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Research report

A gender perspective on gambling clusters in Sweden using longitudinal data

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ABSTRACT

AIMS – This study describes five groups of gamblers and changes in their gambling involvement and gambling problems over four years with a particular focus on whether gambling problems among men and women develop differently within the five groups. DESIGN – The study sample is a subset of participants from the Swedish Longitudinal Gambling Study (Swelogs). Six different clusters of past-year gambling, based on frequency of participation in the nine most common forms of gambling in Sweden (lotteries, horses, number games, sports games, bingo, poker, slot machines, casino games or TV contests) were identified in Two-Way Cluster Analysis after the first wave of data collection in 2008/09. There were 2,508 individuals identified in EP1 (n=5,012) who then also participated in waves EP2 and EP3 and were selected for the present analysis. METHODS – Statistical analysis was done in SPSS 22.0 using Pearson's Chi-Square test of Independence (or Fisher's Exact test when the requirements or expected frequency were not met for Pearson's Test), Mann-Whitney U-test and logistic regression. P-values below 0.05 were regarded as significant. RESULTS – Gambling remains gendered in Sweden. Even though the clusters are based on gambling activities, there are differences between men and women within the clusters as regards the gambling participation patterns. CONCLUSIONS – Men and women gamble differently, but they may still be equals in their total experience of gambling and in relation to how their gambling problems develop. All differences need to be taken into consideration when preventive actions or messages are created.

KEYWORDS – gambling, gender, gambling involvement, gambling problems, clusters

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Background

Need for a gender perspective in gambling research

Gambling includes various activities that involve different groups of people. Even though nunerous population studies around the world show that men gamble more than women and more men than women report gambling problems (Williams, Volberg, & Stevens, 2012), gambling research often lacks a gender perspective (Volberg, 2003; Svensson, 2013). This is manifested in at least two ways: (1) by not examining descriptive statistics separately for men and women and thereby possibly missing or ignoring important gender differences; and (2) by only reporting differences without a gender analysis and thereby cementing gender stereotypes. Questionnaires are habitually constructed to catch male gamblers' risk and protective factors (Orford et al., 2010), while factors that could be relevant for women (e.g., eating disorders such as bulimia or anorexia) are often absent.

This may be due to the assumption

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that so few women gamble or gamble in problematic ways that any consequences of their gambling can be disregarded. It is also possible that this is due to the simple fact that, even in very large surveys, the number of female problem gamblers is too small to allow for separate analysis. Another possibility is that researchers assume that when women do gamble, their gambling behaviour and its effects are the same as men's and therefore it is unnecessary to examine these effects separately. In addition to often not attending to the likely impact of gender influences on gambling behaviour, many gambling studies also neglect to examine different categories of gambling involvement. This, too, is an oversimplification (Shaffer, LaBrie, LaPlante, Nelson, & Stanton, 2004). Gambling involvement is often described as participation in different gambling forms or discussed in terms of the number of different activities instead of the more complex pattern of combinations of different gambling forms.

Men's and women's gambling in Sweden

In Sweden, gambling is largely a mainstream activity for both men and women, although the proportion of people that has participated in a gambling activity in the last 12 months has decreased over the last fifteen years (Statens folkhälsoinstitut, 2010; Folkhälsomyndigheten, 2015). Participation in lotteries is the most common gambling form; over half of all Swedish men and women have bought lottery tickets during the last year. More than a fifth of both men and women have gambled on number games (such as Lotto) or horses. However, there have been, and still are, great gender differences in gambling behaviour with Swedish men gambling more than women and having more problems related to gambling (Abbott, Volberg, & Rönnberg, 2004; Svensson, Romild, Nordenmark, & Månsdotter, 2011). Men's generally higher risk of problem gambling is not surprising: in most jurisdictions, men gamble more than women and on forms of gambling that are markedly correlated with a high risk for problem gambling. In Sweden, men are more engaged with Internet gambling, sports betting and horse races, poker, casino games and slots/gaming machines, while women are in a majority among those gambling on lotteries and bingo. Slots/gaming machines, bingo, casino games and poker are regarded as high-risk games, and all types of games are related to higher risks when played on the Internet. (Statens folkhälsoinstitut 2010). This is similar to the pattern found in most international studies (Williams, Volberg, & Stevens, 2012; Holtgraves, 2009; Wardle, 2010; Victoria Department of Justice, 2011).

In 2008/09, 28% of Swedish men reported that they had gambled during the past week. The corresponding figure for women was 19%. The largest differences between men and women in prevalence rates were for casino games (men 13%; women 3%) and poker (men 17%; women 4%) (Statens folkhälsoinstitut, 2010). The prevalence of problem gambling in Sweden is consistent with international rates. Just over two percent of the total population qualified as problem gamblers, scoring 3 or more on the Problem Gambling Severity Index (PGSI); 3.2% of the men and 0.5% of the women (Svensson et al., 2011). The highest rate of problem gambling is found among men aged 18–24, where almost one

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in ten men has a problem with gambling. Notably, in the oldest age group (65–84) the rate of problem gambling is higher among women than men (0.8% of men and 1.4% of women) (Statens folkhälsoinstitut, 2010).

Gender convergence in gambling and drinking in Sweden

The term "feminisation of gambling" refers to the hypothesis that more women than before are gambling and develop problems and seek help for gambling problems (Volberg, 2003). A convergence of men's and women's behaviour has been evident in the field of alcohol in Sweden. It is appropriate to compare alcohol and gambling given the similarities in risk and protective factors (Welte, Barnes, & Hoffman, 2004; Petry, 2005). Men still consume more alcohol than women in Sweden, and as a result suffer more adverse effects such as alcohol-related deaths (National Board of Health and Welfare, 2014), DALY (Disability Adjusted Life Years) and hospital admissions (CAN, 2014). During the 1960s, men's consumption of alcohol in Sweden was four times as high as women's, while in the early 1980s men's consumption was almost three times as high as women's. Despite this narrowing of differences in alcohol consumption by gender over time, data shows that men's consumption, measured in volume, is still about twice as high as women's (Ramstedt Lindell, & Raninen, 2013). The convergence of alcohol consumption by gender is primarily down to men's decreased consumption rather than increased consumption among women (Kuntsche et al., 2011).

The type of convergence noted in alcohol consumption in Sweden has not yet emerged in gambling. In a dissertation on gender and gambling, Svensson and colleagues found that there were very few changes in men's and women's gambling behaviour in Sweden between 1997/98 and 2008/09. Men and women generally gambled in different domains, and men gambled more than women. However, the study found that men and women who gambled regularly were just as likely to become problem gamblers. In fact, when the data was controlled for age, women who gambled regularly were more likely than men to become problem gamblers (Svensson & Romild, 2014). However, no study has examined whether gambling problems develop differently for men and women who engage in different patterns of gambling participation (i.e., not only among regular gamblers). A subsequent analysis of the Swedish data suggests that almost half of new problem gamblers (those whose problems emerged between 2008/09 and 2009/10) were women (Statens folkhälsoinstitut, 2012), which may indicate that the incidence level of problem gambling could eventually be equal for men and women.

There is a noteworthy effect in adding gambling behaviour to regression models that investigate the risk of problem gambling. Being male is often a significant predictor for problem gambling, but when gambling behaviour (such as gambling in specific types of games or gambling frequency) is added into a model, gender becomes insignificant. This has been found in South Africa (Ross et al., 2010) as well as in Sweden. In some places, such as Manitoba, men and women are equally likely to gamble and to be problem gamblers (Lemaire, MacKay, & Patton, 2008).

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Our study addresses the gap in the gambling research literature by viewing gambling involvement as a complex pattern of combinations of different gambling forms instead of just tackling the number of different activities or participation in different gambling forms. We describe five clusters of gamblers based on their participation in different forms of gambling and with a particular focus on gender differences between and within the clusters. The development of gambling and gambling problems is then followed and compared over three waves of data collection.

Methods

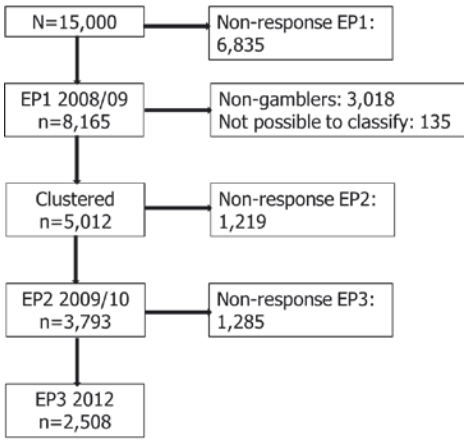
The study sample is a subset of participants from the Swedish Longitudinal Gambling Study (Swelogs) aged 16–84 in 2008. The Swedish Longitudinal Gambling Study (Swelogs) is a research programme financed and conducted by the Public Health Agency of Sweden (Folkhälsomyndigheten since 2014, previously Statens folkhälsoinstitut, Swedish National Institute of Public Health). The original Swelogs sample was a stratified draw of 15,000 individuals aged 16 to 84 from the Register of the Total Population (RTB). In drawing the sample, the population was stratified on gender, age and estimated risk for gambling problems. The estimated risk was a derived variable based on a regression model with data from a pilot study of 1,015 persons (50.7% of 2,000 individuals selected from the RTB) conducted before the main data collection and calculated from national register information. Variables such as male gender, low income, unemployment and receiving social welfare were associated with a higher probability for gambling problems, while a Nordic origin, being married and being on sick leave for more than a month were associated with a lower probability. The sampling strategy involved assigning higher sampling probabilities for young people and people with a higher probability of gambling problems but equal numbers of males and females.

Data collection was carried out by Statistics Sweden using computer-supported telephone interviews as the primary method. Postal questionnaires were used to follow-up those not reached by telephone after ten attempts. Telephone interviews for the first wave (EP1) were carried out from October 2008 to April 2009. Postal questionnaires were collected until August 2009. The interviews and questionnaires covered gambling, problem gambling and related issues, computer gaming and a few demographic questions that could not be easily obtained through the national registers. Over half of the originally drawn sample (8,165 respondents, 54%) was reached in EP1. The second wave of data collection (EP2) was undertaken from December 2009 to August 2010 with the same procedures as in EP1. The 8,165 respondents from EP1 were re-contacted in EP2, and 74% (6,021 individuals) of these also participated in the second wave. The third wave of data collection (EP3) lasted from February 2012 until August 2012. All the respondents from EP1, except those refusing continued participation in EP2, were re-contacted in EP3, a total of 7,064 individuals. The response rate was now 59% (4,198 individuals). Figure 1 presents information about overall sample attrition and non-response.

Calibration weights, based on data from registers stored within Statistics Sweden, were used to compensate for varying sam-

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Figure 1: Attrition.



pling probabilities and non-response in the analysis of prevalence rates and other population estimates. The weights were updated for each wave of data collection. The study plan was approved by the Regional Ethical Review Board in Umeå before data collection began in 2008. Additional ethical applications were submitted in subsequent years due to changes in questionnaires for consecutive data collections. All the submitted applications were approved. More details on the sample, demographics, oversampling procedure, calibration weighting and attrition are available in a methodological overview of the study (Romild, Volberg, & Abbott, 2014).

The majority (70%) of the 8,165 respondents in EP1 had gambled at least once in the past 12 months on one or more of nine different forms of gambling. Six different clusters of past-year gambling, based on frequency of participation in the nine most common forms of gambling in Sweden (lotteries, horses, number games, sports games, bingo, poker, slot machines, casino games or TV contests) were identified through Two-Way Cluster Analysis. Nine variables, one for each form of gambling, with five levels of past-year gambling (no gambling past year/gambled but less than monthly/gambled monthly/gambled several times a month/gambled weekly) were used in the analyses. One cluster consists of non-gamblers (30% of the respondents). This duster was not included in this study, as we wanted to compare different types of gamblers. The gamblers in EP1 (n=5,012) were divided into five clusters titled Seldom Gamblers, Habitual Gamblers, Occasional Gamblers, Social Gamblers and Heavy Gamblers according to their gambling behaviours. The individuals in the gambling clusters who then also participated in waves EP2 and EP3 were selected for the present analysis. A total of 2,504 individuals (50%) were lost in the process, and the present study sample thus consists of 2,508 individuals. This is a sub-cohort from the initial random sample sampled with unequal sampling probabilities.

Table 1 presents detailed information about differential attrition rates for different groups in the population. Attrition rates differ between the gambling clusters with 42% loss of Habitual Gamblers, 47% loss of Seldom Gamblers, 54% loss of Occasional Gamblers, and 57% loss of Social Gamblers and Heavy Gamblers respectively. There were also differences in attrition rates between men and women within the gambling clusters and in relation to demographics and problem gambling status. Attrition rates were higher for women than for men, but only significantly higher among Seldom Gamblers, where 50% of the women and 42% of the men were lost from baseline over the following two waves. Young people and people

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Table 1: Percent dropouts from EP1 to EP3.

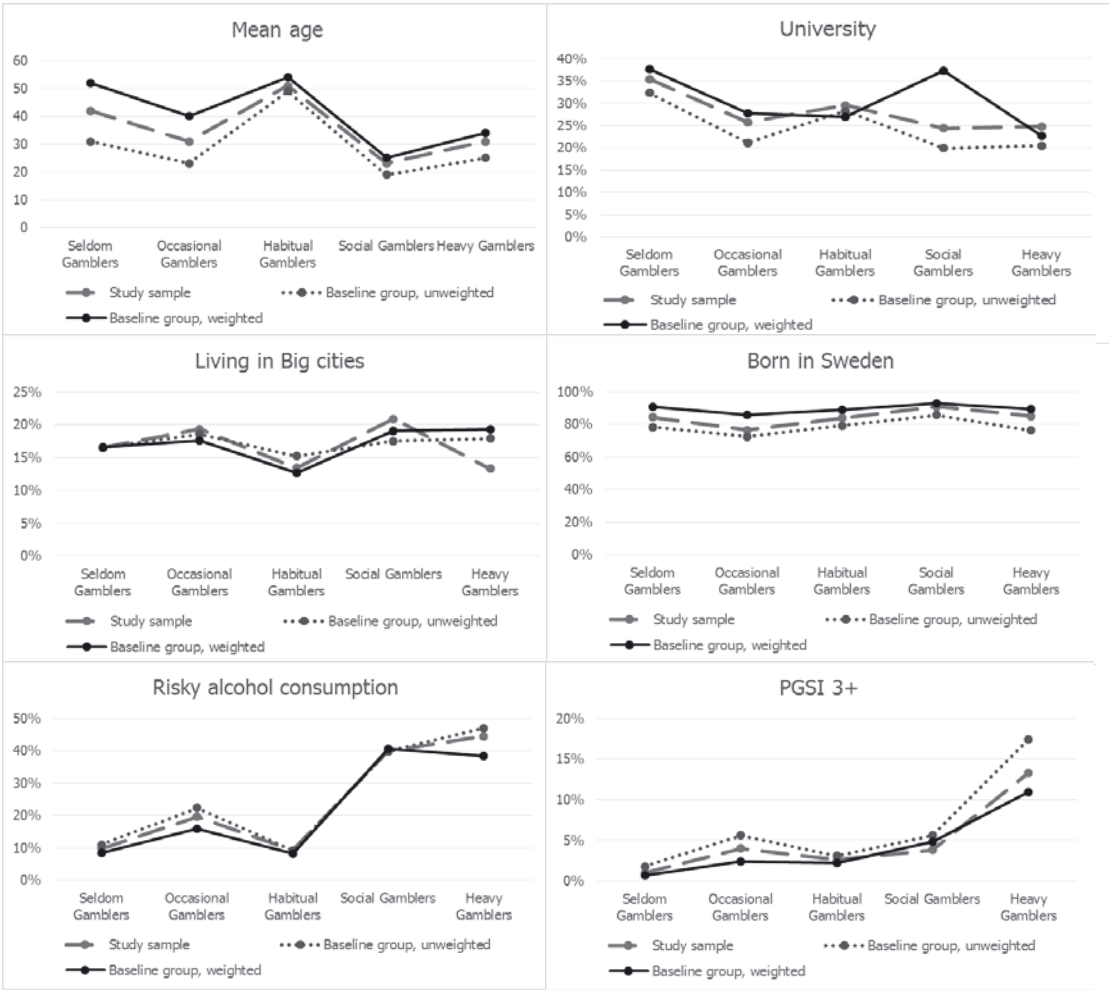
		Seldom Gamblers	Occasional Gamblers	Habitual Gamblers	Social Gamblers	Heavy Gamblers
	Men	42.4	51.0	39.6	55.6	56.7
	Women	50.1	56.0	44.3	61.9	60.1
	P-value	**.008**	.107	.092	.159	.419
Men	Aged 16–24 in 2008	52.8	55.7	54.2	58.1	66.9
	Aged over 24 in 2008	38.0	44.5	38.4	47.8	46.2
	P-value	**.003**	**.014**	**.019**	**.039**	**<.001**
Women	Aged 16–24 in 2008	58.2	60.5	50.6	63.4	61.8
	Aged over 24 in 2008	45.9	49.5	43.2	58.1	59.0
	P-value	**.002**	**.013**	.222	.546	.721
Men	Born in Sweden	40.2	48.3	38.1	53.3	52.8
	Born abroad	57.6	60.6	49.5	71.1	74.3
	P-value	**.011**	**.024**	**.029**	**.004**	**<.001**
Women	Born in Sweden	45.2	53.9	38.2	58.4	51.0
	Born abroad	62.4	60.3	57.0	76.7	71.4
	P-value	**<.001**	.162	**<.001**	.064	**.006**
Men	Big cities	40.6	50.0	43.7	48.5	68.3
	Rest of the country	42.6	51.1	39.0	57.1	54.3
	P-value	.764	.853	.361	.113	**.009**
Women	Big cities	50.0	53.4	53.1	51.9	57.7
	Rest of the country	50.2	56.7	42.3	64.1	69.4
	P-value	.971	.546	.053	.235	.199
Men	No problem/ Low risk	41.7	50.4	39.4	54.5	54.9
	Moderate risk/ Gambling problems	77.8	63.6	50.0	75.0	65.4
	P-value	**.040**	.225	.421	**.023**	.049
Women	No problem/ Low risk	49.9	55.1	43.8	62.3	56.7
	Moderate risk/ Gambling problems	66.7	68.6	51.9	55.6	75.0
	P-value	.248	.122	.415	.732	.057

not born in Sweden were more likely to drop out. The differences in attrition were significant for men in all clusters and for women in regard to age among Seldom Gamblers and Occasional Gamblers and in regard to origin among Seldom Gamblers, Habitual Gamblers and Heavy Gamblers. The differences in attrition related to living in one of the three largest cities of Sweden (Stockholm, Gothenburg and Malmö) were smaller, in fact only significantly different from attrition rates for those living elsewhere in the country for male Heavy Gamblers. Problem gamblers were more likely to drop out compared to other gamblers but this was more obvious for men than for women. Differences were significant between problem gamblers and other gamblers among male Seldom Gamblers and male Social Gamblers.

As shown in Figure 2, the overall effect of study attrition is that the sub-sample contracted to be more representative of the Swedish population in terms of demographics as well as important dependent variables such as gambling problems

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Figure 2: Comparisons between the study sample and baseline gamblers, unweighted and weighted.



and risky alcohol consumption. This is because differences between dropouts and remaining respondents are similar to factors that increased over-sampling probabilities. Furthermore, the differences between the clusters are stable when the study sample is compared to the weighted baseline sample. The data was therefore analysed without calibration weights.

Gambling participation was measured as past-year participation in each specific form of gambling with three levels: none/at least once in the past year but less than monthly/monthly or more often. The Problem Gambling Severity Index (PGSI) (Ferris & Wynne, 2001) was used to measure problem gambling with a sum of 3 or more regarded as problem gambling. The Kessler 6 (Furukawa, Kessler, Slade, & Andrews, 2003) was used to assess mental health with a cut-off at 9 for reduced mental health. Alcohol consumption was meas-

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ured with a short form of AUDIT (Reinert & Allen, 2002) adopted from the Swedish National Public Health Survey.

Statistical analysis was carried out in SPSS 22.0 using Pearson's Chi-Square test of Independence (or Fisher's Exact test when the requirements or expected frequency were not met for Pearson's Test), Mann-Whitney U-test and logistic regression. P-values below 0.05 were regarded as significant. The significance level was adjusted for multiple testing using the Bonferroni correction.

Results

The clusters and their gambling habits

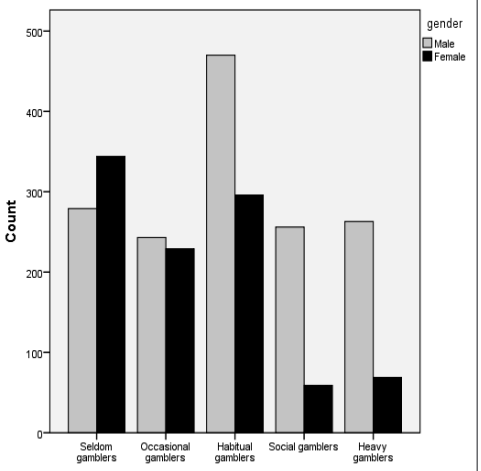
The five clusters were called *Seldom Gamblers, Occasional Gamblers, Habitual Gamblers, Social Gamblers* and *Heavy Gamblers* based on their gambling characteristics.

As Figure 3 shows, Seldom Gamblers is the only group with a female majority, while the gender distribution of the Occasional Gamblers is almost equally male and female. Habitual Gamblers is the largest group of gamblers and has a male majority. Both Social Gamblers and Heavy Gamblers, the two smallest groups, spend substantial time gambling and participate in many forms of gambling. Most of the members of these two clusters are men.

Table 2 presents information about rates of participation in different gambling activities by cluster and gender. Even though only gambling participation was used to form the clusters, there are significant differences between men and women within the clusters when it comes to which games they played.

Seldom Gamblers participate in only a few different gambling activities. They have all bought lottery tickets at some time the past year, but only about a third have done so monthly, and some of them gamble on horses, bingo or casino games but none at number games, sports games or betting, gambling machines or poker. More men than women in this group gamble on horses. It may be merely a coincidence that all Seldom Gamblers who gambled on horses did so monthly, and this also applies to those who became dropouts in EP2 and EP3.

Figure 3: Gender distribution in gambling clusters.



Occasional Gamblers participate in all forms of gambling except poker. Female Occasional Gamblers participate more often in bingo and lotteries, although this difference disappears when it comes to monthly participation. The male Occasional Gamblers are more involved in sports betting.

Habitual Gamblers participate in all types of gambling and they bet more frequently on horses and number games compared to any other cluster. Female Habitual Gamblers are significantly more likely to gamble on bingo, lotteries and gambling

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Table 2: Gambling habits of the gambling clusters in Sweden in 2008. Gambled past year and Gambled monthly past year by gender in percent.

	Seldom Gamblers (n=623)		Occasional Gamblers (n=472)		Habitual Gamblers (n=766)		Social Gamblers (n=315)		Heavy Gamblers (n=332)	
	Past year	Monthly	Past year	Monthly	Past year	Monthly	Past year	Monthly	Past year	Monthly
Horses	6.1	6.1	9.1	3.6	49.7	20.5	3.8	1.3	35.5	19.3
Men	9.7	9.7	8.6	4.5	52.1	26.6	4.3	1.6	36.1	20.9
Women	3.2	3.2	9.6	2.6	45.9	10.8	1.7	(-)	33.3	13.0
P-value	**.001**[a]	**.001**[a]	.716[a]	.267[a]	.096[a]	**.001**[a]	.704[b]	.334[b]	.778[a]	.140[a]
Bingo	1.1	0.3	5.1	0.2	5.5	0.9	0.6	-	14.8	3.6
Men	0.7	-	2.1	-	3.0	0.2	0.4	-	12.5	2.7
Women	1.5	0.6	8.3	0.4	9.5	2.0	1.7	-	23.2	7.2
P-value	.468[b]	.505[b]	**.002**[a]	.485[b]	**<.001**[a]	**.015**[b]	.340[b]		**.027**[a]	.138[b]
Number games	-	-	4.2	1.1	85.1	46.9	1.9	1.0	41.9	22.0
Men	-	-	3.7	0.4	86.2	51.9	2.3	1.2	44.1	24.3
Women	-	-	4.8	1.7	83.4	38.9	-	-	33.3	13.0
P-value	-	-	.553[a]	.204[b]	.302[a]	<.001[a]	.598[b]	1.00[b]	.106[a]	.044[a]
Sports and betting	-	-	33.3	10.0	29.0	14.1	29.8	8.9	56.0	34.9
Men	-	-	45.3	16.0	39.4	20.9	31.6	10.2	63.1	38.8
Women	-	-	20.5	3.5	12.5	3.4	22.0	3.4	29.0	20.3
P-value	-	-	**<.001**[a]	**<.001**[a]	**<.001**[a]	**<.001**[a]	.146[a]	.100[a]	**<.001**[a]	**.004**[a]
Lotteries	100	36.0	54.2	18.9	73.5	45.3	52.1	12.1	77.7	47.6
Men	100	38.7	48.1	18.9	69.8	44.0	50.8	11.7	76.4	44.9
Women	100	33.7	60.7	18.8	79.4	47.3	57.6	13.6	82.6	58.0
P-value	-	.197[a]	**.006**[a]	.966[a]	**.003**[a]	.378[a]	.343[a]	.696[a]	.272[a]	.052[a]
Gambling machines	-	-	45.3	1.7	3.3	0.8	24.1	0.6	54.5	14.8
Men	-	-	44.9	2.1	2.1	0.4	24.2	0.8	53.2	15.2
Women	-	-	45.9	1.3	5.1	1.4	23.7	-	59.4	13.0
P-value	-		.828[a]	.725[b]	**.026**[a]	.213[b]	.937[a]	1.00[b]	.358[a]	.652[a]
Poker	-	-	-	-	3.7	1.6	100	18.7	56.3	30.4
Men	-	-	-	-	4.3	1.9	100	19.5	61.2	34.2
Women	-	-	-	-	2.7	1.0	100	15.3	37.7	15.9
P-value	-		-		1.00[a]	.328[a]	-	.448[a]	**<.001**[a]	**.003**[a]
Casino games	0.2	0.2	0.8	-	1.7	-	12.7	1.6	76.8	9.3
Men	-	-	1.2	-	2.3	-	15.2	2.0	77.9	10.6
Women	0.3	0.3	0.4	-	0.7	-	1.7	-	72.5	4.3
P-value	.367[a]	1.00[b]	.624[b]		.082[a]		**.005**[a]	.588[b]	.337[a]	.109[a]

[a] Pearson's Chi-Square Test; [b] Fisher's Exact Test

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machines compared to male Habitual Gamblers who are instead more involved in sports betting and monthly betting on horses.

All of the Social Gamblers played poker in EP1. Male Social Gamblers were more likely to play casino games compared to the female Social Gamblers but there were no other gender differences in this cluster.

Heavy Gamblers play more bingo, sports, gambling machines and casino games than the other clusters. Female Heavy Gamblers play significantly more bingo than the males, and the male Heavy Gamblers are more involved in sports and poker overall and on a monthly basis.

Demographic differences between and within the clusters

In addition to gender, the clusters differ significantly in other demographic aspects. Table 3 shows significant differences between the clusters in relation to age, being born in Sweden or not, living in one of the three largest cities in Sweden, educational attainment and family situation. There are also significant differences between men and women within the clusters.

The Seldom Gamblers have the largest variation in age among the clusters. The male Seldom Gamblers are significantly older and much more likely to be born in Sweden compared to the female Seldom Gamblers. A majority of the female Seldom Gamblers are single while the majority of male Seldom Gamblers are married.

The Occasional Gamblers are on average younger than the Seldom Gamblers. The male and female Occasional Gamblers are similar apart from country of birth. This cluster has the lowest proportion of men born in Sweden (82%), but the proportion of women born in Sweden in this cluster is significantly lower (70%) compared to the men. More than half of this group are single and without children with no significant difference between men and women.

The Habitual Gamblers are the oldest on average, and the male Habitual Gamblers are on average older than the female Habitual Gamblers. Male and female Habitual Gamblers also differ significantly with regard to country of birth, with a higher proportion of men born in Sweden in this cluster. There are also significant differences in marital status and family situation. More female Habitual Gamblers were single compared to the men.

The Social Gamblers are on average the youngest across the five clusters. Gamblers in this group are the most likely to be born in Sweden (91%), and a majority of the members of this cluster have only primary education, which can be partly explained by their younger median age. A clear majority of the Social Gamblers are single without children; there is no significant gender difference within the group.

In terms of gender, the Heavy Gamblers differ most significantly in regard to country of birth: the female Heavy Gamblers include the lowest proportion born in Sweden (68%) compared to 89% of male Heavy Gamblers born in Sweden. The female Heavy Gamblers also have a significantly lower level of education compared to the men.

Gambling and gambling problems

Figure 4 shows that, across the three waves of the study, overall gambling decreased in all of the clusters with a similar pattern of reduction apparent among men and women in the same cluster except for Heavy

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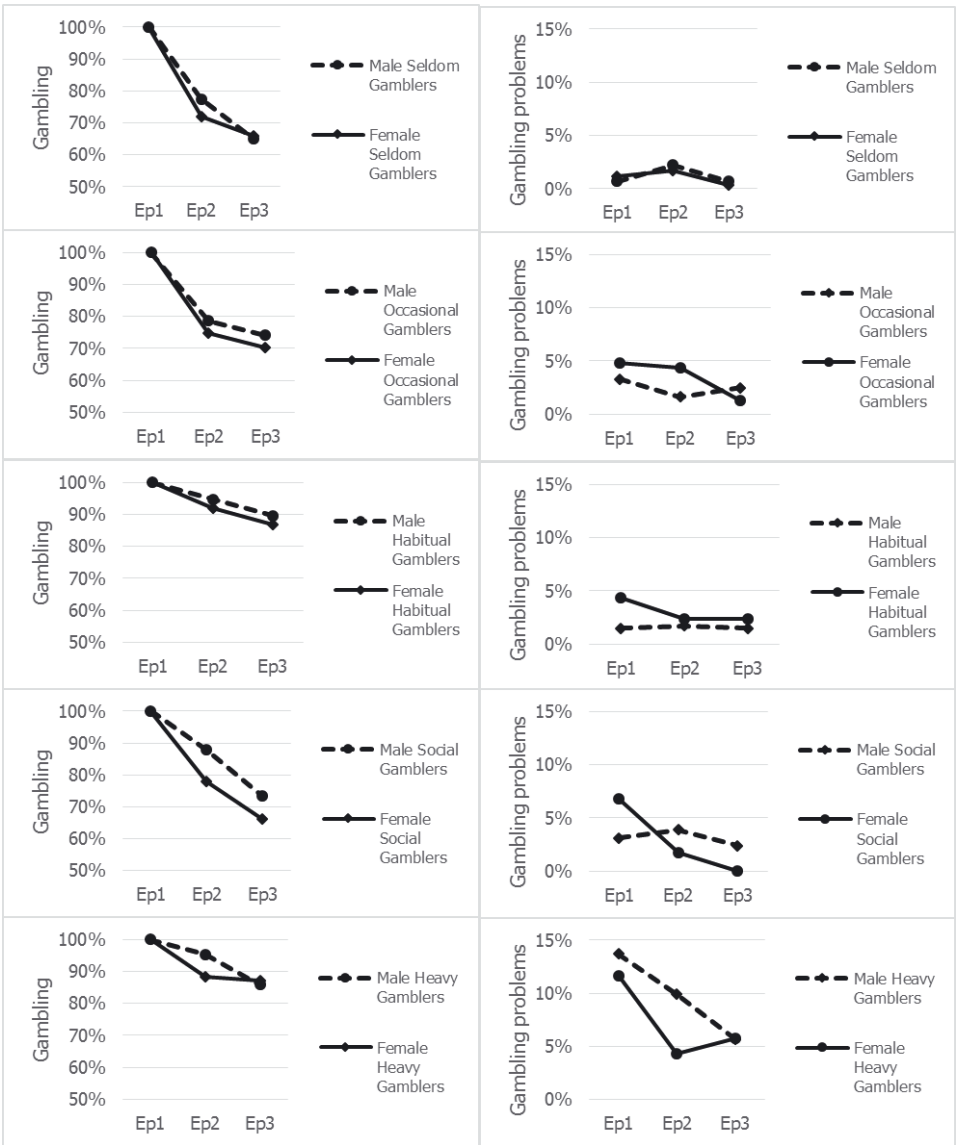
Table 3: Demographics of gambling groups in Sweden in 2008

Demographic Variable	Category		Seldom Gamblers	Occasional Gamblers	Habitual Gamblers	Social Gamblers	Heavy Gamblers	P-value
Age in EP1	Median		35	24	54	19	28	<.001[c]
		Men	48	24	56	19	28	
		Women	31	24	45	19	28	
	Mean (sd)		42[A,B,D,E] (21.0)	31[A,C,D] (17.5)	51[A,B,D,E] (17.8)	23[A,B,C,D] (9.9)	31[A,C,D] (12.9)	<.001[d]
		Men	48 (22.0)	33 (19.7)	54 (14.4)	23 (8.5)	31 (12.7)	
		Women	38 (19.1)	29 (14.7)	47 (17.7)	24 (14.5)	32 (13.7)	
	Min		16	16	16	16	16	
		Men	16	16	16	16	16	
		Women	16	16	16	16	16	
	Max		84	84	84	82	78	
		Men	84	84	84	67	78	
		Women	84	78	82	82	71	
	P-value[b]		**<.001**	.499	**<.001**	.848	.873	
Country of birth	Sweden		84.2[B,D]	76.3[A,C,D,E]	83.7[B,D]	90.8[A,B,C]	84.9[B]	<.001[a]
		Men	91.0	82.3	89.1	91.4	89.4	
		Women	78.5	69.9	75.0	88.1	68.1	
	P-value[a]		**<.001**	**.002**	**<.001**	.433	**<.001**	
Residence	Big Cities		16.5	19.3	13.4[D]	20.9[C]	13.3	.006[a]
		Men	13.6	17.7	12.3	20.3	12.5	
		Women	18.9	21.0	15.2	22.0	15.9	
	P-value[a]		.078	.369	.258	.768	.459	
Highest education level		Primary	30.0[B,C,D]	39.0[A,C,D,E]	23.6[A,B,D]	54.0[A,B,C,E]	19.6[B,D]	<.001[a]
		Secondary	34.6[C,D]	35.3[C,D,E]	46.9[A,B,D]	21.5[A,B,C,E]	55.5[A,B,D]	
		University	35.4[B,D,E]	25.7[A]	29.5	24.4[A]	24.8[A]	
	Men	Primary	30.5	38.6	25.7	53.4	15.5	
		Secondary	37.1	36.4	45.6	20.9	59.3	
		University	32.4	25.0	28.7	25.7	25.2	
	Women	Primary	29.6	39.5	20.3	56.9	35.3	
		Secondary	32.5	34.1	48.8	24.1	41.2	
		University	37.9	26.5	30.8	19.0	23.5	
	P-value[a]		.324	.861	.237	.547	**.001**	
Marital & family situation		Single	41.7[B,C,D]	57.5[A,C,D,E]	26.6[A,B,D,E]	74.8[A,B,C,E]	46.2[B,C]	<.001[a]
		S w children	5.0[D]	2.8	3.7	1.3[A]	3.6	
		Married*	35.5[B,C,D]	21.9[A,C]	47.2[A,B,D,E]	16.9[A,D]	27.2[C,D]	
		M w children	17.8[D]	17.8[D]	22.5[D]	7.0[A,B,C,E]	23.0[D]	
	Men	Single	35.5	58.3	22.9	74.5	48.3	
		S w children	2.5	1.2	0.6	1.2	3.0	
		Married*	44.4	24.4	53.5	16.9	25.5	
		M w children	17.6	16.1	22.9	7.5	23.2	
	Women	Single	46.8	56.8	32.4	76.3	38.2	
		S w children	7.0	4.4	8.4	1.7	5.9	
		Married*	28.2	19.2	37.2	16.9	33.8	
		M w children	18.0	19.7	22.0	5.1	22.1	
	P-value[a]		**<.001**	.091	**<.001**	.918	.284	

[a] Pearson's Chi-Square Test; [b] Mann-Whitney U; [c] Kruskal-Wallis Test; [d] ANOVA; *Married includes cohabiting; [A,B,C,D,E] Marks significant difference to another cluster. Results are based on two-sided tests with significance level .05. Tests are adjusted for all pairwise comparisons within a row using the Bonferroni correction.

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Figure 4: Gambling and problem gambling over time.



Gamblers (P=.043) and Social Gamblers (P=.047). In EP2, female Heavy Gamblers and Social Gamblers were less likely to gamble compared to the men in the same clusters. These differences then disappeared in EP3. Gambling participation was then 85–90% among Heavy Gamblers and Social Gamblers and 65–75% in the other clusters.

Figure 4 also shows that the proportion of problem gamblers, measured as PGSI 3+, differed significantly between the clusters

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Table 4: Odds ratios (OR) with 95% confidence intervals for problem gambling at waves 1–3.

	Seldom Gamblers	Occasional Gamblers	Habitual Gamblers	Social Gamblers	Heavy Gamblers
Ep1	1.00	4.3 (1.7 – 10.9)	2.8 (1.1 – 6.9)	4.1 (1.5 – 11.0)	15.7 (6.6 – 37.3)
Ep2	1.00	1.6 (0.71 – 3.4)	1.0 (0.45 – 2.2)	1.8 (0.80 – 4.2)	4.9 (2.5 – 9.7)
Ep3	1.00	4.0 (1.1 – 14.9)	3.8 (1.1 – 13.4)	4.0 (1.0 – 16.2)	12.5 (3.7 – 42.7)

(P<.001) but was not generally significantly different between male and female gamblers within the same cluster. Male and female Habitual Gamblers differed, with a higher proportion of problem gambling among the women in EP1 (P=.019). However, this difference disappeared in the following waves. The Heavy Gamblers continued to have a higher proportion of problem gamblers in EP3 than did the other clusters (P<.001).

Odds ratios calculated by logistic regression with Seldom Gamblers as the reference category at each wave of data collection are presented in Table 4. The odds for problem gambling, defined as PGSI 3+, are significantly higher for all other clusters and in particular the Heavy Gamblers at baseline (Habitual Gamblers OR=2.8 (p=.030), Social Gamblers OR=4.1 (p=.005), Occasional Gamblers OR=4.3 (p=.002), Heavy Gamblers OR=15.7 (p<.001)). One year later, in EP2, there is only a significant difference between the Seldom Gamblers and the Heavy Gamblers in regard to problem gambling rates. The OR for the Heavy Gamblers is then 4.9 (p<.001). Two years later, the odds are again significantly higher, around 4.0 for Occasional Gamblers (p=.038), Habitual Gamblers (p=.035) and Social Gamblers (p=.051) but 12.5 for Heavy Gamblers (p<.001). Gender was originally included in the models but proved to be insignificant once the cluster variable was included as a factor. We also tested for interactions between gender and cluster but found none at any point in time.

Discussion

Our results show that gambling remains gendered in Sweden and that there are also gender differences in gambling within the gambling clusters. This is true even though the gambling groups are based on gambling participation patterns and not on demographic characteristics. In particular, men are more likely to gamble on horses and sports, games that are traditionally more common among men. In contrast, women are more likely to gamble on bingo and lotteries, which have traditionally attracted female gamblers.

Men and women of the Social Gamblers group have the most equal gambling patterns, while the gender differences are greatest among Habitual Gamblers. The Social Gamblers are on average the youngest group of gamblers, while the Habitual Gamblers are on average the oldest group. We also noted similarities between the Habitual and Heavy Gamblers in several aspects such as the development of their total gambling participation and that few of them seem to live in the larger cities compared to the other groups. The Habitual Gamblers as a group are older than the Heavy Gamblers, but the similarities suggest that Heavy Gamblers may become Habitual Gamblers as they grow older. All

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these similarities and differences between the clusters suggest that gender differences in gambling may change in the years to come or that we are heading for a change and equalisation in how men and women gamble. There are also attempts to attract women to more traditional male gambling forms. One example is Harry Boy, a lottery based on the results from horse races. There are also online casinos, unregulated in Sweden but directed towards Swedish women.

We expected that women involved in more serious gambling and thereby participating in what has traditionally been regarded as masculine behaviour would be more persistent in their gambling than men. However, this was not confirmed. This can perhaps partly be explained by the fact that women and men among the Heavy Gamblers still mainly gamble according to traditional gendered patterns: women gamble more on such games as bingo and men more on sports and card games. We found that gambling participation decreased in all clusters and in a similar way for men and women within the same cluster. The general decrease in participation in gambling in Sweden has occurred in other jurisdictions even while the total money spent on gambling increases (Williams, Volberg, & Stevens, 2012). The development of gambling problems is also more or less equal for men and women within the same cluster. Thus, although men and women seem to gamble differently, even within the same cluster, the changes that they experience over time tend to be similar within the same cluster.

Gender as a term is used to stress the social, cultural and historical constructions of sex (Wamala & Lynch, 2002). The Swedish Research Council conceptualises three categories of research in relation to gender: sex/gender-blind research, gender research and sex/gender difference research. Gender research is defined as research "with a gender perspective so strong that gender is in the center of the analysis and the article entirely connects to theories and methodologies that have been developed within the field of knowledge". Sex/gender difference research is defined as research that includes men and women and describes results both for men and women (The Swedish Research Council, 2007). The aim of this paper was to open up a gambling study for gender analysis, and our results underscore the importance of including a gender perspective in research on gambling. However, this article falls more in the area of sex/gender difference research, as we do not perform a gender analysis even though we identify important differences and commonalities between men and women.

A gender perspective recognises conditions under which men and women live with regard to power, resources, divisions of labour and leisure as well as construction of femininities and masculinities (Svensson, 2013). Even though the use of men and women as quantitative analytic categories (as in this paper) is a narrower perspective than performing a gender analysis, this approach can provide a new understanding of the gendered context of gambling, which has value, for example, in the development of prevention efforts.

Limitations

This study is based on a subset from a larger cohort, namely the Swelogs cohort, originally a random sample from the Swedish

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population. Only those who had gambled in the past year at EP1 and then also participated in EP2 and EP3 are included in the analysis. There are analytic methods that could have been used to include also those with incomplete data but we chose to analyse only the complete cases in order to have exactly the same groups to compare at the different time points. Nor did we consider imputations, as almost half of the selected group would have been imputed. This would have led to false levels of significance and power. The positive side of the dropouts is that the subset is shrinking towards the proportions of the general population, as factors related to the oversampling also are related to dropout.

Calibration weights, adjusting for unequal sampling probabilities and different attrition rates, are available for the entire data set at the different measurement points, but these are mainly meant for estimation in the whole population and are less well suited for a subset like this. We have therefore not used any weights when analysing our data.

Conclusion

Cluster analysis based on gambling participation can be used as a tool to identify general types of gamblers with different risk levels. Once this is done, however, it is important to consider differences within the general groups and adjust prevention measures to different target groups.

In considering the gambling clusters in Sweden, we have identified gender differences in the types of gambling even within clusters based on gambling participation. While men and women gamble differently, their total experience of gambling still seems to be equivalent as is the trajectory of how their gambling problems develop. There are also socio-demographic differences between men and women within the clusters. All these differences need to be taken into consideration when preventive actions or messages are created. It is possible that separate preventive messages need to be crafted for men and women even when their overall gambling participation is similar.

Looking at individuals with similar gambling patterns is an alternative to the more traditional approach of looking at individuals who participate in different types of gambling where one gambler may participate in more than one type of gambling and thereby affect the analytic results in more than one category. We believe that more research on the complex patterns of gambling in populations is needed to better explain why some gamblers experience gambling problems and others do not.

Declaration of interest None.

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