

Self-Exclusion as a Harm Minimization Strategy: Evidence for the Casino Sector from Selected European Countries

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Abstract As the international gambling market continues to expand, determining effective approaches to prevent gambling-related problems becomes increasingly important. Despite a lack of in-depth research into its benefits, self-exclusion is one such measure already in use around the world in various sectors of the gambling industry. The present study is the first of its kind to examine the effectiveness of self-exclusion schemes in the casino sector in selected European countries. A written survey yielded a sample of $N = 152$ (self)-excluded gamblers. In addition to this cross-section analysis, a small subgroup ($n = 31$) was monitored over time by means of follow-up surveys carried out 1, 6, and 12 month(s) after the exclusion agreement came into force. The results reveal that the self-excluded individuals are typically under a great deal of strain and show a relatively pronounced willingness to change. However, this largely reaches its peak at the time the decision to self-exclude is made. From a longitudinal perspective, various parameters indicate a clear improvement in psychosocial functioning; a favorable effect that also starts directly after the exclusion agreement was signed. Finally, considering theoretical and empirical findings, possibilities for optimizing (self-)exclusion schemes will be discussed.

Keywords Pathological gambling · Self-exclusion · Casino · Longitudinal · Program evaluation

Introduction

As the international gambling market continues to expand, strategies that serve to prevent gambling addiction gain increasing relevance. Of the many promising ideas and measures available, self-exclusion schemes offer gambling operators an option that is not open to providers of other consumer goods associated with increased risks to health (e.g., alcohol, tobacco). Formal self-exclusion programs are essentially a relatively new development. In

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the English-speaking world, they were first encountered in Manitoba (Canada) in 1989 (Blaszczynski et al. 2007). In contrast, self-exclusion has been an option offered to gamblers in Austria since its first casinos were established back in 1934. This has been augmented since 1991 by the computer-based collection and sharing of data across all the country's casinos. In Germany, the self-exclusion option has been available to gamblers in the casino sector since the recommencement of gaming operations after the Second World War (e.g., in Bavaria since 1961 at the latest). Country-wide sharing of data and associated efforts to establish a formal national self-exclusion system began back in 1981.

In general, self-exclusion is designed to prevent an individual from accessing gambling facilities. As a gamblers' protection measure, it can help at-risk or problem gamblers regain control of their behavior or support their efforts to abstain from at least one specific form of gambling for a certain time period. In contrast to the various options offered by addiction support schemes, self-exclusion should not be regarded as a form of counseling or treatment, but as an isolated access-limitation strategy (Nower and Blaszczynski 2006). The general value attached to self-exclusion as a means of secondary prevention is emphasized in many reviews (e.g., National Gambling Impact Study Commission 1999; Productivity Commission 2010). At the same time, it should also be noted that the benefits of such access restrictions vary in line with supply and scope: the greater the number of alternative options available to excluded gamblers or the easier it is to circumvent such measure, the lower the apparent relevance of self-exclusion in an addiction prevention or harm minimization sense.

Although self-exclusion programs are being increasingly used worldwide in various market segments (for Europe see Meyer et al. 2009), there is still a lack of differentiated research into its effectiveness. Initial investigations include the evaluation of cross-sectional (Jackson and Thomas 2005; Künzi et al. 2009; Ladouceur et al. 2000; O'Neil et al. 2003; Responsible Gambling Council 2008) and longitudinal (Ladouceur et al. 2007; Nelson et al. 2010; Steinberg 2008; Townshend 2007; Tremblay et al. 2008) self reports from excluded gamblers, formative evaluations (Schrans et al. 2004), analyses of exclusion rosters (LaBrie et al. 2007; Nower and Blaszczynski 2006, 2008), and the evaluation of data on self-exclusion on the internet (Griffiths et al. 2009; Hayer and Meyer 2010; Xuan and Shaffer 2009).

Empirical results from Canada regarding the utilization of self-exclusion schemes show that almost all the participants in a sample of 220 casino gamblers who had signed self-exclusion agreements were (probable) pathological gamblers and that 24% of them had already self-excluded in the past. Further analyses indicate an inconsistency between a high level of willingness to change on the one hand and the actual taking of concrete action on the other hand. Given the perceived lack of enforcement, some self-excluders may regard this measure more as a psychological deterrent and less as an actual (physical) barrier (Jackson and Thomas 2005). Interestingly, individuals with a greater sense of self-awareness and less severe gambling problems seem to be motivated more by the fear of being detected breaching a self-exclusion agreement (O'Neil et al. 2003).

Longitudinal evaluations complement the cross-sectional studies and allow conclusions to be drawn regarding the effects of self-exclusion over time. Ladouceur et al. (2007) carried out telephone interviews with a total of 161 self-excluded casino gamblers in Canada. In addition to baseline interviews, data was collected in four subsequent waves (after 6, 12, 18, and 24 months). The follow-up data reveals generally positive effects, such as a reduction in the urge to gamble, an increase in perceived level of control, a reduction in the intensity of various negative consequences, and an improvement in SOGS (South Oaks Gambling Screen) symptoms and DSM-IV (Diagnostic and Statistical Manual of

Mental Disorders) criteria. However, statistically relevant changes are only identified for the 6-month follow-up, i.e. for the minimum exclusion period. The results obtained by Steinberg (2008) for self-excluders from Connecticut (USA) basically corroborate these findings. Admittedly, only 59 (14.4%) of the participants in the baseline sample ($N = 411$) took part in the follow-up survey scheduled for around 3 months after the self-exclusion agreement came into force. Frequency analyses illustrate that the majority of participants reported having abstained from or reduced their gambling activities both in the casino and elsewhere. As part of an evaluation of a modified self-exclusion program in a casino in Montreal (Canada), Tremblay et al. (2008) interviewed self-excluders at the beginning and end of the exclusion period. They also identify significant improvements for various outcomes, i.e. reductions in the amount of time and money spent on gambling, the negative consequences of gambling, and the indications of certain psychological problems. Furthermore, while 31 participants (80%) were classified as pathological gamblers at the time of the first interview, this figure had dropped to only 10 (26%) by the second interview. Descriptive analyses also confirm that only one fifth of participants (21%) had sought further formal support by the time of the second interview.

Taken together, it can be assumed that self-excluding casino gamblers are generally under a lot of strain and can almost all be classified as problem gamblers at the time they decide to self-exclude. Initial research results also indicate that self-exclusion is an effective intervention over time—at least for a specific group of problem gamblers. When considering these results, it is important to bear in mind that they refer predominantly to the North American market. In general, the heterogeneity of self-exclusion concepts in place worldwide makes generalizations rather difficult. Differences in regulatory frameworks, practical applications, concrete approaches, and threats of sanctions (e.g., Collins and Kelly 2002; Meyer and Hayer 2007; O’Neil et al. 2003) may all impact the effectiveness of self-exclusion programs. The obligatory entry checks in most European countries, as well as the nationwide sharing of exclusion lists and binding (e.g., in Germany or Switzerland) or optional (e.g., in Austria) cross-venue barring of excluded gamblers create a more favorable context than self-exclusion schemes limited to only one specific gambling venue (Meyer and Hayer 2010). Yet all this only serves to emphasize the surprising need to make up ground when it comes to research into the effectiveness of self-exclusion in the specific European settings. To address this research gap, the present study seeks to identify the benefits of self-exclusion programs in selected European countries for the first time.

Methods

Study Design and Procedure

The analyses described below are based on self reports obtained from excluded casino gamblers, who were surveyed on a total of four occasions using written questionnaires. Since operator-excluded gamblers are difficult to contact, all the results—except one case—refer to self-excluded gamblers. Research phase 1 (T_0) provided the baseline data, which was obtained from gamblers who had excluded themselves from terrestrial casinos in the 2-year period from the end of 2006 to the end of 2008. The data was gathered using a self-developed standardized questionnaire. In addition to the cross-sectional questionnaire, participants were also requested to complete further self-developed standardized questionnaires at defined intervals. Research phase 2 consisted of three follow-up surveys,

which were conducted 4 weeks (F_1), 6 months (F_2), and 12 months (F_3) after initial contact (T_0).

Baseline data for the terrestrial sector was collected directly on site with the support of casino personnel. During the self-exclusion registration process, all potential subjects were asked if they would participate in a related research project. They were given the options of filling in the questionnaire there and then or taking it home and returning it in a stamped, addressed envelope (also provided). Patrons who submitted written requests for self-exclusion to casinos were sent the questionnaire by post. A total of 20 different venues participated in the survey—five casinos in Germany, 13 in Austria (including the Casinos Austria head office in Vienna), and two in Switzerland. The main focus in research phase 2 lay on the continual monitoring of the sub-sample of self-excluded casino gamblers. Everyone who had provided contact details in the baseline survey was sent these questionnaires by post or by e-mail. If they failed to return them, they were contacted up to six times and reminded of their agreement to participate in the research project.

Instruments

The customized baseline data questionnaire consisted mainly of items relating to gambling behavior in the run-up to self-exclusion and various aspects of self-exclusion (Meyer and Hayer 2010). Of particular relevance in this context are four questions concerning casino gambling stress indicators (urge, loss of control, emotional strain, reduction in quality of life) formulated according to Ladouceur et al. (2007). The inclusion of both a self-assessment of gambling behavior and the DSM-IV criteria for pathological gambling (10 items relating to casino gambling, 6-month prevalence; see Stinchfield et al. 2005) permits a classification of the current status of the participants' gambling problems. The questionnaire also included items relating to willingness to change and use of professional support facilities, as well as reasons for self-exclusion. Participants were also asked to indicate whether the decision to take this step had been spontaneous or was something they had been considering for a long time. As a rule, the questionnaire took 15–20 min to complete. The measurement tools used in the follow-up surveys (F_1 , F_2 , F_3) were all basically similar in design and content (cf. Meyer and Hayer 2010). In addition to the short-term effects of self-exclusion, the initial follow-up (F_1) served to identify broader problems and selected resource domains. The second and third follow-up (F_2 , F_3) concentrated primarily on determining (behavioral) changes and focused on the development of the respondents' gambling habits, their mental state subsequent to self-exclusion, and the principle benefits of this measure. Overall, the completion of the follow-up questionnaires took about 30–45 min.

Data Analysis

The data were analyzed using descriptive statistics and different significance tests. Statistical relationships were analyzed using Pearson's chi-square (χ^2) test for nominal-scale variables. Various test methods were used to examine mean differences in cross-sectional and longitudinal group comparisons (independent t-test, one factor analysis of variance with post hoc Scheffé test, one factor analysis of variance with repeated measures¹). Furthermore, a linear structural equation model was calculated for the self-excluded casino

¹ Sphericity was verified with the Mauchly test. If the sphericity assumption was violated, the Greenhouse-Geisser correction was used.

gamblers group to allow more precise statements regarding their characteristics. In the run-up to this analysis step, missing values had to be replaced. An inspection of the data showed that participants with low DSM-IV scores for pathological gambling tended with noticeable frequency to non-responses. This systematic mechanism allowed missing data to be replaced with values representing the lowest level of strain. For other variables, imputations were carried out using values from normal distributions generated using the corresponding mean and standard deviation of the original variables. This was followed by a winsorization of the data to eliminate extreme values or smooth bias. Since not all variables met the normal distribution criterion, an asymptotic distribution free estimation algorithm served as a fall-back. The linear structural equation model was calculated using the software *Amos* (Version 5.0). All other analyses were carried out using *SPSS for Windows* (Version 11.5).

Results

Response and Demographics

The sample contains a total of 152 excluded gamblers ($n = 51$ from Germany, $n = 84$ from Austria, $n = 17$ from Switzerland). Based on all banned gamblers, the response rate in Germany is rather low as expected (15.8%), and even lower in Austria (6.2%) and Switzerland (1.9%; based on all self-excluded gamblers, respectively). Overall, 131 (86.2%) of the respondents completed the questionnaire within the casino setting and 21 (13.8%) filled out the forms at home. To ensure the highest degree of anonymity, the sealed envelopes were identical for both ways of data acquisition, and thus, a personalized analysis to uncover systematic differences between these two subgroups could not be conducted. The sample is made up primarily of men (109 of $n = 151$,² 72.2%) and middle-aged individuals ($M = 41.3$ years, range: 19–75 years). Seventy-five of 146 respondents (51.4%) requested self-exclusion as a result of their slot machine gambling, 46 (31.5%) of their table gambling, and a further 25 (17.1%) of both forms. Remarkably, this variable is not independent of gender ($\chi^2(2) = 7.33$, $P = .026$): more men than expected reported that their table gambling habits had led them to self-exclude, while an unexpectedly high number of women viewed slot machine gambling as crucial in their decision to take this step. Almost one third of participants ($n = 45$ of 145, 31%) had already self-excluded in the past. The majority of these previous self-exclusions are single occurrences ($n = 36$ of 42, 85.7%). In 14 of 36 cases (38.9%), the self-exclusion agreements ended at the request of the gamblers themselves.

Gambling Patterns, Stress Indicators and Problem Status Related to Casino Gambling

On average, the subjects first went to a casino when they were 27.7 years old ($n = 140$). They began to gamble in a casino at least once a week 5.5 years later ($n = 124$, $M = 33.2$ years). Another 2 years later, they started to experience gambling-related psychological, social, or financial problems for the first time ($n = 105$, $M = 35.2$ years).

² It is important to keep in mind that the participants were recruited at the time they signed the exclusion agreement. Both, the rather unusual research conditions and the way of data collection may account for the relative large number of missing values with regard to certain items. Therefore, the corresponding denominators are given for all data.

Gender-specific analyses indicate that these developments generally occur later for women (first visit to a casino at 34.2 years of age, $n = 36$, $t(45.64) = 3.84$, $P \leq .001$; start of regular gambling at 41.9 years of age, $n = 30$, $t(121) = 4.81$, $P \leq .001$; development of gambling-related problems at 43.9 years of age, $n = 27$, $t(103) = 4.27$, $P \leq .001$; and self-exclusion at 48.1 years of age, $n = 42$, $t(148) = 3.91$, $P \leq .001$). With regard to their gambling habits in the 6 months prior to self-exclusion, 42 of 150 respondents (28%) reported gambling for five to 7 h on an average visit to a casino; this figure was even higher for a further 20 individuals (13.3%) at more than 7 h. The average net loss on a visit to a casino in the last 6 months was at least 1,000 Euro (or at least 1,000 Swiss Francs) for 59 of 146 (40.4%) respondents.

Response patterns for selected stress indicators provide further indications of possible gambling-related stress (timeframe: the preceding 6 months). On a five-point scale from *very weak* (1) to *very strong* (5) the group mean for urge to gamble ($n = 149$, $M = 3.70$, $SD = 1.05$), emotional strain associated with this form of gambling ($n = 139$, $M = 3.69$, $SD = 1.14$), and gambling-related reductions in quality of life ($n = 143$, $M = 3.35$, $SD = 1.29$) are all in the upper range. Furthermore, subjects considered it very important to stop gambling in casinos at that moment in time (Importance Scale: 0 [*very unimportant*] to 10 [*very important*]), $n = 152$, $M = 9.31$, $SD = 1.66$). They are also confident they would succeed in doing so, but to a less pronounced extent (Confidence Scale: 0 [*not at all confident*] to 10 [*very confident*]), $n = 149$, $M = 7.26$, $SD = 3.27$).

The status of the respondents' gambling problems was identified by applying the DSM-IV criteria for pathological gambling, adapted for casino gambling, which allows a classification into social gamblers (≤ 2 criteria), problem gamblers (3–4 criteria), and pathological gamblers (≥ 5 criteria). Table 1 summarizes the classifications for both variables. Further analyses indicate country-specific effects: Nine of 17 self-excluded gamblers in Switzerland (52.9%) are classified as social gamblers according to DSM-IV criteria. In contrast, fewer of the participants in Germany (13.7%) or Austria (26.2%) are classified as having social gambling habits ($\chi^2(2) = 10.60$, $P = .005$).

Attempts to Behavior Change, Reasons for Self-Exclusion and Familiarity with the Program

Ninety-seven of 148 respondents (65.5%) reported having consciously attempted to abstain from all forms of gambling at least once within the past 6 months. Thirty-six individuals (24.3%) reported more than six such attempts. These strategies for change appear to have been predominantly informal in nature. Only a fraction of the sample—in each case less than 7%—had any previous or current experience of individual professional support facilities. Approximately one in ten gamblers plan to seek the support of a counseling center, physician/psychologist, debt counselor, or self-help group.

Participants generally gave the self-exclusion option rather a lot of consideration before making the decision ($n = 146$, $M = 6.02$, $SD = 3.86$, Spontaneity Scale: 0 = *very spontaneous*, 10 = *after much consideration*). The statistical test for mean differences between social gamblers ($n = 35$, $M = 4.20$), problem gamblers ($n = 36$, $M = 5.69$), and pathological gamblers ($n = 75$, $M = 7.03$) is significant ($F(145) = 7.13$, $P \leq .001$). Pairwise post hoc comparisons confirm significant differences between social and pathological gamblers. Table 2 provides an overview of the common reasons for self-exclusion. With the exception of prevention ($n = 91$, 60.3%), the most frequently listed reasons include the common financial and psychosocial problems associated with excessive gambling.

Table 1 Gambling problem status (last 6 months)

Self-assessment	DSM-IV (≤2) social	DSM-IV (3–4) problematic	DSM-IV (≥5) pathological	
I gamble just like everyone else	16 (61.5%) (44.4%)	4 (15.4%) (11.4%)	6 (23.1%) (7.9%)	26 (17.7%)
I gamble a little too much, but don't have a problem	6 (35.3%) (16.7%)	8 (47.1%) (22.9%)	3 (17.6%) (3.9%)	17 (11.6%)
My gambling behavior is problematic but I am not a gambling addict	13 (31.0%) (36.1%)	11 (26.2%) (31.4%)	18 (42.9%) (23.7%)	42 (28.6%)
I am a gambling addict	1 (1.6%) (2.8%)	12 (19.4%) (34.3%)	49 (79.0%) (64.5%)	62 (42.2%)
	36 (24.5%)	35 (23.8%)	76 (51.7%)	147 (100%)

This cross-classification table only includes those individuals who also gave a response for the self-assessment row variable. The distribution of the 152 respondents according to DSM-IV criteria (column variable) is as follows: 38 social gamblers (25.0%), 37 problem gamblers (24.3%), and 77 pathological gamblers (50.7%). The twelve cells within the table contain both the absolute frequencies as well as the corresponding row and column frequencies. For example, 49 individuals who classed themselves as gambling addicts are also classified as pathological gamblers according to DSM-IV criteria. Of the 62 individuals in total who classed themselves as gambling addicts, 79.0% are classed according to DSM-IV criteria as pathological gamblers (row frequency in percent). Accordingly, the total group of 76 DSM-IV pathological gamblers contains 64.5% of those who assessed themselves as gambling addicts (column frequency in percent). There is a high level of congruence between the two variables: $\chi^2(6) = 52.13$, $P \leq .001$

The survey participants were asked to indicate how or from whom they had actually learned of the self-exclusion option. Overall, the $n = 147$ valid responses (multiple responses were admitted) indicate, on the one hand, that the impact of other gamblers ($n = 43$, 29.3%), of family, friends, and acquaintances ($n = 41$, 27.9%), and also of the media ($n = 30$, 20.4%) should not be underestimated. On the other hand, the efforts of operators to publicize the self-exclusion option seem only to have a limited effect, since only 37 gamblers (25.2%) were informed about self-exclusion directly by casino staff, while only 20 respondents (13.6%) found out about this measure through information material on display in the casino.

Profile of Self-Excluded Gamblers

The modeling of the data using the linear structural equation model resulted in a best possible fit with two latent variables, each of which is made up of three manifest items (see Fig. 1; Table 3). Taken as a whole, the indicators for the complete model fit signify that the variance in the data is explained very well ($\chi^2(8) = 8.72$; $AGFI = .97$; $RMSEA = .02$). The standardized estimator model contains factor loads for the manifest variables, which vary between .85 and .40. Firstly, self-excluded casino gamblers form a group that shows typical indications of gambling addiction. Secondly, the latent characteristic “awareness-based action orientation” implies that the gamblers have been suffering under their situation for a longer period of time, since they consider the self-exclusion option to have come too late. This fits with their view that the self-exclusion option should last for a

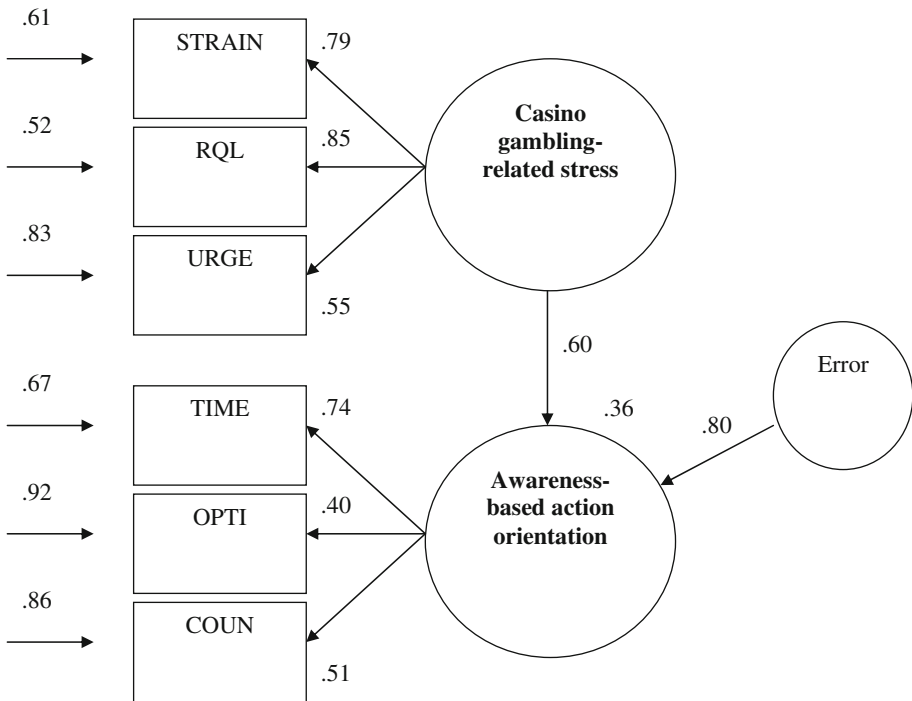
Table 2 Reasons for self-exclusion (multiple answers possible)

Reason for self-exclusion	Percentage and absolute frequencies
Lost too much money in the casino	76.2% <i>n</i> = 115
As a preventative measure	60.3% <i>n</i> = 91
Loss of control	53.6% <i>n</i> = 81
Financial problems due to casino gambling	43.7% <i>n</i> = 66
Spent too much time in the casino	37.7% <i>n</i> = 57
Placing bets that bore no relation to income level/wealth	37.1% <i>n</i> = 56
Family or relationship problems due to casino gambling	32.5% <i>n</i> = 49
In debt because of casino gambling	28.5% <i>n</i> = 43
At the request of family and friends	17.2% <i>n</i> = 26
Problems at work due to casino gambling	13.2% <i>n</i> = 20
Part of my gambling counseling/treatment program	7.3% <i>n</i> = 11
Annoyance with casino staff	4.6% <i>n</i> = 7

lifetime and be combined with professional counseling to prevent it becoming ineffective. Overall, it seems that the survey participants consider self-exclusion as an urgently necessary last course of action.

Longitudinal Analysis

Of the 152 individuals who participated in the baseline survey, 39 (25.7%) could be reached again at F₁, 32 (21.1%) at F₂, and 31 (20.4%) at F₃. Further analyses for selected variables confirm that there are no systematic bias effects as a result of the drop-outs. Accordingly, there are no statistically relevant differences at F₁ between the follow-up sample and the drop-outs for the following indicators (determined at T₀): country ($\chi^2(2) = 2.40, P = .30$), gender ($\chi^2(1) = .80, P = .37$), age ($t(59.92) = -1.62, P = .11$), and casino gambling-related problem status ($\chi^2(2) = 4.13, P = .13$). The following analyses only comprise those subjects who participated in all follow-up surveys (*n* = 31). As summarized in Table 4, the results in general suggest improvements for selected parameters. These changes are already evident at the time of the first follow-up survey 4 weeks after the signing of the self-exclusion agreement and, as a rule, remain consistent 1 year later. As far as gambling problem status is concerned, the percentage of pathological gamblers shifts in favor of the percentage of social gamblers. This is largely consistent with the responses given by the subjects regarding gambling frequency, gambling duration,



All path coefficients are significant at $P = .05$

Fig. 1 Linear structural equation model to determine the profile of self-excluded casino gamblers. *Note:* *STRAIN* casino gambling stressor: strain, *RQL* casino gambling stressor: reduction in quality of life, *URGE* casino gambling stressor: urge, *TIME* time of exclusion (too late), *OPTI* perceived optimal duration of exclusion (lifetime), *COUN* exclusion only makes sense in combination with other counseling. All path coefficients are significant at $P = .05$

and amount gambled, which are lower for all forms of gambling subsequent to self-exclusion. Positive changes can also be observed over time for three of the four casino gambling stress indicators. As expected, the importance of stopping or no longer gambling in a casino decreases over time. In addition, the longitudinal data indicate that a maximum of one third of the self-excluded gamblers sought additional professional external support. Lastly, the subjects were asked to assess the general benefits of self-exclusion on a five-point scale ranging from *very high* (1) to *very low* (5). Based on their responses, this protection measure is generally seen to have strong general benefits, which remain constant over time—with a trend of marginal deterioration.

Discussion

Descriptive analyses regarding the profile of self-excluded casino gamblers show that it is mostly men and middle-aged individuals who elect to have themselves placed on exclusion lists. Over half the subjects chose to self-exclude as a result of their slot machine gambling.

Table 3 Linear structural equation model—indicator values and intercorrelations

	Casino gambling stressor: strain (STRAIN)	Casino gambling stressor: reduction in quality of life (RQL)	Casino gambling stressor: urge (URGE)	Exclusion only makes sense in combination with other counseling (COUN)	Time of exclusion (TIME)	Perceived optimal duration of exclusion (OPTI)
Range	<i>very weak</i> (1) to <i>very strong</i> (5)	<i>very weak</i> (1) to <i>very strong</i> (5)	<i>very weak</i> (1) to <i>very strong</i> (5)	<i>totally disagree</i> (1) to <i>totally agree</i> (4)	<i>preventative</i> (1) to <i>too late</i> (3)	<i>4 weeks</i> (1) to <i>permanent</i> (6)
M	3.457	3.214	3.737	1.633	1.836	4.158
SD	1.328	1.370	.973	.959	.685	1.733
RQL	.693*					
URGE	.425*	.412*				
COUN	.266*	.274*	.238*			
TIME	.21*	.316*	.271*	.353*		
OPTI	.107	.150	.085	.126	.339*	

* $P \leq .01$

Table 4 Changes in selected indicators over time—self-excluded casino gamblers

Indicator	T ₀	F ₁	F ₂	F ₃	Results
Gambling problem status ^a	SP: 16.1% PS: 22.6% PG: 61.3% casino gambling	NA	SP: 48.4% PS: 29.0% PG: 22.6% gambling	SP: 71.0% PS: 16.1% PG: 12.9% gambling	SP percentage is (considerably) higher at F ₂ and F ₃ than at T ₀
Change in gambling behavior—frequency (in days) ^b	NA	le: 87.1% u: 12.9% m: 0%	le: 90.3% u: 9.7% m: 0%	le: 53.3% u: 30.0% m: 16.7%	Clear improvements overall, only the frequency and duration criteria are slightly up again at F ₃ for a limited number of subjects
Change in gambling behavior—duration (in time) ^c	NA	s: 83.9% u: 20.0% l: 0%	s: 83.9% u: 12.9% l: 3.2%	s: 35.5% u: 48.4% l: 16.1%	
Change in gambling behavior—amount gambled ^d	NA	lo: 74.2% u: 19.4% h: 6.5%	lo: 74.2% u: 22.6% h: 3.2%	lo: 58.1% u: 35.5% h: 6.5%	
Casino gambling stressor—urge	M = 4.05	M = 2.48	M = 2.23	M = 1.89	$F(3/81) = 37.34; P \leq .001^*$ $T_0 > F_1/F_2/F_3^*$
Casino gambling stressor—loss of control ^e	M = 2.42	M = 3.04	M = 3.04	M = 2.85	$F(3/75) = 1.60, P = .20$
Casino gambling stressor—emotional strain	M = 3.98	M = 2.52	M = 2.22	M = 2.26	$F(3/66) = 14.29, P \leq .001^*$ $T_0 > F_1/F_2/F_3^*$
Casino gambling stressor—reduction in quality of life	M = 3.54	M = 2.71	M = 2.40	M = 2.42	$F(3/69) = 6.12, P = .001^*$ $T_0 > F_1/F_2/F_3^*$
Importance Scale ^f	M = 9.48	M = 7.74	M = 7.15	M = 4.63	$F(3/78) = 14.77, P \leq .001^*$ $T_0 > F_1/F_2/F_3^*$ $F_1 > F_3^*$ $F_2 > F_3^*$
Confidence Scale ^g	M = 8.23	M = 7.81	M = 7.54	M = 7.46	$F(3/75) = .46; P = .71$

Table 4 continued

Indicator	T ₀	F ₁	F ₂	F ₃	Results
Sought professional external support	yes: 22.6% no: 77.4%	yes: 29.0% no: 71.0%	yes: 32.3% no: 67.7%	yes: 19.4% no: 80.6%	A maximum of one third of gamblers sought professional external support
General benefits ^h	NA	$M = 1.69$	$M = 2.07$	$M = 2.22$	$F(1.53/42.95) = 3.40; P = .054$

* $P \leq .01$

^a *SP* social gambler, *PS* problem gambler, *PG* pathological gambler, DSM-IV criteria applied to casino gambling (T₀) and gambling in general (F₂, F₃) (always for the preceding 6 months)

^b *le* less, *u* unchanged, *m* more

^c *s* shorter, *u* unchanged, *l* longer

^d *lo* lower, *u* unchanged, *h* = higher

^e In the follow-up surveys, subjects were asked about control over gambling habits in general

^f Importance of stopping gambling in the casino at that moment (T₀) or not gambling in a casino at the moment (F₁, F₂, F₃) (*very unimportant* [0] to *very important* [10])

^g *Not at all confident* [0] to *very confident* [10]

^h *Very high* [1] to *very low* [5]

These findings basically correspond to Steinberg's (2008) findings for the USA, which show that 57% of excluded gamblers are male, have an average age of 42 years, and view slot machines as the problematic gambling form. In general, it can be assumed that casino gambling problems takes several years to develop. Furthermore, almost 6 years pass between the first appearance of gambling-related problems and the initiation of a self-exclusion agreement. This indicates a clear need for suitable early detection and intervention measures as a central element in a proactive social responsibility concept.

Various indicators, such as the average amount of time and money spent on casino gambling or prior experiences with self-exclusion, indicate that the respondents' gambling patterns had become excessive. In addition to the loss of too much money or financial problems, two of the top motives behind the decision to self-exclude also relate to maladaptive gambling habits (cf. Ladouceur et al. 2007). Congruently, around three quarters of the subjects can be classified as problem or pathological gamblers based on both their self-assessments and the DSM-IV criteria. However, in comparison to findings from Canada (Ladouceur et al. 2000, 2007; Tremblay et al. 2008) and the USA (Steinberg 2008), the sample still includes a relatively high percentage of social gamblers. This results, on the one hand, from the inclusion of the sub-sample from Switzerland, where the legal framework accords a higher general relevance to (secondary) preventative gamblers' protection (Häfeli 2009). On the other hand, it would seem that the lack of access controls contributes to the higher percentage of individuals with more pronounced problems who self-exclude in Anglo-Saxon countries. In contrast, the relatively frequent inclusion of prevention as a motive for self-exclusion is surprising. This finding should be treated with caution, since the participants presumably do not use the term in a medical sense (i.e., the proactive prevention of a problem), but are instead referring to the prevention of further (more serious) damages.

The participants also exhibit a trend characterized by a high level of ambivalence: they might want to change their behavior, but this is counteracted by their pronounced attachment to gambling. Evidence for this can be found in their numerous (yet unsuccessful) attempts to abstain from gambling and the comparatively long period of deliberation prior to self-exclusion. The linear structural equation model confirms that gamblers feel self-exclusion has come too late and only makes sense in combination with additional counseling. While the subjects view self-exclusion as an urgently necessary step, the majority of them do not, however, seek professional external support. Evidently, there is a considerable discrepancy between what they think and what they actually do (cf. Ladouceur et al. 2000), and their willingness to change peaks at the time they sign the self-exclusion agreement. The inadequate integration of self-excluded gamblers into the addiction support system corresponds both to other research findings (e.g., Künzi et al. 2009; Ladouceur et al. 2000) as well as to the common tendency of problem gamblers to seek little professional external support (Suurvali et al. 2009). Generally speaking, this substantiates the demand for innovative models that create appropriate links between self-exclusion programs and counseling and/or treatment services. Related theoretical considerations (Błaszczynski et al. 2007) and initial empirical studies (Tremblay et al. 2008) appear promising, but require further elaboration and adaptation to the respective regional contexts. Other approaches aimed at improving the design of self-exclusion programs relate to their marketing and inclusion in a broad social responsibility concept borne primarily by casino staff.

The longitudinal data show that various gambling-related parameters indicate a clear improvement in psychosocial functioning subsequent to self-exclusion. Taken in combination with the respondents' positive assessment of the general benefits of this measure,

self-exclusion evidently has the desired effects (Ladouceur et al. 2007; Steinberg 2008; Townshend 2007). Changes are evident after only 4 weeks and are still upheld 1 year after the signing of the self-exclusion agreement. These findings imply rapid release for gamblers and substantiate the conclusions of Ladouceur et al. (2007) and Steinberg (2008), who were able to confirm corresponding results at their 6- or 3-month follow-ups. A possible related effect of the immediate relief experienced by respondents is their avoidance of counseling or treatment to determine and reappraise the background to their problem (Steinberg 2008; Tremblay et al. 2008). Likewise, the decrease in the importance of abstaining from gambling in a casino observed over time may reflect an improvement in an individual's overall situation, but could also be a reflection of a successively decreasing regard for (former) gambling problems.

Obviously, the research method used in this study was associated with the loss of representativeness. Examining gamblers at the point when they decide to self-exclude from terrestrial casinos naturally incorporates a self-selection process into the creation of the sample. Given the lack of reference points, conclusions regarding the representativeness of the individual samples prove speculative. The extent to which the samples systematically differ from the groups of individuals who declined to participate in the research project remains undetermined. In particular, the rather low response rate constrains the validity of our data, however, the sensitive topic and the characteristics of the study design make it difficult to obtain higher response rates in general. For example, Steinberg (2008), who used a similar methodology, has indicated response rates of 23.1% (baseline) and 14.4% (follow-up), respectively, Künzi et al. (2009) did only obtain data of 6.8% of all excluded gamblers, and other authors did not even mention this kind of information (e.g., Ladouceur et al. 2000, 2007), representing a general lack of high-quality self reported data on this subject.

Besides, there are various aspects that need to be discussed with reference to the robustness of the conclusions. Firstly, the information provided by participants in questionnaire-based surveys should never be considered to offer an exact portrayal of reality. Certain basic parameters (e.g., filling out the questionnaire in the casino) are bound to have had an influence on the answers provided. Since the quantitative data was based on surveys of the same information sources using similar measurement tools, inherent interpretation problems in the "shared method variance" sense cannot be excluded. Furthermore, given the novelty of the research field, the use of theoretically sound and validated instruments was only possible to a limited extent. Also, the size of the baseline sample does not permit country-specific analyses. Likewise, had the sample size permitted, it would have been useful to determine the relative significance of predictors associated with the success of self-exclusion in the long term. Moreover, the small numbers of participants in the follow-up samples contribute decisively to the low variance in certain indicators. Given the relative large number of drop-outs, these results should be interpreted with caution and only be used as a starting point for further research activities. Finally, another basic limitation refers to the absence of a control group that complicates the exact determination of the effectiveness of self-exclusion. However, a control group of non-excluded pathological casino gamblers could not be established for ethical and legal reasons. Since a significant number of pathological gamblers evidently succeed in altering their destructive behavior without formal or external professional support (Slutske 2006), a comparison of self-excluded and non-self-excluded gamblers would have been indispensable in unequivocally attributing improvements over time to the self-exclusion measure as opposed to other interventions or mechanisms of action.

Despite these caveats, the findings underline the benefits associated with self-exclusion. Essential improvements in financial situation, psychosocial functioning, and subjective feeling of well-being—at least in the short-term—confirm the necessity of including access restrictions as a central element in a comprehensive social responsibility concept. Notwithstanding this basically positive conclusion, the empirical data indicate a need for improvement in various elements of the actual design and implementation of self-exclusion programs. In general, recommendations for action on a political level (e.g., the introduction or effective and efficient enforcement of access controls) can be separated from strategies that should be implemented directly by operators (e.g., the raising of awareness of the self-exclusion option and reducing the structural access barriers to this measure). Of the broad range of recommendations for action, two points should be emphasized: the minimization of the risk of switching to other gambling sectors, and the structural linking of self-exclusion programs to professional addiction support services. A cross-country and/or cross-segment expansion of the scope of self-exclusion programs and the implementation and evaluation of innovative models based on the exemplary Self-Exclusion Educator (Blaszczynski et al. 2007) or Self-Exclusion Counsellor (Tremblay et al. 2008) would be the methods of choice for achieving these goals. Future research projects should also strive to replicate the present study using larger samples to examine the specific effects of various self-exclusion programs, to allow a definition of authoritative predictive variables and mechanisms of action, and to delineate different subgroups of banned gamblers with different needs. It would also seem important to include a longitudinal perspective that extends beyond a period of 1 year. In addition, it is recommended to carry out a detailed analysis of the emotions and cognitions of gamblers in the ambivalence phase prior to self-exclusion in order to illustrate the decision-making processes that are crucial to this step. The insights obtained from such research activities and their translation into practice should serve to optimize self-exclusion practices and thus make a valuable contribution to gamblers' protection.

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