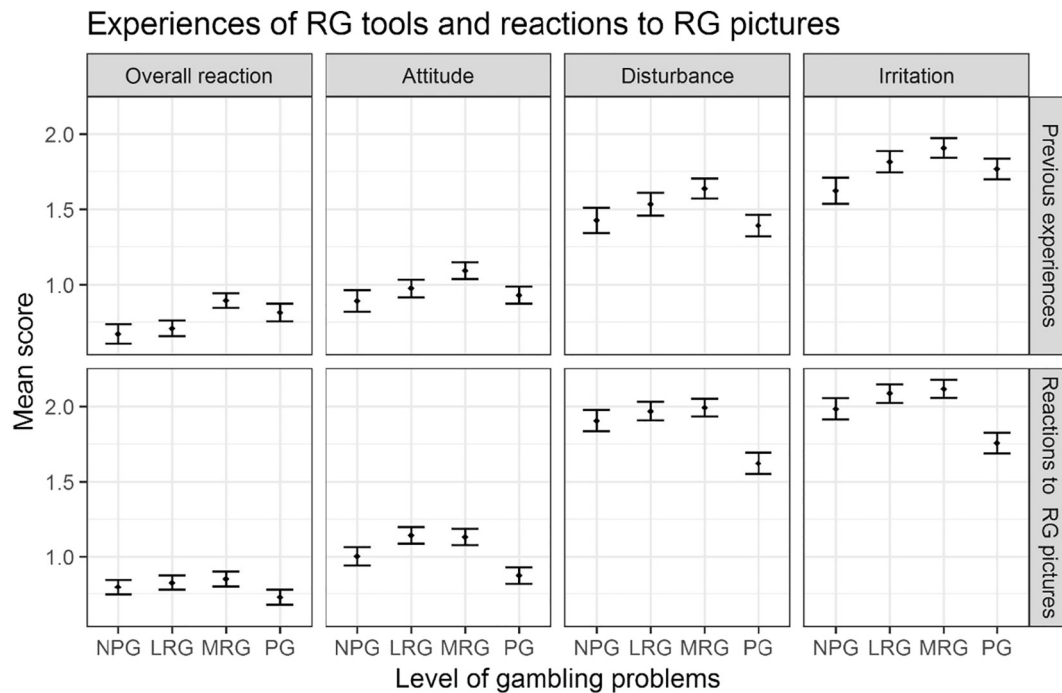
by the level of gambling problems. Table 2 shows comparisons in experiences of RG tools between respondents with different levels of gambling problems. Regarding verbal descriptions, moderate-risk gamblers (MRG) had more positive overall attitude to the previously experienced RG tools compared to NPG and experienced them as less irritating compared to NPG. In both cases, evidence against the null hypothesis according to the  $BF_{10}$ -value indicates lower than barely worth mentioning. Regarding RG pictures, problem gamblers (PG) had more negative reactions compared to NPG across all dimensions except the overall reaction. Only in the cases of disturbance and irritation the evidence against null hypothesis reached  $BF_{10}$ -values that were barely worth mentioning. NPG had more positive experiences of and reactions to information related to prizes and gambling products compared to RG related information across the majority of dimensions (See Table C.1, Appendix C).

### 3.3. Inclination to abandon an online gambling service

Fig. 2 shows proportions of respondents who has previously abandoned an online gambling service due to overexposure to RG tools that they considered unnecessary (to the left) and how likely they thought they would be to abandon a gambling service for that reason in the future (to the right). NPG and low-risk gamblers (LRG) had the least experience of having abandoned a gambling service because of overexposure to RG tools (5.2% and 5.8%, respectively). The corresponding proportions were 13.2% for MRG and 25.9% for PG, and both groups differed significantly from NPG (see Table 3). Problem gamblers rated their inclination to abandon a gambling service higher (21.8%) than non-problem gamblers (11.3%) (Table 3). The proportions were 7.9% among LRG and 13.6% among MRG.

### 3.4. Mediation analyses

Structural equation modelling was used to test whether summarized



**Fig. 1.** Mean scores (95% CI) for the four experience dimensions divided by the level of gambling problems. A higher mean score indicates a more positive experience (i.e., a more positive overall reaction and less irritation). The upper graphs depict the mean scores of descriptions of previous experiences of RG tools, and the lower graphs depict the mean scores of reactions to pictures of RG-related content. The values for the Overall reaction-dimension (initially a 5-point Likert-like scale) are adjusted to be comparable to the other dimensions (7-point Likert scale). NPG: non-problem gamblers; LRG: low-risk gamblers; MRG: moderate-risk gamblers; PG: problem gamblers.

**Table 2**

Low-risk gamblers', moderate-risk gamblers', and problem gamblers' experiences of RG tools and reactions to RG images compared to those of non-problem gamblers.

|                                  | NPG         |                    | LRG  |                      | MRG  |                        | PG   |      | Adjusted R <sup>2</sup> | BF <sub>10</sub> |
|----------------------------------|-------------|--------------------|------|----------------------|------|------------------------|------|------|-------------------------|------------------|
|                                  |             | B (95% CI)         | p    | B (95% CI)           | p    | B (95% CI)             | p    |      |                         |                  |
| Previous experiences of RG tools |             |                    |      |                      |      |                        |      |      |                         |                  |
| Overall reaction                 | (Reference) | 0.01 (-0.11-0.13)  | .842 | 0.14 (0.03-0.26)     | .015 | 0.07 (-0.07-0.21)      | .316 | .01  | 0.39                    |                  |
| Attitude                         | -           | 0.05 (-0.13-0.23)  | .606 | 0.16 (-0.01-0.33)    | .067 | -0.03 (-0.24-0.18)     | .804 | .03  | 0.06                    |                  |
| Disturbance                      | -           | -0.04 (-0.27-0.18) | .696 | -0.13 (-0.34-0.08)   | .209 | 0.17 (-0.09-0.42)      | .199 | .04  | 0.06                    |                  |
| Irritation                       | -           | -0.12 (-0.34-0.09) | .259 | -0.21 (-0.42- -0.01) | .038 | -0.02 (-0.27-0.23)     | .863 | .05  | 0.10                    |                  |
| Reactions to RG pictures         |             |                    |      |                      |      |                        |      |      |                         |                  |
| Overall reaction                 | (Reference) | 0.02 (-0.09-0.13)  | .691 | 0.04 (-0.06-0.14)    | .473 | -0.05 (-0.17-0.07)     | .417 | .004 | 0.01                    |                  |
| Attitude                         | -           | 0.11(-0.06-0.27)   | .212 | 0.09 (-0.07-0.24)    | .264 | -0.19 (-0.38- -0.0001) | .050 | .03  | 0.71                    |                  |
| Disturbance                      | -           | -0.02 (-0.21-0.18) | .862 | -0.04 (-0.22-0.14)   | .680 | 0.36 (0.13-0.58)       | .002 | .04  | 3.11                    |                  |
| Irritation                       | -           | -0.05 (-0.24-0.13) | .573 | -0.08 (-0.26-0.09)   | .360 | 0.29 (0.08-0.51)       | .008 | .05  | 2.90                    |                  |

Note: NPG: non-problem gamblers; LRG: low-risk gamblers; MRG: moderate-risk gamblers; PG: problem gamblers.

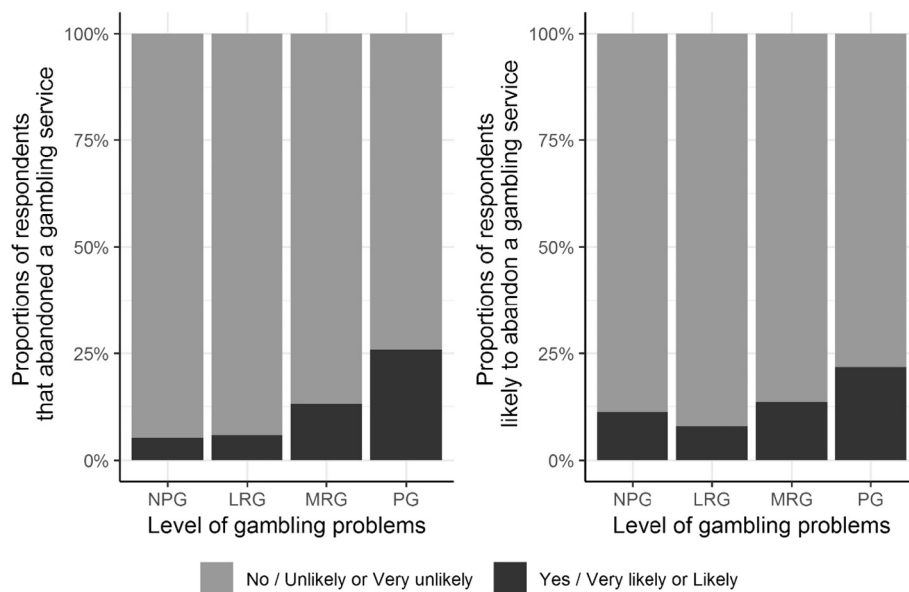
Between-group comparisons are calculated by means of linear regressions. Each experience dimension is used as dependent variable and the level of gambling problems, age, gender, and having experienced each of verbally described RG tools (limit setting, game freeze and self-test) as independent variables.

BF<sub>10</sub>: Bayes factor of the alternative hypothesis over the null hypothesis.

Being a male was associated with less positive overall reaction to previous experiences with RG tools, less positive attitude towards previous experiences of RG tools and towards RG pictures, as well as more disturbance and irritation related to previous experiences of RG tools and to RG pictures.

Higher age was associated with more disturbance and irritation related to previous experiences of RG tools and to RG pictures.

The experience of being offered to freeze one or several gambling categories was associated with more positive attitudes and less disturbance related to previous experiences of RG tools.



**Fig. 2.** Proportions of respondents who has previously abandoned an online gambling service due to overexposure to RG tools that they considered unnecessary (left) and who thought it was likely that they would abandon a gambling service for that reason in the future (right). NPG: non-problem gambler; LRG: low-risk gambler; MRG: moderate-risk gambler; PG: problem gambler.

experience of RG tools presented verbally, and summarized reaction to the RG pictures, as separate mediators in the relationship between the four levels of gambling problems and experience of having abandoned as well as inclination to abandon a gambling service. Only two models – both using the sum of reactions to RG pictures as the only mediator –

were considered to have acceptable model fit (experience of abandoning as dependent variable:  $\chi^2 = 28.93$ ,  $p < .001$ , CFI = 0.74, RMSEA = 0.06; inclination to abandon in the future as dependent variable:  $\chi^2 = 28.93$ ,  $p < .001$ , CFI = 0.85, RMSEA = 0.06). No significant mediation effect was found with experience of having

**Table 3**

Between-group comparisons of the proportion of individuals who has previously abandoned an online gambling service due to overexposure to RG tools that they considered unnecessary and who thought it was likely that they would abandon a gambling service for that reason in the future.

|                         | Non-problem gamblers |                  | Low-risk gamblers |                  | Moderate-risk gamblers |                   | Problem gamblers |     | Adjusted R <sup>2</sup> |
|-------------------------|----------------------|------------------|-------------------|------------------|------------------------|-------------------|------------------|-----|-------------------------|
|                         |                      | OR (95% CI)      | p                 | OR (95% CI)      | p                      | OR (95% CI)       | p                |     |                         |
| Abandoned a service     | -                    | 1.21(0.57-2.56)  | .626              | 2.99 (1.56-5.72) | < .001                 | 7.17 (3.61-14.23) | < .001           | .07 |                         |
| Would abandon a service | -                    | 0.72 (0.40-1.28) | .256              | 1.35 (0.83-2.22) | .229                   | 2.41 (1.39-4.19)  | .002             | .04 |                         |

Note: The between-group comparisons were calculated by means of logistic regression. Abandonment of a gambling service (yes/no) and inclination to abandon a gambling service ([very likely-likely]/[unlikely-very unlikely]) were used as the binary dependent variables, and the level of gambling problems, age, gender, and having experienced each of verbally described RG tools (limit setting, game freeze and self-test) as independent variables.

Being a male was associated with higher rates of previous experience of abandoning a gambling service.



abandoned a gambling service as the dependent variable (Level of Gambling Problems  $\times$  Summarized Reactions to RG Pictures:  $B = 0.01$ ,  $p = .078$ ). Reaction to RG pictures significantly mediated the positive association between level of gambling problems and inclination to abandon a gambling service in the future (Level of Gambling Problems  $\times$  Summarized Reactions to RG Pictures:  $B = 0.01$ ,  $p = .047$ ), the main effect of level of gambling problems on the inclination to abandon a gambling service in the future remained significant.

#### 4. Discussion

The current study found no evidence that RG tools inconvenience non-problem gamblers to a higher extent than they do to gamblers with some degree of gambling problems. In two cases (overall reaction and irritation regarding previous experiences of RG tools), moderate-risk gamblers had significantly more positive experiences compared to non-problem gamblers, but in both cases the evidence towards the alternative hypothesis did not reach the level of being barely worth mentioning based on Bayes Factor. Also, non-problem gamblers had the lowest rate of having actually abandoned a gambling service because of exposure to RG tools, with only 5.2% reporting such an experience compared to over a fourth of problem gamblers. The response rate of 12.0% was not a problem for the power of the analyses due to the large absolute number of respondents. However, the distribution of individuals with varying levels of gambling problems differed from both general public and what can be expected among active gamblers (Abbott, Romild, & Volberg, 2017; Salonen, Hellman, Latvala, & Castrén, 2018), with the proportion of problem gamblers being markedly higher and the proportion of non-problem gamblers being markedly lower among the respondents of the current survey. The response rate in combination with the current distribution of different categories of gamblers and with regard to the fact that the respondents were self-selected could have introduced confounding under the assumption that different subgroups of gamblers in the four PGSI-groups chose to participate. The possibility of this allows questioning of any firm conclusions from our study. However, the findings that gamblers have positive attitudes to RG tools and that non-problem gamblers in particular are not disturbed by them do correspond to the conclusions of previous research (M. Auer et al., 2018; Gainsbury et al., 2013; Ladouceur et al., 2012; Nisbet et al., 2016). All in all, the current state of evidence does not find any grounds for limiting design and implementation of RG tools due to the fear of disturbing non-problem gamblers by lowering the recreational value of gambling. In order to conclusively assert whether RG content disturbs recreational gamblers, an experimental design in the form of A/B test (i.e. randomization to conditions during actual product use) examining actual behaviors of gamblers needs to be set up. An experimental design would also allow for a proper evaluation of the effectiveness of RG tools, making it a highly preferable study design for future research, given the current lack of knowledge on how RG tools affect gamblers' behaviors.

Overall, the users of the online gambling service that participated in the current study had positive experiences of RG tools and found them neither disturbing nor irritating. Moreover, the reaction to RG pictures was also positive among all respondents. In the case of verbal descriptions, low-risk, moderate-risk, and problem gamblers tend to have slightly more positive experiences compared to non-problem gamblers with regard to the average experience, but the differences were non-significant in the majority of comparisons (10 out of 12). Problem gamblers had significantly more negative reactions to RG pictures compared to non-problem gamblers in three out of four dimensions, with small effects. This might indicate a possible discrepancy in how gamblers recall their reactions compared to the actual reactions. As mentioned above, a study with experimental design would be the best way to study both reactions and behaviors induced by RG tools.

Our results do not support the assumption of RG tools potentially channeling recreational gamblers away from gambling operators with

extensive responsibility programs due to perceived overexposure to RG tools. The findings also suggest that the moderate-risk gamblers and problem gamblers are the groups at most risk of abandoning a gambling service due to experienced overexposure to RG tools they consider unnecessary. The specification of considered necessity of RG tools was included in the phrasing of the question. The purpose of such phrasing was to increase the likelihood of the respondents reporting the abandoning of a gambling service due to disturbance caused by RG tools that they considered unnecessary as opposed to quitting gambling as an effort to counteract the gambling problems – which would mean the RG tools has served their purpose. A limitation of the current survey is that it is impossible to know whether the question was interpreted as intended. Assuming this was the case suggests a need for developing more effective consumer protection strategies capable to support those in need but not impeded by the worry to disturb recreational gamblers. As very few proper evaluations of effectiveness RG tools has been conducted as of today, it is challenging to suggest possible directions for future design of RG tools. However, normalizing RG tools as well as making them a natural and integrated part of online gambling environments could be potentially effective. Upcoming surveys should also specify whether respondents abandon a gambling service in favor of a less protective one or as an attempt to control their gambling.

Reactions to RG pictures – but not previous experiences of RG tools – mediated the relationship between level of gambling problems and the self-rated inclination to abandon a gambling service due to experienced overexposure to RG tools. The reactions to RG pictures among respondents with more severe gambling problems tended to be less positive which was associated with higher inclination to abandon a gambling service. This finding indicates that targeting the gamblers' reactions to RG tools may be an important strategy to stop gamblers from seeking to services with less extensive customer protection programs. The causal relationship in this case is only an estimate, as true causality can only be studied using longitudinal design.

We found that experiences of non-RG-related information (for example bonuses and prizes) tended to be more positive than experiences of RG tools among non-problem gamblers, indicating that more work can be done in adjusting the design of RG tools to make them more appealing while not compromising their effectiveness. It is, however, important to understand that the comparison to the non-RG-related information (for example, about bonuses or winning a prize) is unbalanced, as the latter information evokes a direct economic gain and excitement for the gambler, which are considerations closely related to the very reason for gambling. These aspects are not present when it comes to RG tools. We also found that survey respondents tended to be more positive to pictures of RG tools compared to non-RG-related ones. It is impossible to determine what aspects of the pictures the respondents rated, and the validity of this part of the survey is limited by the fact that the pictures did not occur in their natural setting (an online gambling platform). However, attempts were made to make the pictures as equivalent in design to each other as possible, and, in line with previous research, our results indicate a clear tendency towards positive reactions to RG content among recreational gamblers.

The proportions of respondents at the four levels of gambling problems differed from what is usually expected in the general population. A Finnish population survey showed that 4.2% of respondents who were gambling at least monthly were classified as pathological or problem gamblers, 17.3% were at-risk gamblers and 78.5% were recreational gamblers (Salonen et al., 2018). The low proportions of problem gamblers in the general public – not only among active gamblers - are comparable to those reported in Sweden (Abbott et al., 2017) and Denmark (Harrison, Jessen, Lau, & Ross, 2018). The respondents in the current study differ from general population of individuals engaged in gambling to some extent, with the largest proportion of respondents (38.5%) being classified as moderate-risk gamblers, followed by 26.8% low-risk gamblers, 18.9% non-problem gamblers and 15.6% problem gamblers. The difference is apparent despite the use of different

instruments for measuring the level of gambling problems. This might reflect a higher inclination of problem gamblers to fill in the questionnaire or to try to win a gift card. Also, the proportions are likely to be influenced by the specific characteristics of the population of online gamblers that tend to have higher rates of gambling problems compared to offline gamblers (Svensson & Romild, 2011).

Being a male was associated with more negative attitudes towards RG tools and higher rates of having abandoned a gambling operator due to perceived overexposure to RG tools that are considered unnecessary. It has been shown that men tend to value availability, utility and convenience in online gambling to significantly higher extent than women (Davis, 2014; McCormack, Shorter, & Griffiths, 2014), and RG tools may have impact on those features. Also, male and female gamblers tend to choose different types of games, with men being more likely to engage in games requiring elements of skills, while women preferring games of pure chance (Romild, Svensson, & Volberg, 2016; Svensson & Romild, 2014). These preferences might influence the perception of RG tools, as games with elements of skills may give a sense of control that dissonates with the mechanisms behind RG tools.

The current study uses the term RG tools as it is common in the field of consumer protection in gambling. However, the term implies the gambler's individual responsibility to gamble in a sustainable way with the help of mostly voluntary tools implemented into the gambling platforms. This does not go in line with the known mechanisms underlying addictive disorders, where the individual's capacity to act in a responsible manner in relation to the object of addiction is impaired. Therefore, the term responsible gambling covers a very narrow spectrum of what can be done to help gamblers to gamble in a sustainable manner and shifts the responsibility away from gambling providers. The term "consumer protection tools" should be considered more suitable in future literature.

In addition to the limitations already discussed, our study has some other caveats. Aside from the PGSI, the scales included in the questionnaire have not been psychometrically validated for the current purpose. The low response rate has already been mentioned but is worth further discussion. One probable reason for the low response rate can be the strong association between e-mails from the gambling company and marketing information that can be ignored by the consumers. The e-mails can also be automatically tagged as marketing by the e-mail application, requiring the recipient actively seek up the e-mail in the marketing folder. There are ways of increasing response rates in online surveys, such as involving key stakeholders in designing the survey and applying user friendly survey environments and appealing to the respondents' interests (Fulton, 2018). However, given the fact that support has not been found for the idea that recreational gamblers are being disturbed by RG tools, along with the advantage of experimental designs allowing for causal conclusions, the next step in studying the influence of RG tools on gamblers' behaviors should be experimental trials in natural gambling environments. Time spent on a gambling platform supposedly varies between gamblers with different levels of gambling problems and might mediate the relationship between level of gambling problems and experiences of abandoning and inclination to abandon a gambling service. In the current study, the respondents' self-rated gambling involvement in terms of time was of poor quality and could not be used in the analyses.

These limitations notwithstanding, our findings have important implications for the regulation of gambling operators. Customer protection and harm minimization is often expressed as the highest priority both by representatives of the gambling industry and policy-makers responsible for gambling market regulation (SOU 2017:30, 2017; Sper - Spelbranschens Riksorganisation, 2017). Perpetuating the unsupported notion - in both previous and current research - that RG content is aversive for recreational gamblers is counterproductive with regards to the principle of customer protection. It might contribute to so called "reversed evidence law", a phenomenon meaning that public health interventions having highest potential are also least studied ones

(McMahon, Thomson, Kaner, & Bambra, 2018; Nutbeam, 2004) and to the fact that the tools that are likely to be most effective - such as risk assessments, mandatory spending limits, and pop-up windows - are the least implemented (Marionneau & Järvinen-Tassopoulos, 2017). With this in mind, a natural next step should be an acceleration of the design, dissemination and evaluation of RG tools, including monitoring of the channelization of various subgroups of gamblers as a built-in part of the evaluation.

## 5. Conclusion

The study found no evidence that recreational gamblers in particular are disturbed by RG tools. Recreational gamblers had the least experience of abandoning a gambling service due to perceived overexposure to RG tools and rated their inclination to do so in the future significantly lower than moderate-risk gamblers and problem gamblers. The results must be interpreted with caution due to the low response rate and a possible non-representativeness of the respondent sample. However, the findings do correspond with previous research and based on the current state of evidence regulators should be able to require gambling services to design and implement effective customer protection measures without being afraid of channeling recreational gamblers to gambling services with less extended customer protection programs. When developing customer protection strategies, focus should be directed at making the tools more capable of helping customers with more severe gambling problems - the group in most need of protective measures as well as most likely to abandon a gambling service due to overexposure to RG tools. These efforts should not be hindered by the worry to disturb recreational gamblers.

## Role of funding sources

The project is a part of EI's PhD position that is fully funded by Ålands Penningautomatförening (Paf), a publicly governed gambling operator from Finland. As the questionnaire was distributed using Paf's communication channels, the questionnaire was developed in collaboration with Paf. The data was collected using Paf's survey tool and delivered to the research team after the data collection was closed. The pictures of common RG tools were designed in collaboration with Paf designers and the questionnaire was translated into Finnish by Paf's copywrite team. Paf was not involved into the data analyses, producing or submitting the manuscript.

## Conflict of interest

EI's PhD position is funded by a grant from Paf (a publicly governed gambling operator from Finland).

JR's PhD position is partially funded by a company specializing on prevention of addictive problems in workplace settings. The company itself received funding from the Public Health Agency of Sweden to evaluate a workplace intervention for problem gambling.

PL has received funding as both main and co-applicant from the independent research council of Svenska Spel, the government-owned gambling provider in Sweden.

PC has been the primary investigator of two larger treatment studies on pathological gambling funded by the Public Health Agency of Sweden. He has also received 3-year funding from FORTE, a government agency under the Swedish Ministry of Health and Social Affairs, for an Internet-delivered treatment for concerned significant others of people with problem gambling. In addition, he has received three research grants (Svenska spel and Paf) specifically devoted to only cover the university costs of employing two Ph.D.-students and one postdoc. Finally, PC has served as an unpaid gambling expert for the National Board of Health and Welfare (Socialstyrelsen) which is a government agency in Sweden under the Ministry of Health and Social Affairs.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.abrep.2019.100161>.

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