Are scratchcards addictive? : two-year cumulative incidence and stability of pathological scratchcard gambling among Dutch scratchcard buyers
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CHAPTER 1

GENERAL INTRODUCTION

In the last two decades scratchcards, scratchies or instant lotteries were launched in more than 40 countries. The introduction of scratchcards in the Netherlands in 1994 was preceded and accompanied by a long and often heated public debate about their potential negative side effects in terms of excessive playing. Opponents of the introduction of scratchcards referred to their structural game characteristics, and considered them potentially addictive. The most important characteristics in this respect are low threshold, short-payout intervals and “near misses”. Because of the assumed hazards, the Dutch government imposed several conditions to the introduction of this game of chance on the Dutch legal gambling market. However, the addictive potential of scratchcards in the Dutch situation had never been thoroughly assessed. The study launched in the first year of the introduction (Hendriks, Meerkerk, Oer, & Garretsen, 1997) did not allow a proper assessment of the addictive potential of scratchcards since it generally takes several years for problems to develop and people to get addicted to a game of chance (Meyer, 1992; Poppel, 1994; Jacques, Ladouceur, & Ferland, 2000). Therefore, a large socio-epidemiological study was needed to scientifically evaluate and monitor the potential negative side effects of scratchcards at the community level, in order to assess the addictive potential and the social burden of this form of gambling.

The purpose of this thesis is twofold: first, to investigate the addictive potential of scratchcards in the Netherlands (Part II), and second, to investigate some unresolved issues in the assessment of gambling problems in general. The latter includes the validation of the South Oaks Gambling Screening and the development of a new instrument to assess the severity of gambling problems, the Gambling Problems Severity Scale (Part III). Before elaborating on the twofold purpose of this thesis, it is necessary to briefly illustrate the role that gambling has played throughout history, as well as to review some important concepts in order to clarify the nature of gambling problems.

This introductory chapter (Part I) aims: (1) to describe the role of gambling from a historical perspective, (2) to define pathological gambling and to review some factors that are important in the addictive potential of different types of gambling, as well as to refer to some methodological issues in the identification and assessment of gambling problems, (3) to illustrate the situation of legalised gambling in the Netherlands, specifically with regard to scratchcards, and finally, (4) to present the aims and structure of this thesis.

THE ROLE OF GAMBLING THROUGHOUT HISTORY

Gambling is part of human nature, and as such has been found in all cultures, societies and social classes. Among other aspects, gambling combines two important elements in a person’s development and socialisation: “playing” and “taking risks”.
General introduction

There is evidence that games of chance have been around as long as civilisation itself. For example, circa 2000 BC the Egyptians were using knuckle bones painted as four-sided dice, and around 2300 BC the Chinese were already playing a sort of roulette (Becofia, 1996; Bellringer, 1999). The Greeks always played for money. It is documented that Aristoxene criticised Socrates because “he speculated, wagered money, won, quickly spent his win, and began to gamble again”. Once Plato “insulted a man who was playing dice. The other responded that he was losing his temper over a little thing, and Plato said to him: “But the habit of playing is not a little thing” (Ladouceur, Sylvain, Boutin, & Doucet, 2002, page 2). Gambling was a very popular activity in the Roman Empire. Actually, emperors like Nero or Claudius gambled excessively with dice. Evidence seems to indicate that dice were also used when the Roman soldiers raffled the clothes of Jesus Christ.

Closer to our time, there are reports of famous excessive gamblers like Columbus (1451-1506), the English king Henry the VIII (1509-47), the French scientist and philosopher Descartes (1596-1650), the French king Louis XIV (1638-1715), or even pathological gamblers like Dostoyevsky, who, in order to settle gambling debts, wrote, in less than a month, his autobiographic novel “The Gambler” –1866– (Becofia, 1996, 2003).

Gambling from reprobation to a noble status

Excessive gambling has always been perceived as morally inferior and as subversive to the social order. For this reason governments or institutions that hold powerful positions in society have tried to regulate, or even ban, gambling. Religious authorities in particular have censored gambling by considering it a vice, morally wrong and evil (Bellringer, 1999).

An important shift in the conception of gambling took place when it became associated with worthy causes, sometimes even promoted by powerful figures or institutions. Since the fifteenth century, countries like Spain, France, England or the Netherlands have used lotteries as a way of financing useful and worthy causes. There are plenty of examples of these forms of charity through history. For instance, in England, Queen Elizabeth I (1533-1603) organised a lottery for the public good and the profits were used to renovate her realm’s bridges and aqueducts (Ladouceur et al., 2002). In Italy, the proceeds derived from organised lotteries helped finance the construction of the cathedral of Milan. Since then, lotteries have been linked with charities and novel causes. Today, not only governments but also influential institutions and associations like universities or non-governmental organisations (NGOs) organise various games of chance in order to fund scientific research, to build hospitals and schools in developing countries or to help the victims of natural catastrophes and other similar causes. Throughout history, whether encouraged or prohibited, the need for humans to gamble has been exploited by both public and private organisations.

TOWARDS A DEFINITION OF PATHOLOGICAL GAMBLING

To gamble literally means betting or staking something of value on the outcome of a game or event (Encyclopaedia Britannica Online, 2003). But when does gambling become excessive or
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problemati cc  o r  eve n  pathological? Ho w  ca n  w e  defin e  pathologica l gamblin g  an d  identif y pathologica ll  gamblers? D o  al l pathologica l gambler s  follo w  th e  sam e  career  i n  th e development  o f  thei r  gamblin g  problem s  an d  do  al l form s  o f  gamblin g  hav e  th e  sam e addictive  potential? Thes e  question s  wil l b e  addresse d  i n  thi s  section.

Nowadays,,  gamblin g  i s  a  commo n  leisur e  activit y  an d  ove r  two-third s  o f  adult s engage  in  it  o n  a regular  basis. For instance, in 1998, 86% of the general adult American population had gambled at some point in their lives (National Opinion Research Center (NORC), 1999). Similarly, European studies have shown that 95% of the Swedish population participated in one or more gambling activities at some time during their lives (Volberg, Abbott, Ronnberg, & Munck, 2001), over 60% of English adults gamble every week (Griffiths & Macdonald, 1999) and a Dutch study found that more than half (55%) of the general population between 12 and 35 years of age had gambled in the preceding year (Koeter, Brink, & Niewijk, 1996). Gambling, like other potential addictive behaviours (i.e. drinking or smoking), is a socially accepted behaviour in which a minority of individuals reaches levels that disrupts social adaptation or becomes dependent. For most people, however, gambling is and remains a relaxing activity that does not carry any negative consequences. Less than 10% of the adult gamblers develop gambling-related problems (Potenza, Kosten, & Rounsaville, 2001a). They lose control over their gaming and become “addicted”. For those individuals compulsive wagering is a source of both excitement and relaxation in the short term, which, in the long term, starts to dominate their lives with all its’ negative consequences (Ladouceur et al., 2002). Such consequences significantly affect their financial, occupational, interpersonal and social areas of functioning.

Different terms have been used to describe problem gambling, including excessive (Cornish, 1978; Ladouceur et al., 2002), pathological (Moran, 1970; Lesieur & Custer, 1984), compulsive (Bergler, 1957; Gamblers Anonymous), dependent (Bellringer, 1999), addictive (Dickerson, 1977) or disordered gambling. Due to this diversity in terminology there is no uniformly accepted term to denominate gambling problems.

In 1977, the term pathological gambling (PG) was included in the International Classification of Diseases (ICD-9, World Health Organization, 1977), and in 1980, in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) as one of the impulse-control disorders not elsewhere classified (American Psychiatric Association, 1980). The DSM criteria have become the scientific standard to diagnose pathological gambling. Since the DSM-III, the criteria for this disorder have been modified on two occasions (American Psychiatric Association, 1987; American Psychiatric Association, 1994). The first modification was in response to Lesieur’s criticism (1988) that the DSM-III (1) suffered from a bias that led to an overestimation of pathological gambling in the middle-classes, (2) failed to recognise that many compulsive gamblers are self-employed, (3) excluded individuals with Antisocial Personality Disorders leading to an underestimating of the prevalence of this disorder, and (4) that its criteria did not allow for individuals who spend a disproportionate amount of time gambling but still without serious consequences. Additionally, there was a growing acceptance that gambling shares many characteristics with addictive behaviours (Lesieur, 1988; Griffiths, 1995). The American Psychiatric Association,
addictive behaviours (Lesieur, 1988; Griffiths, 1995). The American Psychiatric Association, taking these points of criticism into account, developed the DSM-III-R criteria modelled on the DSM criteria for substance abuse disorders (APA, 1987). However, Rosenthal’s study (1989) reported some dissatisfaction with the DSM-III-R criteria among treatment professionals. These clinicians advocated a new modification of the criteria for pathological gambling that would include: (1) a combination of the DSM-III and the DSM-III-R criteria, (2) the addition of “escapism” as a criterion and (3) the exclusion of individuals with a current Manic Episode. The resulting DSM-IV criteria for PG are presented in Table 1.1 (APA, 1994). As in many other disorders, the DSM-IV symptom criteria for pathological gambling are a product of clinical experience, research findings, expert group consensus, and possible cultural and political biases (Stinchfield, 2002).

Table 1.1 DSM-IV criteria for pathological gambling (APA, 1994, p. 271).

<table>
<thead>
<tr>
<th>A. Persistent and recurrent maladaptive gambling behaviour as indicated by five (or more) of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)</td>
</tr>
<tr>
<td>(2) Needs to gamble with increasing amounts of money in order to achieve the desired excitement</td>
</tr>
<tr>
<td>(3) Has repeated unsuccessful efforts to control, cut back, or stop gambling</td>
</tr>
<tr>
<td>(4) Is restless or irritable when attempting to cut down or stop gambling</td>
</tr>
<tr>
<td>(5) Gambles as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)</td>
</tr>
<tr>
<td>(6) After losing money gambling, often returns another day to get even (“chasing one’s losses”)</td>
</tr>
<tr>
<td>(7) Lies to family members, therapist, or others to conceal the extent of involvement with gambling</td>
</tr>
<tr>
<td>(8) Has committed illegal acts such as forgery, fraud, theft, or embezzlement to finance gambling</td>
</tr>
<tr>
<td>(9) Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling</td>
</tr>
<tr>
<td>(10) Relies on others to provide money to relieve a desperate financial situation caused by gambling</td>
</tr>
</tbody>
</table>

| B. The gambling behaviour is not better accounted for by a Manic Episode. |

Notwithstanding the ongoing debate about the most adequate definition and symptomatology of this disorder, which shares similarities with both impulse control disorders and substance dependence, the DSM-IV criteria for pathological gambling have
(National Opinion Research Center (NORC), 1999; Stinchfield, 2003). Therefore these criteria will be the definition of pathological gambling used in this thesis.

**Stages of the pathological gambler's career**

Although at the individual level there are many characteristics that differ from gambler to gambler, some groups seem to be more at risk of pathological gambling than others. For example, relatively high prevalence rates have been found among young adults (age group 18-29, Abbott & Volberg, 1996; Gotestam & Johansson, 2003), adolescents (Griffiths & Sutherland, 1998; Kaminer & Petry, 1999; Griffiths, 2000b; Gupta & Derevensky, 1998) and adults in mental health and substance abuse treatment (Crockford & elGuebaly, 1998; Shaffer, Hall, & Vander-Bilt, 1999; Potenza et al., 2001a). Most epidemiological surveys also reported that men are more at risk of pathological gambling than women (Tavares, Zilberman, Beites, & Gentil, 2001; Potenza et al., 2001b; Gotestam et al., 2003).

Clinical evidence suggests that there are three common stages in the development of pathological gambling: the winning phase, the losing phase and the desperation phase (Custer, 1984; Lesieur, 1984; Griffiths, 1995; Griffiths et al., 1999 & Bellringer, 1999).

**The winning phase** often occurs the first few times the individual gambles. Small wins or an early significant win lead the gambler to believe that he/she is lucky by nature and that he/she is "skilful" at this gambling activity. Several authors report that most recreational gamblers stop their gambling in this phase (Custer, 1984; Griffiths, 1995). Others, however, will continue gambling, convinced that "lady luck" is on their side. During the career of the problem gambler this winning stage may return at any time, following non-fixed reinforcement schedules, which strongly rewards and justifies their continuing gambling behaviour.

During the next stage, **the losing phase**, gamblers mainly incur losses as a result of their wagering. Yet, these losses are not experienced as such by the problematic gamblers because they have the unrealistic belief that these losses precede ultimate and total success (Bellringer, 1999). Inevitably, the losing phase is more persistent than the gambler expects and takes away all his/her resources, and the gambler needs to get money elsewhere. This phase is characterised by the so-called "chasing pattern", i.e. gambling for the "big win" that will repay all the losses and solve the problems. However, instead of "cutting their losses" gamblers get deeper and deeper into financial problems, and as a consequence other areas of functioning are also affected (Griffiths, 1995). As a result of this repetitive gambling despite losses the gambler reaches **the desperation phase** in which debts accumulate and relationship problems become acute. Bellringer (1999) reported that the trigger into desperation very often occurs when gamblers cannot cover a debt that is being requested by a third party (family member, loan shark, employer, etc.). This crisis could precipitate the gambler crossing the line into illegal behaviours in order to finance his/her gambling as the last effort to repay his/her debts. Even when a gambler has reached this desperation stage gambling may continue for several years until there are no more options left. At this point the gambler could suffer severe depression and suicidal thoughts or may be imprisoned. Usually it is during this
desperation phase that the gambler seeks professional help, often under constraint, having been urged to by family members or compelled by the legal system.

In addition to these three phases of the pathological gambler’s career, there is a fourth and final phase, the so-called rock bottom phase, as suggested by Gamblers Anonymous. During this phase excessive players continue gambling until illness, death or a successful suicide attempt ends their addictive behaviour (Bellringer, 1999). Fortunately, not all gamblers reach this rock bottom phase. Findings from experimental studies have also described an alternative fourth phase called the hopeless or giving up phase (Rosenthal, 1989; Griffiths et al., 1999). In this phase gamblers realise that “they cannot possibly recover their losses and they do not care, leading to play for play’s sake” (Griffiths, 1995, p. 9). Similar to “laboratory animals with electrodes planted in their pleasure center, they gamble to the point of exhaustion” (Lesieur & Rosenthal, 1991, pp. 14-15).

These are the phases that seem to explain the development of the pathological gambler’s career at an individual level – from social to pathological gambling. However, there are other factors that may play a role in this development. For example, scientific evidence, that will be presented next, suggests that not all forms of gambling have the same addictive potential. In other words, some games of chance are more hazardous than others. The following section explores some of the characteristics that increase a game’s addictive potential.

Game characteristics and addictive potential
Several authors have pointed to the association between the increased availability of gambling opportunities and the rise in the prevalence of gambling-related problems and pathological gambling (Lester, 1994; Hendriks et al., 1997; Shepherd, Ghodse, & London, 1998a; Wood & Griffiths, 1998; Volberg et al., 2001; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002; Götstam et al., 2003). But the term gambling denotes a heterogeneous groups of games of chance such us wagering in casinos, playing in the lotteries, horse or dog race betting, playing slot machines, card games, scratchcards, bingo, participating in internet gambling, and charity raffles. Since the 1950s, various authors have related the addictive potential of a game of chance to a number of structural characteristics of the game (Royal Commission on Gambling, 1951; Kingma, 1993; Griffiths, 1995; Pugh & Webley, 2000; DeFuentes-Merillas, Koeter, Schippers, & Brink, 2003; Dickerson, 2003). The games that allow for continuous play and have relatively short-payout intervals between stake and outcome (e.g. casino games, slot machines, scratchcards, and horse/dog racing) are particularly likely to lead to excessive gambling. These structural characteristics are believed to either induce the player to gamble or induce continued playing.

The six basic elements that are considered to increase a game’s addictive potential (Griffiths, 1995) will be discussed in more detail next. (1) The pay-off schedule and event frequency of the game, i.e. the time between the initial wager and reward (payment). A distinction is made between short and long-payout interval games. Based on this characteristic
Dickerson (1996) uses the terms continuous\(^1\) versus non-continuous or discontinuous (Dickerson, Baron, Hong, & Cottrell, 1996). The former identifies hazardous games of chance that permit a repeated cycle of stake, play and outcome (e.g. slot or fruit machines, casino games, scratchcards) and the latter characterises gambling forms such as lotteries, where there may be a period of hours, days or even months between stake and outcome. (2) \textit{The frequency of “near misses”} or failures that are close to being successful are believed to encourage future play and to induce continued gambling. Games with a high proportion of these “near misses” give a player the feeling that he/she is not constantly losing but constantly nearly winning (e.g. slot machines, roulette, scratchcards). (3) \textit{The multiplier potential} refers to whether one can gamble on only one or on a series of events; more specifically, whether the game allows for gambling at a variety of odds and/or stake levels. For example, fruit machine gamblers can choose the rate at which their wins and/or losses multiply. (4) \textit{The win probability and payout ratio}, referring to the probability that the player wins an individual bet and to the ratio of potential winnings to the gamblers’ stake, respectively. For scratchcards in the Netherlands the payout ratio in 2002 was approximately 50% and the mean win probability over the last 12 series was 20% or 26% depending whether a free scratchcard was counted as a win. (5) \textit{Game presentation, naming, sound, light and colour effects} also play a crucial role in attracting gamblers and finally, (6) \textit{the suspension of judgement}, by which the structural characteristics that temporarily dislocate the player’s financial value system (or money’s true value), such as in playing with chips instead of money at casinos, are meant.

In addition to these structural characteristics four situational features that influence the addictive potential of a game are frequently mentioned: (1) \textit{The location of the game and environmental characteristics} may attract the potential player to gamble and/or to maintain gambling. (2) Also \textit{the availability of the game in a specific area, possible membership requirements and enforcement of the gaming laws}, stipulating the availability of a specific game for a potential player, may either encourage or discourage gambling. For example, roulette in the Netherlands can only be played in casinos and access to casinos is limited to adults\(^2\). (3) \textit{The influence of advertising} presented on television, radio, in newspapers, on billboards, shops, etc., including “prime time” television shows (with popular media figures) and related news broadcasts (publicity surrounding the winning numbers and the winners). All these activities are meant to attract players and to induce them to gamble. (4) \textit{The accessibility/availability of other continuous forms of gambling}, e.g. slot machines, casinos, bets, bingo. Thus, scratchcards might be more addictive in a context where, compared with the Netherlands, access to continuous gambling forms is more restricted (DeFuentes-Merillas et al., 2003). Based on nine of these characteristics, Kingma classified the six most popular games of chance in terms of participation rates in the Netherlands (i.e. lotteries, bingo, casino games, slot machines, horse race betting and scratchcards; Kingma, 1993). Table 1.2 shows the total “Kingma-score” per game of chance. The higher the total score the higher the

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\(^1\) In this thesis we will refer to these forms of gambling as short-payout interval games.

\(^2\) In this study the term adult refers to a person who is 18 years old or older.
addictive potential. It remains yet to be proven that this so called "Kingma score" is a valid indicator of addictive potential. Nevertheless, Kingma’s classification is frequently used in the Netherlands by various key figures (policy makers, journalists, the gaming industry, etc.).

| Table 1.2 Kingma’s risk profile* of the 6 most popular Dutch games of chance (1993) |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Game characteristics**          | Lotteries       | Bingo           | Casino games    | Slot machines   | Horse racing    | Scratchcards    |
| Pay-off schedules               | -               | -               | ++              | ++              | +               | ++              |
| Stake                           | +               | -               | +               | -               | +               | -               |
| Payout ratio                    | +               | +               | -               | +               | -               | +               |
| Environment                     | -               | +               | +               | +               | -               | +               |
| Rapid event frequency           | -               | ++              | +               | +               | +               | +               |
| Prize attractiveness            | ++              | -               | +               | +               | -               | +               |
| Skill/player’s involvement      | -               | -               | +               | +               | +               | -               |
| Supervision and control         | -               | -               | +               | +               | -               | +               |
| Availability                    | +               | +               | +               | +               | +               | +               |
| Total                           | -1              | 0               | 7               | 5               | 4               | 2               |

* Risk profile = - (low risk), + (moderate risk), + (risk), ++ (high risk).

** Pay-off schedules (time between stake and game outcome); Stake (minimal amount, variation per purchase); Payout ratio (the ratio of potential winning to the gambler’s stake); Environment (and its influence in the game); Rapid event frequency (time spent per purchase and playing sequence); Prize attractiveness (amount, win probability and variation); Skill and player’s involvement (how the player can influence the outcome); Supervision and control; Availability (and accessibility).

Identification and assessment of gambling problems
As mentioned in the discussion of the development phases of pathological gambling, the majority of problem gamblers who seek treatment do so when their problem has reached a critical stage. This is the reason why the early detection and assessment of gambling-related problems is such an important issue. Reliable and valid instruments for the general population are needed to assess, monitor and evaluate the effect of existing gaming policy and new developments on the extent and character of gambling availability. Many epidemiological studies on pathological gambling have used diagnostic interviews and/or self-report screening questionnaires to estimate prevalence rates. In our opinion, the most appropriate instrument, in terms of validity, is a structured psychiatric interview like the DIS-T (Pathological Gambling Section of the Diagnostic Interview Schedule, APA 1994). However, in the case of relatively rare diseases like pathological gambling, large samples are needed to get prevalence estimates*. In this situation structured psychiatric interviews are too time consuming and too expensive. Therefore, a more cost-effective solution to estimate the prevalence of gambling problems is the use of self-report screening instruments like the South Oaks Gambling Screening (SOGS, Lesieur & Blume, 1987). A drawback is that such screening instruments

* The Se(p) is defined as V(p(1 - p)/n) and is maximised for p=.50 and becomes smaller when p becomes smaller or larger than .50. In the case of rare diseases, however, you need at least some cases to be able to make an estimate and describe the characteristics of these cases. This makes large samples necessary.
always generate misclassifications (false positives and false negatives). In the case of a low prevalence disorder like PG, even a screener with excellent specificity like the SOGS will produce a substantial number of false positives, and as a consequence will overestimate the prevalence.

A methodological solution to this dilemma is the use of a cost-effective two-stage sampling design (Cullenton, 1989; Volberg & Abbott, 1994; Abbott et al., 1996; Ladouceur, 2002; DeFuentes-Merillas et al., 2003). In the first stage, a self-report screener is used to identify people at risk of pathological gambling in a large and representative sample of the target population. In the second stage, all screener positives and a random sample of the screener negatives are given a structured diagnostic interview to assess whether or not they meet the diagnostic criteria for pathological gambling. This two-stage sampling design was applied several times in the studies reported in this thesis.

COMMERCIAL GAMBLING IN THE NETHERLANDS

Gambling has been around in Dutch society through the ages, and similar to many other countries, gambling laws were developed to canalise gambling behaviour. In the Netherlands, various government institutions are involved in the licensing and controlling of gaming. The Dutch gaming law has three main aims: (a) the prevention of pathological gambling, (b) the protection of players by assuring fair games of chance, and (c) the prevention of criminal practices by excluding illegal providers of gambling. At the national level, the departments of Justice; Economic Affairs; Finance; Public Health, Welfare and Sports, and Agriculture are involved in licensing the gaming monopolies. In addition, an independent advisory body appointed by the Crown, “Het College van toezicht op de kansspelen” (the Netherlands Gaming Control Board), advises the departments on the issue, alteration and withdrawal of the licenses of the legal gaming monopolies, as well as on the approval of their constitution and regulations. Currently, there are six legal monopolies in the Netherlands (the state lottery, scratchcards, sports pools, horse race betting, lotto and casino games) plus three charitable lotteries with exclusive rights (bankgiro lottery, postal code lottery and sponsor lottery; The Netherlands Gaming Control Board, 2004). In addition, there are approximately 35,000 slotmachines outside the casinos which are not monitored by the Netherlands Gaming Control Board.

Since the introduction of the “Wet op de Kansspelen” (“Gaming Law”) in 1964, the Dutch legal gambling market has expanded rapidly: between 1989 and 1994, for example, it grew almost nearly 75% (Meerkerk, et al., 1995). Simultaneous with the proliferation of gaming opportunities there has been an increase in the number of gamblers participating in games of chance (Hendriks et al., 1997). For the vast majority of the Dutch population gambling is a harmless recreational activity, but for some it may become problematic. Therefore, it is vital to understand any new game’s potential negative consequences to society. Such knowledge can best be obtained by an independent evaluation of the available evidence on the addictive potential of the game involved prior to its introduction. Based on
these results and in order to protect any at-risk groups, the authorities may, if necessary, adapt the existing gaming law pertaining to that particular form of gambling by imposing specific restrictions (e.g. an age limit or maximum amount per transaction). Ideally, such an empirical evaluation study should also be conducted after its introduction. Unfortunately, methodologically sound evaluation studies are rarely performed in the gambling field due to the high costs. To illustrate this fact, the process of the introduction of scratchcards in the Netherlands, as well as the conditions surrounding the introduction, will be discussed in the next section.

THE POSITION OF SCRATCHCARDS IN THE DUTCH LEGAL GAMBLING MARKET

Public debate around scratchcards
The introduction of scratchcards in the Netherlands in 1994 was preceded and accompanied by a long and often heated public debate about their addictive potential. Opponents of the introduction of this new game referred to its structural game characteristics and to Kingma's risk profile, and consequently considered it potentially addictive. Based on the structural and situational characteristics outlined in the previous section, the addictive potential of scratchcards can be considered to be moderate, i.e. higher than the risk of standard lotteries but lower than the risk associated with slot or fruit machines and casino games. The characteristics of scratchcards that might facilitate excessive gambling are their “short-payout intervals” and “low threshold” (both in terms of accessibility i.e. high availability, and costs), which may additionally motivate the player due to the psychological effect of the “near miss”. This “near miss” effect can be considered one of the main marketing strategies used by the scratchcard providers. Because of these and other similarities with fruit machines, scratchcards have been referred to as “paper fruit machines” (Griffiths, 2000a), a term with strong negative connotations, considering that fruit machines are believed to be the most addictive hazard game. In fact, in the Netherlands, the majority of the pathological gamblers undergoing treatment have problems relating to fruit machines.

Because of the potential negative side effects the Dutch government imposed several conditions on the introduction of scratchcards on the Dutch legal gambling market. A number of these regulations aimed to protect the consumers, such as the limitations on the volume of scratchcard sales per year, the number of scratchcards per customer and per transaction and the restriction of the sales to adults only. In the Netherlands, the scratchcard age ban (≥ 18 years) is quite restrictive in comparison with the sale regulations of other addictive substances like tobacco or alcohol. For example, the age ban for tobacco is 16 years. An evaluation study focusing on potential problems related to scratchcard gambling, to be conducted following the game's introduction, was also imposed. This study was carried out among a sample of 4,497 adult scratchcard buyers. In this sample 4.1% were classified as “at-risk gamblers”, defined as players that bought at least 25 scratchcards in the month preceding the assessment and met at least one “risk” or “problem” indicator (Hendriks et al., 1997). However, due to the fact that
this study was conducted within one year of the introduction of the scratchcards, no conclusions could be drawn with regard to the addiction potential since it takes on average several years for players to become addicted (Meyer, 1992; Poppel, 1994). For the same reason the prevalence estimate of “at-risk gamblers” in this study probably underestimates the “true” prevalence of scratchcard-related problems.

**Evidence from the literature**

At an international level several studies have addressed the issue of scratchcard-related problems in the last decade. Based on their main research goals the studies can be divided into three subgroups: (1) studies assessing the effect of public availability of scratchcards by estimating the prevalence of scratchcard playing and/or identifying vulnerable groups, (2) studies exploring under-age scratchcard gambling, and (3) studies that investigated whether theoretical assumptions about gambling or pathological gambling apply to scratchcards.

The first group comprises five studies (IPM Research en Advies, 1993; Lester, 1994; Aasved & Schaefer, 1995; Hendriks et al., 1997; Shepherd, Ghodse, & London, 1998b). Despite heterogeneity in designs, samples and methodological limitations, most studies reported the following results: first, most scratchcard gamblers did not experience scratchcard-related problems. One of the British studies reported that affirmative responses to DSM-IV criteria for pathological gambling (but not the number of pathological gambling diagnoses) increased significantly six months after the introduction of the National Lottery and scratchcards (Shepherd et al., 1998b). Second, when scratchcard problems were reported, their prevalence was low and mostly restricted to specific subgroups (IPM Research en Advies, 1993 & Hendriks et al., 1997). And finally, two characteristics were mentioned as potential risk factors: *heavy involvement in other forms of gambling* (IPM Research en Advies, 1993; Aasved et al., 1995; Hendriks et al., 1997), and *lower income and education level* (Aasved et al., 1995; Hendriks et al., 1997; Shepherd et al., 1998b). However, these findings on the effects that scratchcards may have on gamblers need to be viewed with caution due to the limited number of studies, the disparity between study goals, samples, designs and methodological limitations.

The second group of studies includes three British studies (Wood et al., 1998; Griffiths, 2000a; Pugh et al., 2000a) all conducted among under-aged players. The first study reported a prevalence of 6% for pathological gambling according to DSM-IV-J criteria among their total sample of scratchcard players. The second found that 5% of the total sample met the DSM-IV criteria for pathological scratchcard gambling, and that this was 12% for the scratchcard gamblers (who had bought scratchcards themselves). The last study (Pugh et al., 2000) not only showed that 54% of their sample purchased scratchcards but also laid bare the lack of adequate enforcement of the laws prohibiting sales to minors: only six of the 137 under-age scratchcard gamblers had ever been refused scratchcards at an outlet. All three studies reported a strong influence of the parents’ scratchcard playing on their child’s participation in the game. It needs to be noted, however, that these studies probably addressed specific

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4 Aasved’s study was included in this review because reports on pull-tabs, which are very similar to scratchcards.
subgroups with specific psychological characteristics and life styles (minors buying scratchcards in a situation where this is illegal), which makes the generalisation of these findings to the general population rather problematic.

The third group of studies comprises three studies investigating the generalisability of theoretical assumptions about gambling or pathological gambling to scratchcards (Frost, Meagher, & Riskind, 2001; Lange, 2001; Wood, Griffiths, Derevensky, & Gupta, 2002). The first study examined hypotheses about the diagnosis of PG and its symptoms in a population of lottery and scratchcard gamblers. The authors state that PG falls under a family of disorders with obsessive-compulsive disorders at its core. The other two publications addressed two important and closely related issues: the self-perception of gamblers and the reliability of self-reported gambling. These studies revealed a great ambiguity in the self-perception of gamblers, especially in connection with their gambling behaviour regarding scratchcards and lottery tickets. These two forms of gambling were generally not perceived as gambling by the majority of the players, unless the items were purchased frequently. This ambiguity about the definition of "gambling" has been reported in other studies too (see e.g. Shepherd et al., 1998b, and Lange, 2001). Inherently, due to this ambiguity the reliability of self-reported gambling for lottery and scratchcards is somewhat questionable.

The need for a prospective study
Owing to their diverse target populations, national legislation and market situations and because of their methodological limitations (non-representative samples, self-report data, low response rates, etc.), generalisation of the results of the above-mentioned studies about the addictive potential of scratchcards to the Dutch situation is complicated. The only Dutch study available before the initiation of the prospective study presented in this thesis found that among a sample of adult scratchcards buyers 4.1% were "at-risk players" (having bought at least 25 scratchcards in the previous month and meeting at least one at-risk problem indicator, Hendriks et al., 1997). However, this study was conducted within the first year after the introduction of scratchcards, which prevented conclusions to be drawn with respect to pathological scratchcard gambling because it takes, on average, about 3.5 years before excessive gambling is recognised as a problem by the gambler himself or his social environment (Meyer, 1992). Consequently, the addictive potential of scratchcards for the adult general population, and specifically for the population of the Netherlands, remained unclear. Therefore, a new study was needed to assess the addictive potential of scratchcards in the Netherlands. Ideally, this study should include a random sample of the general population and should be prospective to facilitate a sound exploration of the prevalence and incidence of scratchcard-related problems, as well as the stability of the pathological scratchcard gambling diagnosis over time (Wood et al., 1998; Crockford et al., 1998; Griffiths, 2000a; Ladouceur, 2002; Toce-Gerstein, Gerstein, & Volberg, 2003). The present thesis is the first to present such investigations in the Netherlands, initiated 5 years after the game's launch. The second part of the thesis describes the design and results of a large socio-epidemiological study on the addictive potential of scratchcards. The third part focuses on the identification of problem gamblers and pathological gamblers.
AIMS AND STRUCTURE OF THE THESIS

The main focus of this thesis is to investigate the addictive potential of scratchcards in the Netherlands (Part II). However, it is impossible to know whether a specific form of gambling is addictive or not without the aid of proper, validated instruments. Therefore, the secondary focus of this thesis is to investigate several of the unresolved issues in the assessment of gambling problems in general, i.e. a validation of the South Oaks Gambling Screen in a community study and the development of a new instrument to assess the severity of gambling problems (Part III). With these purposes in mind, the research described in this thesis includes three separate empirical studies. First, a large prospective three-phase study among adult scratchcard buyers in the Netherlands (Part II, Chapters 2, 3 and 4). Next, an epidemiological study among the Dutch general population (Part III, Chapter 5) is presented and, finally, a multi-sample study to develop and validate the Gambling Problems Severity Scale (GPSS; Part III, Chapter 6) is reported. Each of these chapters describes in more detail the existing knowledge at the time the particular paper was written, the research methodology used and the specific research questions underlying the study.

Part II. The Addictive potential of scratchcards

Part II of this thesis addresses the addictive potential of scratchcards and the nature of the problems. To this end a large epidemiological study was conducted among adult scratchcard buyers in the Netherlands. This prospective study used a non-proportional stratified sample of 12,222 adult scratchcard buyers and had three independent assessment phases: a prevalence phase, an incidence phase and a qualitative phase.

Chapter 2 describes the results of the first-phase of this study: a cross-sectional prevalence survey among a non-proportional stratified sample of 12,222 adult scratchcard buyers. Its main aim was to obtain a valid estimate of the addictive potential of scratchcard gambling by establishing the one-year prevalence of recreational, problematic and pathological scratchcard gambling among a representative sample of adult scratchcard buyers five years after the introduction of scratchcards in the Netherlands.

Chapter 3 comprises the second -phase of this prospective study, i.e. the incidence phase, conducted to provide the final evidence of the addictive potential of scratchcards. A cost-effective design was used in this follow-up conducted two years after the prevalence phase, in that only those scratchcard buyers (n=201) that had already experienced some scratchcard-related problems at the initial assessment were included. The threefold aim of this incidence study was (1) to estimate the two-year cumulative incidence of pathological scratchcard gambling (PSG) among a representative sample of high-risk scratchcard buyers, (2) to assess the two-year temporal stability of PSG and scratchcard-related problems, and finally, (3) to estimate the adjusted one-year prevalence for PSG taking into account the temporal dynamics of this diagnosis.

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5 This book integrates some of our published papers and reports. In the original publications different styles were used. However, for the reader's convenience, a uniform style has been used in this thesis. This does not have any consequences for the information contained in these chapters.
Chapter 4 presents the final qualitative phase of this prospective study, an in-depth face-to-face interview. Participants were those respondents that fulfilled the DSM-IV criteria for pathological scratchcard gambling at the prevalence phase who consented to take part and have the interview recorded (n = 10). The chapter explores the following two questions: what is the extent and nature of scratchcard-related problems in this cohort, and does the DSM-IV clinical significance criterion minimise the number of false positive diagnoses?

Part III. The Assessment of gambling-related problems
Part III deals with relevant issues in the assessment of gambling problems in general. The focus of the two chapters presented in this section is on the identification of individuals with gambling problems and the measure of the severity of those problems. Chapter 5 used a two-stage sample design among a representative sample of 5,830 Dutch young adults (12-35 years old). The aim of this study was twofold: to estimate the prevalence of pathological gambling in a community sample and to test the validity of the South Oaks Gambling Screen (SOGS) as a screener (self-report questionnaire) for pathological gambling against the DSM criteria for pathological gambling.

Chapter 6 states that although pathological gambling is an increasing problem, there is still no instrument that accurately and quickly assesses the severity of this disorder in different life-dimensions. Such an instrument would be most useful for clinicians by allowing them to set their treatment priorities, and for researchers and treatment centres by facilitating the assessment of the effect of different gambling treatments. This chapter describes the development of such an instrument, i.e. the "Gambling Problems Severity Scale" (GPSS), in which both the findings reported in the scientific literature and experiences from the clinical practice are integrated. A sample of 636 adults covering the entire continuum of gambling severity was used to develop the instrument.

Part IV. General discussion
The fourth and final part of this thesis includes the general discussion section. Chapter 7 integrates the main findings of this thesis in terms of the addictive potential of scratchcards, and in the use of the various assessment instruments to measure prevalence and severity of gambling problems in general. Additionally, methodological issues that are important for the interpretation of our results and their extrapolation to other populations and/or contexts will be provided. Finally, the implications of this thesis are outlined as to the extent to which the results of the empirical studies presented can lead to further tools and suggestions for future research.

REFERENCES

Chapter 1


General introduction


IPM Research en Advies (1993) *Orienterend onderzoek naar de wijze waarop instantloterijen in enkele landen zijn ingevoerd en naar de eventuele problemen die zich hierbij hebben voorgedaan.* Rotterdam: IPM.


