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RESEARCH REPORT

The Dutch instant lottery: prevalence and correlates of at-risk playing

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Abstract

After a long and contentious political debate, the instant lottery was introduced in the Netherlands in 1994. One of the conditions for allowing the introduction was that an evaluation study should be conducted with regard to possible negative side effects of the instant lottery in terms of excessive playing or addiction. This article reports on the main results of this evaluation study. In a random sample of 4497 instant lottery players, at-risk players were differentiated from recreative players on the basis of level of involvement in the instant lottery, impaired control and the experienced negative consequences of playing. Of the sample, 4.1% could be classified as an at-risk player. Actual problems resulting from playing in the instant lottery were experienced by 0.7% of the players. At-risk players and recreative players did not only differ substantially in their playing behaviour, but also with regard to their socio-economic background, playing motivation, participation in other games of chance, and involvement in alcohol use and use of marijuana. To summarize, at-risk players were more likely to come from a poor socio-economic background, to play the instant lottery with a negative playing motivation, to be heavily involved in other forms of gambling, to have used marijuana and to drink alcohol excessively.

Introduction

In the Netherlands, as in many other countries, the availability of legalized gambling opportunities has increased substantially during the last decades. Until recently, the Dutch legal gambling market consisted of several traditional passive lotteries, nine casinos, slot machines in amusement arcades and gambling halls as well as in many catering establishments, lotto games, soccer pools, bingo, horse betting and numerous prize contests.

With the increased supply of gambling opportunities, there has also been a substantial rise in the number of people who participate in gambling. For example, the number of visitors to casinos increased from 1.3 million in 1986 to nearly 4 million in 1992 (Dutch Council for the Casino Games, 1992), whereas the turnover of the Dutch State Lottery increased from 20 million Dutch guilders in 1952 to 687 million guilders in 1992 (van 't Veer, Moerland & Fijnaut, 1993). Paralleling these developments, the

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number of gamblers who sought treatment for gambling problems has increased considerably during the past years. For example, registration data from the Dutch Consultation Bureaus for Alcohol and Drugs show a rise in admissions for primary gambling problems from 1600 in 1988 to 6800 in 1993 (Ladis, 1993).

Despite these indications of both a rapidly growing market and increase in treatment admissions, little is known about the prevalence of gambling problems and gambling addiction in the Netherlands. Estimates vary considerably, depending on both the game and segment of the population under investigation, and on the definition used to characterize problematic gambling. Concerning problematic gambling in general, prevalence estimates in the Dutch general population range from 0.13% (Hermkens & Kok, 1988), 0.25% (Kingma, 1993), 0.94% (Janssens, 1988) to 2.5% (Kerssemakers, 1992). However, based on the differences in definitions used in these studies ("excessive gambling", "very regular gambling", "pathological gambling", etc.), van den Brink *et al.* (1994) conclude that the actual prevalence of problematic gambling will most probably be in the range from 0.25% to 0.76%.

With regard to certain segments in the population, prevalence estimates of problematic gambling have been found to be consistently higher among (in particular male) youngsters (2–4% of those in the age range of 12–18 years; Camps, Verhagen & Wulms, 1992; van der Most & Knibbe, 1993; Korf & van der Steenhoven, 1993) than in the general population. Young players on slot machines have particularly been found to comprise an at-risk group; prevalence estimates in this group range from 4% (Laeijendecker-Burger, Kroesbergen & Wassenaar, 1991) to as much as 11% (van der Most & Knibbe, 1993). In addition (excessive) players on slot machines constitute the greater majority of those applying for treatment for gambling problems in the Netherlands (90%; Ladis, 1993).

Concerning the various forms of gambling, there has been an increasing awareness that certain characteristics of the game itself play an important role in the development and continuation of problematic gambling. Such characteristics include continuity versus discontinuity ("short odds" versus "long odds"), session dur-

ation, variability in timing, stake size and payouts and the extent to which the game generates an illusion of control (Dickerson, 1993; Griffiths, 1993; Kingma, 1993). In addition, it has been suggested that different psychological processes may underlie the development of impaired control in different forms of gambling. For example, Dickerson (1993) argued that the subjective experience of excitement may have a more significant impact on (impaired) control in horse race betting than in slot machine playing, whereas the belief in the importance of skill—given the more limited scope for rational attributions for wins and losses in slot machine playing—may be a more important factor in slot machine playing.

In 1994, the Dutch government decided positively on the introduction of a new type of gambling game in the Netherlands: the instant (or "scratch-off") lottery. With regard to its game characteristics, several of the at-risk factors described above may also apply to the instant lottery. Probably the most important of these concerns the instant lottery's short odds character. Typically, short odds games such as slot machine playing, off-course betting, and roulette provide the opportunity to play a series of consecutive game sessions, each comprising a sequence of stake, play and outcome (winning or losing), which—in the event of losing—may lead to a pattern of "chasing" (Lesieur, 1984): after a sequence of losing the player continues the game with higher stakes. Concerning its short odds character it should be emphasized that instant lotteries differ considerably from traditional lotteries, where there is typically a considerable period of time between stake and outcome.

Other at-risk factors that may apply to the instant lottery include the wide availability and accessibility of the game (one ticket costs Dfl. 2.50 (approx US\$1.50); 2385 selling-points throughout the country), the variability of payouts and the high prices that can be won (up to Dfl. 75,000 (approx. US\$44 100)). On the other hand, the instant lottery also seems to possess low-risk characteristics, which include an unattractive ambience (the tickets are mainly sold in tobacconist's shops), the impossibility for players to alter their stake, and the unlikeliness that players think or feel that they can influence the game's outcome. Furthermore, only one of 5.8 tickets contains a price, which is a low price-

rate compared to, for example, roulette. To summarize, the game-profile of the instant lottery suggests both high-risk and low-risk characteristics.

To the decision to allow the introduction of the instant lottery in the Netherlands, the Dutch government attached various conditions, including the prohibition of selling tickets to minors (under the age of 18 years) and the realization of a nation-wide evaluation study within 2 years after the introduction of the lottery, to investigate possible negative side effects of the game in terms of excessive playing or addiction. This paper reports on the main results of the evaluation study, which was commissioned by the Dutch Ministry of Justice. To explore the risk-potential of the Dutch instant lottery empirically, the study focused on (1) the extent of excessive or at-risk playing among players in the instant lottery and (2) the characteristics that distinguish at-risk players from recreative players, in terms of background, playing behaviour, playing motivation and participation in other games of chance.

Methods

Definition and assessment

In epidemiological studies on gambling, many different—often overlapping—definitions of excessive, problematic or pathological gambling have been used. Whereas excessive gambling often refers to the mere level of involvement in gambling, the term problematic gambling is often reserved for those who experience negative consequences from their gambling. With the introduction of the DSM-III (APA, 1980), pathological gambling was labelled as a separate “mental disorder”, while its successors, the DSM-III-R (APA, 1987) and the DSM-IV (APA, 1994) placed pathological gambling among the impulse control disorders, characterized by an irresistible impulse to perform harmful acts. Most research on gambling has focused on those characterized as pathological gamblers (Lesieur & Rosenthal, 1991; Murray, 1993).

Given that the present study was conducted during the year following the introduction of the instant lottery, it was considered unlikely that addictive-like or pathological gambling behaviour specifically related to the instant lottery could develop in such a limited time-span. For example, according to Meyer (1992) there is

usually an average of approximately 3.5 years before excessive gambling behaviour is recognized as a problem by the gambler himself or his social environment. Therefore, the DSM-classification was rejected as too addiction-orientated for use in the present study. Instead, the decision was made to focus on at-risk behaviours, which typically include such measures of (impaired) control as “spent more money than planned” and “difficulty to stop or reduce gambling”.

Another issue in the development of an operational definition of at-risk playing constituted the specific focus of the study on the instant lottery. Whereas an instrument such as the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987) provides a general measure of gambling problems, our interest was primarily on those behaviours specifically related to the instant lottery (realizing that former or concurrent participation in other forms of gambling may contribute to such behaviours).

The approach that was opted for in this study was to define at-risk players in terms of their level of involvement in the instant lottery, and in terms of the occurrence of either behaviours and feelings that indicate impaired control or the presence of problems that result from playing in the instant lottery. Concerning the first measure, one would find it difficult to argue that some level of involvement (e.g. money spent, time spent) is not a necessary condition for experiencing loss of control. Furthermore, Corless & Dickerson (1989) showed that the likelihood of impaired control increases with the level of involvement in gambling: in their study, more than half of the variance in impaired control could be accounted for by level of involvement. Based on the pattern of income brackets in the Netherlands, and on the results from a Delphi study on the issue of (financial) cut-off values in relation to (recreative, at-risk and addictive) gambling (Hermkens *et al.*, 1988), the criterion for level of involvement in the definition of at-risk playing was determined as having bought at least 25 instant lottery tickets (equivalent to Dfl. 62.50; approx. US\$36.80) during the previous month.

Concerning the second component of the definition, five measures of impaired control (“at-risk indicators”) and six measures on the presence of problems (“problem indicators”) were derived from the literature (see Table 1). All the measures on impaired control have

Table 1. *At-risk and problem indicators (n = 4497)*

Indicator	% Respondents
Bought at least 25 instant tickets in the previous month	11.1
At-risk criteria	
Feeling of having spent too much money on instant tickets	6.9
Received remarks from significant others about playing too much	5.5
Difficulty with stopping or reducing playing	4.2
Concealed the purchase of instant tickets	4.2
Borrowed money in order to buy instant tickets	0.7
Meets at least one at-risk indicator	14.2
Problem criteria	
Financial problems due to the instant lottery	1.0
Social problems with partner due to the instant lottery	0.6
Psychological problems due to the instant lottery	0.7
Social problems with others (than partner) due to the instant lottery	0.2
Problems at work or at school due to the instant lottery	0.1
Legal problems due to the instant lottery	0.1
Meets at least one problem indicator	1.8
At-risk instant lottery players	4.1
Problem instant lottery players	0.7

been previously used as standard items in gambling research (APA, 1980, 1987, 1994; Lesieur & Blume, 1987; Hraba, Mok & Huff, 1990; Dickerson, 1993), but were adapted to the specific context of participating in the instant lottery. In addition, the six problem measures informed about the subjective experience of problems in various life areas, as a consequence of participating in the instant lottery.

According to Hraba *et al.* (1990), who used comparable dimensions to describe problem gambling (i.e. gambling behaviour, impaired control over gambling and consequences due to gambling), there is some evidence that these three components represent three distinct phases in the development of problem gambling (in that gambling behaviour precedes impaired control and gambling consequences, and impaired control precedes consequences), as well as evidence that these three components are closely interconnected and overlapping. For example, people may experience the problematic consequences of their gambling as signs of losing control, thus raising the question whether impaired control represents a necessary condition for experiencing problematic consequences or may be preceded by such consequences.

Since the present study's purpose was primarily explorative—to give a description of the

extent and correlates of at-risk playing—it was decided to avoid the issue of causality between impaired control and problematic consequences by incorporating both types of measures as one (second) component in the definition of at-risk playing. In addition, analogous to the scoring-procedure suggested for the SOGS (Lesieur & Blume, 1987), where a score-range of one to four (at-risk responses) refers to the presence of "some gambling problem", a positive answer on at least one of the measures of impaired control or presence of problems was considered as indicative of at-risk playing. Thus, based on both components, an at-risk player in the instant lottery was defined in the present study as *an individual who has bought at least 25 instant tickets during the previous month and meets at least (a) one of the at-risk indicators, or (b) one of the problem indicators.*

Within this group of at-risk players, a further distinction was made between those who have—and those who have not—experienced *problems* due to their participation in the instant lottery. To describe this first group, the term *problem player* was used. Hence, a *problem player* was defined as *an individual who has bought at least 25 instant tickets during the previous month and meets at least one of the problem indicators* (see Table 1).

A structured questionnaire was developed to

collect information on the above-mentioned criteria, as well as on demographic and socio-economic background, buying and playing behaviour, buying motivation and participation in other games of chance. This questionnaire was tested extensively during a 1-month pilot phase of the study, and adapted according to the results. The final questionnaire was designed to be administered in a face-to-face interview, with a duration of 10–15 minutes.

Subjects

The total study sample consisted of 6155 buyers of instant lottery tickets, who were randomly approached for the interview from February to March 1995 at 313 randomly selected selling locations. Of these, 5831 (94.7%) were willing to answer at least two basic questions in the questionnaire (on the number of tickets bought during the previous month and presently). From this group, 813 respondents were willing to only answer these two questions. Of the remaining 5018 respondents, 422 subjects had either never bought an instant ticket before or never bought a ticket for themselves, and 99 subjects had missing values on all five at-risk indicators and all five problem indicators. The remaining sample of 4497 subjects (73.1% of the total study sample) formed the basis of the analyses in the study.

The subjects were predominantly men (59.6%), living with a partner (63.4%), Caucasian Dutch (87.3%) and employed (57.4%). Age ranged from 14 to 83 years (mean age 38.0 years); 0.7% were under the age of 18 years. Subjects bought an average of 3.3 tickets in one purchase; 66.8% bought up to three tickets and 2.4% bought 11 or more tickets in one purchase.

Results

Prevalence of at-risk playing

On the basis of the above-mentioned definition, the study sample was differentiated into a group of recreative players and a group of at-risk players. Table 1 shows the percentages of respondents in both groups that meet the various at-risk and problem criteria of the definition.

Table 1 indicates that 4.1% (186 subjects) of the sample could be classified as an at-risk player, and 0.7% (33 subjects) as a problem player. At-risk behaviours were displayed by 14.2% of the subjects. Actual problems as a

result from playing in the instant lottery were experienced by 1.8%. From the at-risk indicators, the item concerning "spending too much money" was answered positively most often (6.9%). From the problem indicators, financial problems resulting from playing in the instant lottery was mentioned most often. Analyses showed furthermore (not mentioned in Table 1) that all subjects who had bought at least 25 tickets and met at least one of the problem criteria also met at least one of the at-risk criteria. Conversely, 17.7% of those who had bought at least 25 tickets and met at least one of the at-risk criteria also met at least one of the problem criteria. This indicates that for 82.3% of these subjects, although displaying at-risk behaviour, playing in the instant lottery did not (yet) lead to problems. Figure 1 presents an overview of the rates pertaining to various aspects of the definition of at-risk player and problem player.

Background characteristics of at-risk players

Recreative players and at-risk players were compared on demographic and socio-economic variables. The results of this comparison are shown in Table 2.

From the variables compared, significant ($p < 0.01$) differences between the two groups were found for gender, ethnic background, living arrangements, employment status and income. Compared to recreative players, at-risk players were more often male (58.9% and 76.2%, respectively; $\chi^2 = 22.0$, $df = 1$, $p < 0.001$), from a non-Dutch ethnic background (12.1% vs. 27.4%; $\chi^2 = 38.0$, $df = 1$, $p < 0.001$), living alone (22.8% vs. 31.2%; $\chi^2 = 10.0$, $df = 2$, $p < 0.01$), unemployed (7.0% vs. 13.0%; $\chi^2 = 15.2$, $df = 4$, $p < 0.01$), and in a low income category (26.0% vs. 33.7%; Mantel-Haenszel $\chi^2 = 6.7$, $df = 1$, $p < 0.01$).

Conversely, the proportion of at-risk players was more than twice as high among men (5.3%) than among women (2.4%), and among respondents from a non-Dutch background (8.9%) compared to those with a Dutch background (3.4%). In addition, 7.5% of the unemployed respondents, compared to 3.9% of the other employment categories, appeared to be in the at-risk group. No differences were found with regard to the variables age and educational level.

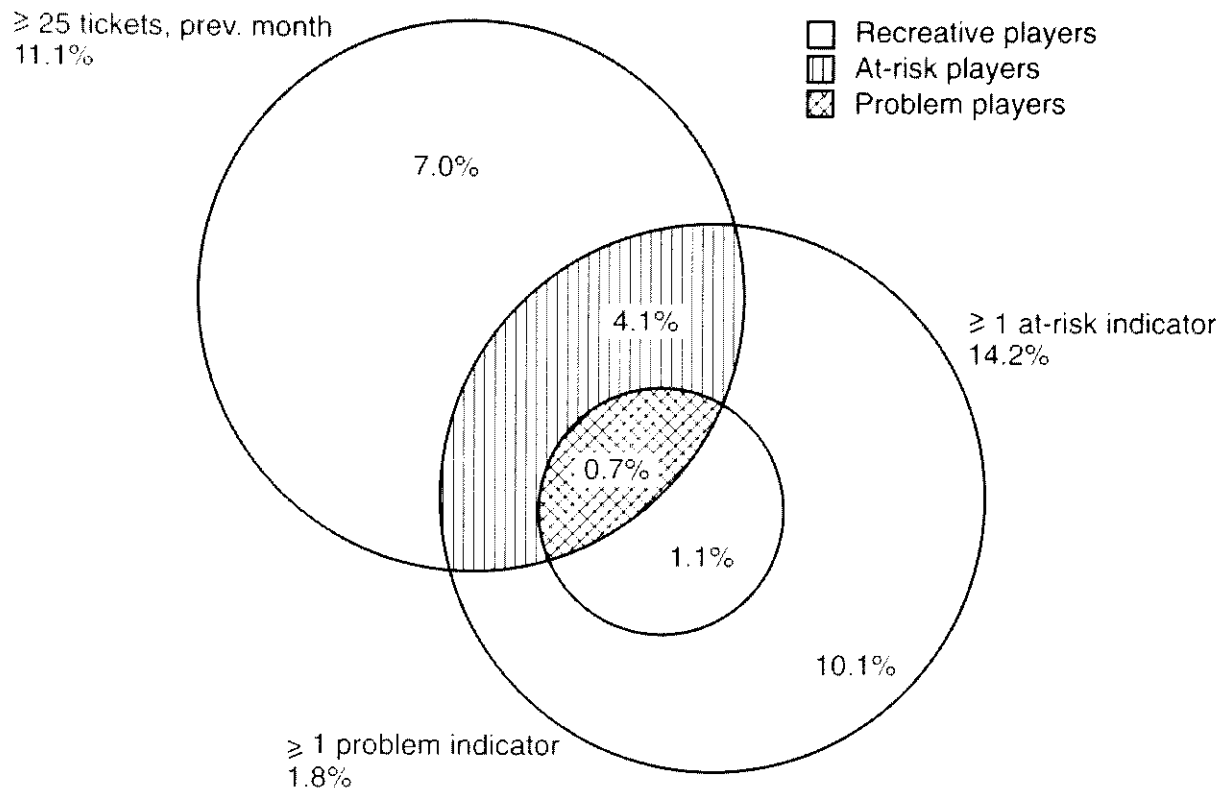


Figure 1. Recreative, at-risk, and problem players ($n = 4497$).

At-risk playing behaviour

Although differences in buying behaviour between recreational players and at-risk players are partly inherent to the cut-off criterion of “at least 25 tickets” in the definition (i.e. number of tickets bought), various aspects of buying behaviour were compared between the two groups to gain insight into the actual differences yielded by the definition. In Table 3 the means (continuous variables) and percentages (categorical variables) are given for each group.

Significant differences were found between the two groups on all investigated variables of buying behaviour. In general, at-risk players were found to buy more tickets and to buy tickets more frequently than recreational players. Although the cut-off value in the definition of “at-risk playing” was determined at 25 tickets, the mean number of tickets actually bought by at-risk players amounted to more than 60 tickets, compared to 10 tickets among recreational players ($t = 9.62$, $p < 0.001$). Since this difference may partly have been caused by extreme values, the median values were also compared. These amounted to 40 in the at-risk group versus seven among the recreational players (Mann–Whitney $U = 25325.0$, $p < 0.001$). Additional analyses showed that 12.5% of the at-risk players had bought at least 100 instant tickets during the previous month,

versus 0.6% of the recreational players ($\chi^2 = 225.1$, $df = 1$, $p < 0.001$). For 200 or more tickets, these figures amounted to 4.9% of the at-risk players, and 0.1% of the recreational players ($\chi^2 = 129.0$, $df = 1$, $p < 0.001$).

Shown at the bottom of Table 3, at-risk players appeared to actually buy their tickets less impulsively, hence more intentionally, than recreational players. In addition, their buying pattern over time appeared to be less stable: compared to recreational players, more at-risk players bought instant tickets both increasingly and decreasingly over time.

At-risk playing motivation

To assess possible differences in playing motivation between at-risk players and recreational players, the respondents were presented with nine statements on reasons for participating in the instant lottery. Table 4 shows the percentages of respondents in each group that considered the reason depicted *slightly*, *moderately* or *very important* (versus *not important*) to them.

As indicated in Table 4, only two variables showed a significant difference between at-risk players and recreational players. From the nine statements, these are the only two statements

Table 2. Background characteristics of recreative players and at-risk players (n = 4497)

Variable	Recreative players (n = 4311) (%)	At-risk players (n = 186) (%)	χ^2	p
Age				
< 18 years	0.7	1.6	0.10	NS
18–25 years	20.7	16.8		
26–35 years	25.5	27.0		
36–50 years	31.5	33.0		
51–65 years	16.6	17.3		
> 65 years	5.0	4.3		
Gender: male	58.9	76.2	22.0	< 0.001
Ethnic background: Caucasian Dutch	87.9	72.6	38.0	< 0.001
Living arrangements				
alone	22.8	31.2	10.0	< 0.01
with partner/child	63.9	52.7		
other	13.3	16.1		
Educational level				
lower	36.0	41.4	3.06	NS
middle	40.7	40.2		
higher	23.3	18.4		
Employment status				
employed (paid job)	57.4	57.8	15.2	< 0.01
retired	7.3	6.5		
disability	4.4	6.5		
unemployed	7.0	13.0		
other	24.0	16.2		
Net income				
< Dfl. 1700	26.0	33.7	6.7	< 0.01
1700–2500	28.5	30.2		
2500–3500	26.1	21.3		
> 3500	19.4	14.8		

that inform about negative aspects of playing motivation. Nearly half of the at-risk players felt that *regaining lost money* was an important reason for them to play in the instant lottery, versus 15.9% among the recreative players ($\chi^2 = 122.5$, $df = 1$, $p < 0.001$). In addition, 22.3% of the at-risk players considered *forgetting worries* an important reason, versus 7.9% of the recreative players ($\chi^2 = 46.5$, $df = 1$, $p < 0.001$).

Participation in other games of chance

To investigate the relation between participation in the instant lottery and in other games of chance, recreative and at-risk players were compared on their involvement in various games. Table 5 shows the percentages of respondents who had *sometimes*, *regularly* or *often* participated in other games of chance during the previous 6 months (versus those who had not played in these games at all during this period).

In general, at-risk players proportionally participated more in other games of chance than recreative players. Significant differences were found on five of the seven games investigated. Large differences were particularly found for the categories *slot machines*, *casino games* and *illegal lotteries* (all $p < 0.001$).

Further analyses (not shown in Table 5) showed that these differences could mainly be attributed to those who had *regularly* or *often* participated in these games. For example, whereas 23.7% of the at-risk players had played *regularly* or *often* on slot machines, only 5.0% of the recreative players had done so ($\chi^2 = 112.8$, $df = 1$, $p < 0.001$).

To explore the relation between the instant lottery and other games of chance in more detail, at-risk players and recreative players in the instant lottery were compared on the extent to which they had ever experienced (employment, social, financial, legal or psychological) problems due to their participation in other games of

Table 3. Buying behaviour of recreative players and at-risk players ($n = 4497$)

Variable	Recreative players ($n = 4311$)	At-risk players ($n = 186$)	t or χ^2	p
Number of tickets bought at moment of interview	3.2	6.5	4.28	< 0.001
Number of times tickets bought in previous week	1.7	4.8	6.37	< 0.001
Number of tickets bought in previous week	4.6	20.9	10.40	< 0.001
Number of tickets bought in previous month	10.5	62.7	9.62	< 0.001
Maximum number of tickets in one purchase	5.7	21.2	5.86	< 0.001
Maximum number of tickets on one day	6.1	22.9	6.21	< 0.001
Highest price won in the instant lottery (Dfl.)	71.6	132.8	1.74	< 0.05
Impulsive purchase tickets at moment of interview	26.0%	15.1%	10.7	< 0.001
Buying pattern				
increasing over time	3.7%	15.7%	86.3	< 0.001
similar over time	68.9%	44.3%		
decreasing over time	27.3%	40.0%		

chance. Results showed that significantly more at-risk players than recreative players (13.0% vs. 3.5%; $\chi^2 = 42.7$, $df = 1$, $p < 0.001$) had ever experienced such problems.

Problem players versus at-risk players

As described in the "methods" section, at-risk players were further differentiated into those who had ($n = 33$)—and those who had not ($n = 153$)—experienced problems due to their participation in the instant lottery. To examine their characteristics, both groups were compared on the same variables that were subject of investigation in the previous paragraphs. Given the small size of the group of problem players ($n = 33$), the results from the comparison between problem players and at-risk players without problems should be interpreted with caution.

No differences were found between the two groups on any of the background variables. Concerning the variables on playing behaviour, the maximum number of instant tickets ever bought in one purchase appeared to be significantly higher among problem players (average of 32.2 tickets) than among non-problem players (average of 18.9 tickets; Mann-Whitney $U = 1976.0$, $p < 0.05$). Thus, from recreative players via at-risk players without problems to problem players there is a stepwise increase on this variable from 5.7 tickets to 18.9 tickets to 32.2 tickets, respectively.

With regard to the variables on playing motivation, a significant difference was found on the

item "I buy instant tickets to regain money that I lost before". This motivation was considered *slightly*, *moderately* or *very important* (versus *not important*) by 78.8% of the problem players, and by 39.3% of the at-risk players without problems ($\chi^2 = 16.9$, $df = 1$, $p < 0.001$). Again, there is a stepwise increase on this variable from recreative, at-risk to problem players of 15.9% via 39.3% to 78.8%, respectively.

With respect to other games of chance, problem players reported to have participated significantly more in casino games (43.8%; $\chi^2 = 4.6$, $df = 1$, $p < 0.05$) and in illegal lotteries (33.3%; $\chi^2 = 4.6$, $df = 1$, $p < 0.05$) than at-risk players without problems (25.0% and 16.9%, respectively). In addition, significantly more (instant lottery) problem players had experienced problems due to other games of chance than at-risk players without problems (42.4% vs. 6.6%; $\chi^2 = 30.6$, $df = 1$, $p < 0.001$).

Co-occurrence of at-risk playing and other at-risk habits

To assess the co-occurrence of at-risk playing in the instant lottery and other at-risk (addictive-like) habits, an in-depth interview on the use of alcohol, tobacco and marijuana was held in a subsample of 72 recreative players and 47 at-risk players, derived from the larger sample used in the prior analyses. Results from the χ^2 analyses indicated that considerably more at-risk players meet the definition of "excessive" to "very excessive" alcohol use (Garretsen, 1983) than

Table 4. Differences in playing motivation (n = 4497)

Variable	Recreative players (n = 4311) (%)	At-risk players (n = 186) (%)	χ^2	p
I buy instant tickets:				
• To win money	89.6	92.9	2.13	NS
• Because I want to make a bet once in while	85.3	88.0	0.98	NS
• Because I think it is fun	81.2	77.2	1.74	NS
• Because it is exciting	81.1	79.1	0.44	NS
• Out of curiosity	68.1	61.0	4.01	NS
• Because they are cheap	47.3	48.1	0.04	NS
• To support a charitable cause	36.5	37.9	0.15	NS
• To regain money that I lost before	15.9	48.0	122.5	< 0.001
• To forget my worries for a moment	7.9	22.3	46.5	< 0.001

recreative players (38.3% vs. 15.3%; $\chi^2 = 8.2$, $df = 1$, $p < 0.01$). In his study on problem drinking, Garretsen defined the group of very excessive alcohol users as those who have drunk six or more alcoholic beverages at least five times a week, or at least 21 days a month. Excessive drinkers were defined as those who (a) have drunk six or more alcoholic beverages three or four times a week, or nine to 20 days a month, or (b) have drunk four to five alcoholic beverages at least 21 days a month. In addition, significantly more at-risk players than recreative players had actually scratched an instant ticket under the influence of alcohol or drugs (12.7% vs. 1.4%; $\chi^2 = 6.7$, $df = 1$, $p < 0.05$). No differences between the two groups were found with respect to the use of tobacco. However, about twice as much at-risk players had ever used marijuana compared to recreative players (44.7% vs. 22.2%; $\chi^2 = 6.7$, $df = 1$, $p < 0.01$).

Discussion

Data have been presented on various aspects of risk-potential of the Dutch instant lottery. Given the fact that the Dutch instant lottery was introduced only 9–10 months before the data collection phase in this study, the results should be interpreted within the framework of studying a new phenomenon that in various ways may not yet have fully developed or stabilized. An important consequence of this recent introduction for this study has been the focus on at-risk partici-

pation instead of on addictive or pathological gambling. As indicated by many research findings, addictive or pathological gambling patterns are unlikely to develop merely in the course of only a few months (for example: Custer, 1984; Lesieur & Custer, 1984).

The findings from this study suggest that the risk-potential of the instant lottery (4.1% at-risk players) is moderate. The likelihood of at-risk playing in the instant lottery is considerably lower than that of the slot machine, which in many studies has been found to have a high risk potential (Laeijendecker-Burger *et al.*, 1991; Reelick & Lamers, 1992). Nevertheless, extrapolated to the Dutch adult population and after correction for differences between subjects in the frequency of buying tickets, the at-risk percentage suggests a total of between approximately 12 000 and 25 000 at-risk instant lottery players in the Netherlands (Meerkerk *et al.*, 1995).

This study indicates that there are several background factors that enhance the likelihood of at-risk playing in the instant lottery. Gender and ethnic background are significant factors, found in many other gambling (and other addiction) studies as well. In the present study, male at-risk players outnumbered their female counterparts by more than two to one, as is also the case for non-Dutch ethnic players compared to Caucasian Dutch players. In contrast with various studies on slot machines, young people do not seem to be specifically attracted by the instant lottery, nor do they exhibit more at-risk

Table 5. Participation in other games of chance ($n = 4497$)

Variable	Recreative players ($n = 4311$) (%)	At-risk players ($n = 186$) (%)	χ^2	p
Has during the previous 6 months participated in:				
• Lottery (Lotto, Dutch State Lottery, soccer pools, "Lucky 10", etc.)	70.5	82.8	13.1	< 0.001
• Slot machines	24.0	46.8	49.5	< 0.001
• Bingo	17.6	23.1	3.61	NS
• Gambling with friends for money (e.g. playing cards)	17.3	24.6	6.52	= 0.01
• Casino games (e.g. roulette, Black Jack)	15.2	28.3	22.5	< 0.001
• Illegal (city) lottery	6.4	19.9	48.3	< 0.001
• Other games of chance	4.0	4.9	0.35	NS

playing than others. Other socio-demographic risk-factors found include living alone, having a low income and being unemployed. Taken together, some of these factors reflect the underprivileged groups in society, who in general are blocked from the opportunity in the mainstream. Although these findings lend some support to sociological views on gambling that state that part of excessive or problematic gambling is rooted in a poor socio-economic, deprived background, it is uncertain from the data whether these factors are causes, effects, or are otherwise related to at-risk gambling.

From the motivational factors, whereas none of the positive incentives for playing in the instant lottery (e.g. "to win money", "because it is exciting") discriminated between recreative and at-risk players, both negative motives ("to regain lost money", "to forget my worries") showed a strong relationship with at-risk playing. These two motives are very similar to the factors found by Corless & Dickerson (1989) as the most significant determinants of impaired control in problem gamblers (i.e. the belief in chasing, and negative emotions such as frustration and depression). In addition, Dickerson (1993) found dysphoric mood and the presence of debts to be associated with increased persistence when losing, a factor which is clearly indicative of loss of control. Taken together, these findings point to the general importance of negative motives and emotions in the development of impaired control and addictive-like gambling behaviour: the combined effect of negative mood, and belief in (eventually) winning after a sequence of losing

may lead to a pattern of chasing the big win, being confronted with new losses, and becoming more and more preoccupied with the game.

Whereas pathological gambling is classified as an impulse control disorder in the DSM-IV, more at-risk players than recreative players in this study planned the actual purchase of instant tickets: they often already intended to buy their tickets before entering the selling point. Although the at-risk player's decision to go out and buy tickets may itself reflect—and be preceded by—a failure to resist an impulse to gamble, it is more likely that impaired control in problem gamblers is not merely a function of (lack of) impulse control, but of much more complex processes, involving both internal factors (cognitions, emotions, personality) and external factors (environmental cues, game characteristics) (Orford, 1985; Dickerson, 1993). Furthermore, whereas impaired control within an ongoing game session may result primarily from the combined effect of these factors, it may be primarily cognitive factors (expectations, beliefs about winning) that contribute to the decision to start a new game session (Dickerson, 1993).

Concerning the participation in other games of chance, the findings stress the importance of a general relationship between the level of involvement in different types of gambling. Compared to recreative players, at-risk players in the instant lottery were more likely to be heavily involved in other games of chance, and—given the recent introduction of the instant lottery—probably already were this much involved in other games *before* playing the instant lottery. Hence, for these

players the instant lottery does not seem to substitute for the other games, but is instead added to the player's gambling repertoire.

In line with these findings, this study provides additional support for a general relationship between various types of addictive-like behaviours. Both excessive alcohol use and the use of marijuana were associated with at-risk playing in this study, suggesting either a causal connection between these behaviours or the existence of an underlying dimension of "risk-taking" or "non-standard" behaviour. As others have pointed out, such a dimension may be rooted in personality (Kusyszyn, 1979; Zuckerman, 1984; Rosecrance, 1986), neurobiology (Zuckerman *et al.*, 1983; Blaszczyński, Winter & McConaghy, 1986; Roy *et al.*, 1988) and social learning (Blaszczyński, 1985; Lesieur, Blume & Zoppa, 1986; Jacobs, 1989).

Given the short odds character of the instant lottery, the general importance of the phenomenon of chasing in impaired control of gambling behaviour and the salience of buying instant tickets to regain lost money among at-risk players in this study, future research on the instant lottery should focus specifically on the occurrence of ongoing game sessions after losing, in particular in relation to the presence of negative moods prior to and/or during the session. Besides factors that contribute to impaired control, further insight is needed into specific control mechanisms that excessive or problematic players use in order to keep or regain some level of control over their gambling behaviour. Such self-regulating measures may provide important clues for prevention.

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