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Institut national
de la santé et de la recherche médicale

Gambling

Contexts and addictions

Collective expert report
Summary and recommendations

Inserm

Institut national de la santé et de la recherche médicale
(National Institute for Health and Medical Research)

This document presents the work conducted by the group of experts brought together by Inserm within the scope of the collective expert report procedure (Appendix) in response to the request expressed by the Direction générale de la santé about public health's questions related to gambling. This work is based on the scientific data available during the first quarter of 2008. Almost 1,250 articles have served as the documentary basis for this expert report.

This collective expert report has been coordinated by the Inserm Collective Expert Report Center.

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Foreword

The gambling industry is an important economic and financial sector, which produces employment (direct and indirect) and taxation revenue, and involves a gamblers population of millions of people. According to Insee in 2006, almost 30 million people in France, or three out of five people of gambling age, gamble at least once per year. Since 1975, the total value of stakes has doubled. According to the Trucy report, the turnover of the legitimate gambling industry has increased from the equivalent of 98 million euros in 1960 to 37 billion in 2006.

Gambling is social and cultural practices which have a very long history in leisure activities. They now occupy an important place in everyday life, both in free time and at special events. Whereas gambling is a recreational activity for a large number of people, they can be harmful for some, with individual, family and social-occupational consequences. For some gamblers, gambling can take on the features of addictive behavior.

The possible dangers of gambling are increasingly drawing the attention of public bodies and gambling operators themselves. A request made to Inserm by the Directorate General for Health for a collective expert report was motivated by the need to provide assistance, support and care for people with gambling difficulties.

In order to respond to this request, Inserm brought together a multi-disciplinary group of experts in history, sociology, health economics, epidemiology, psychology, neurobiology, psychiatry and addiction medicine. This group organized its thinking on gambling and video and Internet games using several approaches: historical, sociological, psychological, neurophysiological and clinical as well as a public health approach. The way in which gambling problems are handled in some countries was an additional area considered.

In the course of ten working group meetings, the group of experts analyzed approximately 1,250 articles containing the available national, European and international data on gambling, its context, gambling behavior and addiction. In the expert report, the group uses the terms "problem gambling" and "pathological gambling"[1] as used in most studies to designate problematic gambling practices.

The group of experts consulted several reports and interviewed 8 people dealing with these problems. Following a critical analysis of the literature it has produced an overview and proposed a number of recommendations for action and research.

[1] The pathological player meets the criteria for a clinical diagnosis. The problem player has difficulties with gaming behaviour without meeting all of the criteria for pathological gambling.

Summary

Gambling has continuously developed in different forms in Western societies for the past 300 years. Gambling activities were initially prohibited in France by Royal Decree and for a long time were conducted in secret. They were legalized in the last third of the 18th century with the creation of the royal lottery. The principles defined for gambling at the time live on today.

In gambling, the person irreversibly hands over a good (money or object) and the end of the game results in a loss or gain determined partially or totally by chance. For a long time gambling has had a social and economic dimension. In the current social context (easy borrowing, consumer society and the huge increase in the number of games available), the various forms of compulsive expenditure (gambling purchases) can represent an "unlucky encounter" between a vulnerable person with unmet desires and an attractive marketing offer giving the illusion of fulfilling a "missing need".

Excessive gambling appears to be the product of personal history and a global social, economic, historical and cultural context. Although a public health problem, its causes and consequences are fundamentally social and as such it is an indicator of our society. Whilst the expert report draws widely on psychological and medical work to analyze pathological gambling, the social, economic and cultural causes liable to explain excessive gambling should in no way be overlooked.

The sociological approach to gambling considers that the degree of "closeness" between the gambler and his/her gambling depends on the relationship that the gambler establishes with the game in a given social and personal context.

Although the existence of pathological gamblers was described as early as 1929, the concept of pathological gambling appeared in the scientific literature around the end of the 1980s. Excessive gambling was firstly considered to be a manifestation of compulsive disorders, following which the disorder was then gradually included in the group of "non-substance additions". It was at this time that it was suggested that the best method to study addictive disorders was not to examine each as an isolated entity but rather to "search for a common origin or mechanism for addictions which are expressed through a multitude of behavioral expressions". From an analysis of the international scientific literature on "pathological gambling", different models are now proposed obtained from the psychoanalytical, psychological and psychobiological fields to explain researchers' working hypotheses on gambling addiction. These different models incorporate multiple interactions between individual and environmental factors. Like substance addition, gambling addiction can occur as a result of a meeting between a product, a personality and a social-cultural moment. The recent emergence of video and Internet games opens new avenues for research into the problem of addiction.

Identification of the different risk and vulnerability factors for pathological gambling, and improved knowledge about the trajectories of the gamblers who become involved in pathological and risk gambling practices at a given time, are key objectives for constructing preventive actions, facilitating access to care and also defining the most relevant indications for treatment.

A few details on the history of gambling

Four major debates characterize the history of gambling in France.

The moralist and clerical debate, which is very old, is hostile to gambling for theological and moral reasons: the use of chance for profane and entertainment purposes is an outrage to divine Providence, which should only be used in extreme situations. This intransigent position changed at the end of the 17th – early 18th century, when under the influence of probability mathematics, the idea that chance is indifferent "per se" established itself with clerics and lay people. The secular moralist debate extended into the second half of the 18th century with Enlightenment thinkers who then centered their attacks on the pernicious social consequences of gambling and on the policy followed by the monarchy which stood accused of having created the French Royal Lottery in 1776, thereby promoting the ruin of families. It should be noted however that as of 1566, the Royal State strove to limit the social effects of gambling by limiting and then canceling gambling debts. The moralist debate which considered compulsive gambling firstly to be a sin (16th –17th century) and then a vice (18th century) still influenced the views of philosophers such as Roger Caillois (1958) on gambling in the 20th century.

A literary debate around gambling, which was strongly influenced by the moralist view, appeared at the end of the 17th century. Through plays and novels acted or published since approximately 1670 the tragic figure of the gambler led into misery, ruin and death by his passion took form. This representation continued into the 19th and 20th centuries with the novels of Dostoïevsky, Stefan Zweig and Sacha Guitry.

A philosophical and anthropological debate which was very fertile in the 20th century developed in Kant's and Schiller's analyses. This debate, which was successively illustrated by J. Huizinga, M. Klein, DW. Winnicott, J. Château, R. Caillois, J. Henriot, LJ. Calvet, JM. Lhôte and C. Duflo, reasserted the value of gambling and gaming in general. Gaming activities were then seen as an entirely separate activity, free, regulated, limited in time and space and providing both joy and excitement to humans (J. Huizinga), a form of behavior and a social reality (J. Château, R. Caillois), a contract based on "legaliberty" (C. Duflo).

The historical debate is represented on one side by academic works listing and describing past games and, on the other, by work replacing gaming in a global social context. This latter category of work deals extensively with gambling, studied in the Middle Ages and in the modern era. Their authors have found a description of players' behavior, which would now be described as excessive, in ancient texts. Belonging to the social elites of their time (Court, aristocracy, army) they conformed to the "ethos" of their social group, which valued extravagance and risk-taking. Their attitude is similar to the "potlatch" rituals described by J. Huizinga (1951) or "ordalic" behavior described by M. Valleur (1997). It was probably in the 18th century with the spread and "democratization" of lotteries - particularly with the creation of the royal lottery in France in 1776 – that the general population was more exposed to the risks of excessive gambling. This is borne out in the criticisms formulated by the philosophers and the terms of Royal legislation.

There are very few serious historical works on gambling in the 19th and 20th centuries in France because of access restrictions to archives held by gambling operators and the legal consultation periods.

Access to archives is less restrictive in North America which has promoted research into the recent history of gambling. Approximately 80% of adults in the United States gamble at least once during the year. The risks of gambling have been denounced since 1957 by "Gamblers Anonymous", which in 1970 joined the National Council on Compulsive Gambling alongside representatives of the medical profession, clergy and lawyers' associations. It was

in 1980 that excessive gambling became included in the "Diagnostic and Statistical Manual of Mental Diseases" (DSM) produced by the American Association for Psychiatry. In some peoples' opinion this "medicalization" of excessive gambling could lead to an underestimation of the political, social and familial explanatory factors which could play a key role. The State, which is the principal manager of the various gambling places and also protector of its citizens is therefore faced with a complex social dilemma which hinders the introduction of an effective prevention policy that is socially acceptable and ethically legitimate.

Identical historical changes have been seen in Canada, where moral, social, political, medical and economic arguments have been put forward both to censor and legitimize gambling. As long as gambling was strictly controlled, regulated and in some cases originated from the government, Canadians accepted it as part of a policy contributing to public good because of its economic benefits. This position was questioned following the large rise in gambling and the damage caused by video lottery terminals (VLTs) and slot machines. In this context, the joint action of senior governmental officials and the gambling industry, backed by experts and professionals, contributed to the birth of the concept of "responsible gambling" and to the development of prevention and warning programs for high-risk populations. In some peoples' view the concept of "responsible gambling" has transformed the social problems associated with excessive gambling into individual problems, thereby removing their political nature.

What is the current situation of gambling in France?

It was in the 20th century that casinos, the PMU (Pari mutuel urbain created in 1931) and the National Lottery (reestablished in 1933) developed in France. These are the three gambling operators that currently still operate in France, and whose major beneficiary is the State.

There are 192 casinos in France with a total turnover of 18.66 billion in 2004 and 64 million admissions. Most French casinos are owned by 5 private investment groups under State control (Ministries of the Interior and Finance) and local authorities.

PMU administers betting outside of the racetracks. The Tiercé, created in 1954, was followed by an increase in the number of races and the diversification of betting (Quarté, Quinté). The turnover of the PMU was estimated to be 8 billion euros in 2006. There were 8,881 PMU sales outlets in 2005. Racetrack bets only represent 4% of racing bets in France. The ways of betting have become more diversified in recent years with interactive television (Equidia channel created in 1999), Internet betting (since 2003) and mobile phone betting (since 2006). The total number of people betting was 6.8 million in 2005.

Française des jeux (FDJ) administers the Lotto, the successor to the National Lottery in 1980, the Sports Lotto, Keno and scratch card gambling. This is a semi-public company in which the State holds more than 70% of the shares. It had a turnover of 9.7 billion euros in 2007. In 2005 there were approximately 40,000 sales outlets and it is also possible to bet on the Internet. Five million people play the Lotto each week.

Gambling has increased considerably over the last 40 years. The turnover of the authorized gambling industry in France has increased from 98 million euros in 1960 to 37 billion euros in 2006, with an acceleration over recent years. In the space of 7 years (1999-2006), bets placed by gamblers have increased by 77% for Française des jeux, 91% for PMU-PMH[2] and 75% for the casinos.

[2] PMU-PMH: Pari mutuel urbain-Pari mutuel hippodrome

The launch of many new gambling (notably Lotto, Scratch card gambling, Rapido and Euro millions for Française des Jeux, Tiercé, Quarté, Quinté+ and many other forms for the PMU), the legalizing of slot machines in casinos and more recently of poker, the increased number of gambling places (often very close together in the case of FDJ and PMU), computerized processing, the gaming network across the country as well as the intense media coverage and permanent commercial communication for these products (televised draws, advertising, sponsoring, etc.) partly explain the success and popularity of gambling. It now plays a major role in leisure activities in France. In addition, and although they fall outside of the national statistics by definition, illegal gambling and above all the large number of illegal on-line gambling sites with future growth prospects reinforce the phenomenon.

Gambling and its peripheral related activities are economically and financially significant (more than 100,000 people directly employed) and contribute to the development of many economic, cultural and commercial sectors (particularly horse-riding for PMU, animation and the cultural life of spas for casinos, sport for FDJ and so on). This sector contributes significantly to State finances (6 billion euros) and to those of 200 districts. It redistributes money to thousands of winning gamblers and also to different organizations, bodies and associations.

Regulations, legislation and the different control and legal authorities (administrative, fiscal and police) set up by public bodies have guaranteed the equity and safety of gambling, while protecting public order in general. The dual role played by the State in this specific economic, social and cultural activity has provided protection, but also growth. How can the resulting conflict of interest which has been present for a long time now be taken into account in the policy of responsible gambling desired by the public bodies and all of those involved in the gambling sector, but also in the context of modernizing the gaming and gambling sector, virtual or not, desired by the European Union (EU)?

Who gambles in France?

Forty-one per cent of usual casino attendees are either non-working individuals or retirees. Those over 50 years old or under 30 years old each make up approximately 30% of slot machine gamblers, 57% of whom are men.

Of the 6 million PMU betters, 65% are men between 35 and 49 years old, generally from modest social-occupational backgrounds. Of these, 55% are regular clients who play above all at the weekend, 40% are occasional gamblers drawn by large racing events and 5% are dedicated gamblers who play several times each week.

In 2006, 29 million people played a Française des Jeux gambling; 49% of these were men, 51% were women and 34% were under 35 years old. The gamblers have almost the same social-occupational profile as the general population, with a slight over-representation of laborers and salaried employees. There are slightly more young people and slightly fewer elderly persons amongst the gamblers than in the general population[3].

Gamblers' bets and their net expenditure (their losses minus their gains) have increased considerably in recent years. The turnovers of gambling operators have also increased over the same years. In 2005 gamblers' returns represented approximately 60% of turnover for FDJ, more than 70% for PMU and 85% for the casinos. According to the report by Senator François Trucy (2006), expenditure on gambling is estimated to be 134 euros per person per year.

[3] Data source: http://www.francaisedesjeux.com/groupe/essentiel-groupe/chiffres-cles

Change in bets and net annual expenditure of gamblers with the three operators (from the Trucy Report, 2006)

Year	FDJ		PMU		Casinos	
	Bets (euros)	Net expenditure (euros)	Bets (euros)	Net expenditure (euros)	Bets (euros)	Net expenditure (euros)
1999	175.35	74.16	656.09	202.37	1 776.80	213.55
2005	309.65	123.88	1 251.27	341.59	3 108.86	435.24

Development of video and Internet games

What is known as video gaming is a recent phenomenon which emerged in the 1970s; it became much more widespread and was transformed by the Internet in the 1990s.

The two countries that create video games are the United States and Japan. The first video game was produced in the 1950s. Space War was created in 1962 by a student from the Massachusetts Institute of Technology (MIT). The first Nintendo games console dates back to 1983.

The video games world incorporates three main themes: science fiction, role playing (notably "Dungeons and Dragons") and simulation, i.e. a technical world (computer technology and simulation) and an imaginary universe and game. The novelty of these games is that they offer a potential space where players act within or even beyond their imagination.

Video games have now moved into a new market thanks to the Internet, resulting in new multiplayer games: massively multiplayer online role-playing games (MMORPG) or massively multiplayer online games (MMOG). These games can last from 20 minutes to a year and are played against other players or against the machine and require the development of specific skills. The "World of Warcraft" game is a model of a successful general public MMORPG according to the manufacturers. This is the most widely played online game in the world with 9 million subscribers in 2007. The game involves 2 to 40 players who move throughout all of the continents in the world. Hundreds of hours are needed to reach a given level. Rewards can be obtained on entering the game for simple tasks, followed by promises of greater rewards for the more difficult tasks. As players are always on the point of gaining new skills they increase their playing time to achieve these new rewards.

"Second Life" is a 3D virtual universe brought out in 2003. It is a simulation space more than a game and enables the user to live a sort of "second life". Most of the virtual world is created by the residents themselves who evolve through the avatars that they create. It is also an Internet forum in which debates, presentations, conferences, training and marriages take place. This universe is invested in heavily by organizations (companies, political parties, large schools, etc.) that use it as a window and a marketing media. It illustrates a certain blurring of the boundaries between the games world and the economic world, places for socialization and places for gathering information.

The introduction of video games and the Internet into social life is a recent phenomenon. These games have so far been very little studied, particularly in France.

According to a French survey in 2002, 80% of children between 8 and 14 years old reported that they played video games, 53% reporting that they play 2 hours or less per week and 26% that they spent more than 4 hours playing per week[4].

This is the first time that this type of game, which is entirely new and due entirely to the extension of communication techniques, has appeared in our society. The young age of the people who play most is interpreted as a generational effect as video games require skills that come from an IT culture. This gaming behavior is also a means of socialization between peers and a means of seeking identity reassurance.

Both qualitative and quantitative work has revealed the predominantly male population in video gaming. They are also generally of a high social-cultural level, with an average age of 26[5]. According to some authors, the male over-representation is explained by the fact that most of the games on offer relate more to male socialization (promoting aggression, violent games).

In terms of Internet use, Insee reported in 2006 that 34% of young Internet users (15 to 18 years old) used it to play games. A recent survey of sports bettors on the Internet showed that more than 91% of players were male, with an average age of 31.

Socio-economic impacts and damage associated with gambling

Most of the studies covered (United States, New Zealand, Australia, England, Sweden, Germany, etc.) have examined the socio-economic impacts of the liberalization and development of gambling, either on a community, town or national level. These studies mostly examine the "problematic" effect of the gambling business: increased impoverishment, excessive debt, suicide, family problems, gambling-related divorce, concomitant gambling and "substance" addiction (alcohol, drugs, etc.). Gambling would appear to cause more social problems in poorer populations, as the proportion of their expenditure on gambling is higher even though the amounts spent on gambling are lower. Gambling can also dismantle community and family relationships. In the worst-case scenario, this leads to inveterate gamblers losing everything in gambling and finding themselves with no resources.

The legalization of gambling has brought economic benefits and new jobs to the residents of Nevada but it also has social costs. According to Nevada residents, some people loose control of their gambling although at the same time the legalization of gambling has brought improved quality of life to their community. However, the perception of these advantages and disadvantages varies depending on the sub-populations studied (educational level, whether or not working in the gambling industry, etc.).

In Canada, a survey in a population of gamblers (managed by Joueurs Anonymes) showed that approximately 25 to 33% of jobs lost and personal bankruptcies were linked to gambling.

An exploratory study in France among people consulting the "SOS Joueurs" association showed that the majority of gamblers questioned had been faced with excessive debt, almost 20% had committed crimes (particularly breaches of trust, theft, check counterfeiting, etc.).

In terms of suicide and divorce rates, a survey conducted in eight regions in the United States between 1991 and 1994 did not find any significant difference between regions with a

[4] Data source: http://www.tns-sofres.com/etudes/consumer/181202_jeuxvideo.htm

[5] Between 22 and 30 years old according to Roustan (2005), 25 years old according to Yee (2001)

casino and control communities. Over a longer period however (1970-1990), a modest positive correlation was found between suicide rates and the presence of a casino in urban areas. This result was not seen in the analysis of suicide rates before-after the legalization of gambling.

Studies (particularly in the United States and Canada) differ in terms of the relationship between the presence of a casino in a region and an increase in the criminality rate.

Problem gambling in an Australian study was 20 times higher in prison inmates than in the general population. Another study examined suspects arrested in two American towns. Three to four times more problem gamblers were found in this study than in the general population.

Social cost of gambling

Calculating the social cost of gambling is designed to provide a quantitative estimate of the harmful economic and social consequences of gambling in a given geographical area at a given time. In order to have meaning it must be based on rigorous methodology. The classic economic approach based on the teachings of welfare economics, although not the only possible approach, emerges as one of the most robust provided that one is aware of its interest and limitations.

Until now the economics of gambling has not been greatly studied. The studies that specifically set out to calculate social costs are almost all Anglo-Saxon, predominantly concern casino gambling and contain a huge variety of approaches and results. The 1st international symposium on the economic and social impact of gambling (Whistler, Canada, September 2000) and then the 5th Alberta annual conference on gambling research (Banff, Canada, April 2006) attempted to put some order into this muddle of research approaches, although ultimately it was still impossible to reach a consensus on an analytical framework to study the economic consequences of gambling. Methodological controversies surround the definition of the objectives chosen (choice of perspective and counterfactual scenario), the determination of the costs to include in the analysis (questions about handling "transfers", "internal costs", "family costs", costs related to the institutional organization of the country and "discretionary costs") and methods used to measure these costs (identifying reliable data sources representative of the population, estimating costs attributable to gambling and allocating monetary values to intangible costs).

This lack of consensus is regrettable as adopting a common analytical framework, even if imperfect, would have many advantages, particularly improved legibility and greater comparability of the estimates produced. Four national studies conducted in the United States, Australia, Canada and Switzerland merit being quoted. The Australian study, which is the most complete, is usually used as the reference work. This study found the total social cost of problem gambling in 1997-1998 to lie within a range between 1.8 and 5.6 billion Australian dollars.

Whilst the total social cost of gambling is difficult to interpret as "raw data," an analysis of its breakdown is however very instructive. Firstly, gambling costs are to a very large extent (90%) psychological costs generated by the small group of problem gamblers and borne by themselves and by their families and friends. A comparison with the social cost of drugs in Australia also shows that gambling incurs proportionally more intangible costs than legal and illegal drug abuse. Secondly, estimates of costs by type of gambling show major differences by category and reveals slot machines (and to a lesser extent betting) to be the greatest cost generators.

The Trucy report provides a good summary of the state of research in France on the social cost of gambling: "In France? Nothing on the subject, the same as for other areas of research on gambling. This is at the very least disappointing even if it is extremely difficult to do the calculations". At present we therefore have no other choice than to base our work on estimates made in other countries, which we can try to assess by comparing them with estimates of the social cost of drugs in France. We observe that the estimated social cost of gambling in Australia (tangible costs only) is almost the same as the social cost of cannabis estimated in France (15 euros per person per year).

Comparison of the estimated social cost of gambling in Australia (1998) with the estimated social cost of drugs in Australia and in France (tangible costs only)

	Social cost per person in euros[a]		
	Australia		France
Activity	CTT[b]	CTA[c]	CTA
Smoking	435[d]	225[d]	770[f]
Alcohol	155[d]	120[d]	600[f]
Illegal drugs including cannabis	60[d]	45[d]	45[f] 15[g]
Gambling	50-160[e]	5-16[e]	

[a] In euros, price of the year of study, current exchange rate; [b] CTT: Total cost; [c] CTA: Tangible costs only; [d] Collins and Laspsley (1996), estimate for 1992; [e] Productivity Commission (1999), estimate for 1997-1998; [f] Kopp and Fenoglio (2006), estimate for 2003; [g] Ben Lakhdar (2007), estimate for 2003

Some useful information can also be extracted from an analysis of social costs to help construct public policies. Firstly, the estimated sum provides theoretical justification for State intervention, and to this end comparison with other types of activity may help with priority setting. Next, it is also extremely valuable to define the desirable form of State intervention. As it emerges that a very large proportion of the social cost of gambling is due to so-called "internal" costs, i.e. costs which the minority of highly dependent gamblers impose on themselves, gambling emerges as an ideal area to apply the concept of "asymmetric paternalism". This concept proposes to introduce policies specifically targeting the small group of problem gamblers (those who both create and bear the largest proportion of the cost) without penalizing others. The majority of non-dependent gamblers generates little or even no social costs and gain pleasure from gambling. If in addition we adopt the hypothesis of limited rationality associated with time-inconsistent dependent gamblers, it may be useful to promote self-control mechanisms (for example voluntary bans in casinos) that will allow the gamblers to not succumb to their short-run preferences and help them get out of their addiction. Finally, it is essential that public policies target as a priority the gambling that incur the greatest costs and adapt to the development of Internet gaming and gambling.

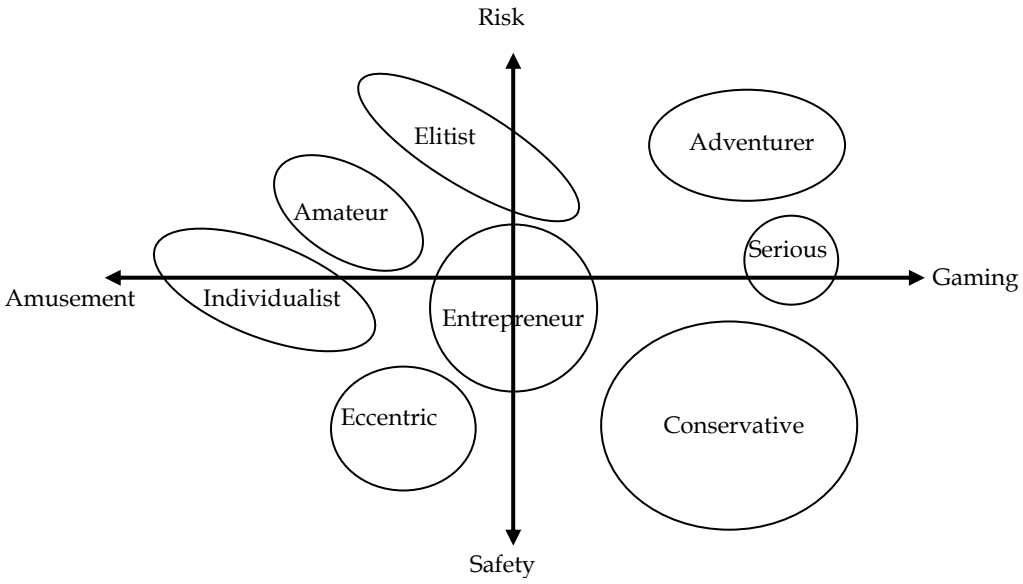
An analysis of the literature on the social cost of gambling reveals the extent of current debate and highlights the need for continued research. Since French people appear to be increasingly drawn to gambling, and the gambling supply is undergoing great change, it would be extremely useful to have indicators for France.

What motivates gamblers?

A number of sociological studies have examined the motivations for specific homogeneous populations. In people over 65 years old, relaxing and enjoying themselves, passing the time and combating boredom are the motivations most reported by gamblers. Other studies have analyzed for example the motivations in four ethnically different communities (North African, Chinese, Haitian, and Central American) in Montreal: in these communities the hope of making significant gains and improving their economic situation is an important motivation for gambling. The desire to come closer to the culture of the host country in order not to feel excluded is also a motivation for gambling even if its practice contradicts the traditional culture of origin (for example North Africa). Believing in chance and the supernatural is also a component of gambling for Chinese and Haitian cultures. Gambling is part of social and family life from the youngest years onwards in Central American countries.

Sociological studies have examined the behavior, rituals, movements, exchanges and conversation of gamblers. A detailed study of gamblers in the natural gambling situation is useful to understand the social and cultural perspective of contemporary gambling including in situations when it appears to be excessive from a commonsense perspective.

This qualitative research provides a clear view of the different "categories" of gamblers not only from a sociological perspective in terms of social features but also in terms of gambling practices. Some authors have proposed a typology for gamblers consisting of eight categories or psychobiological portraits each making up 8 to 21% of the population studied: individualist, eccentric, amateur, elitist, entrepreneur, adventurer, serious and conservative. Each of these profiles can be positioned along two axes: level of risk or safety and level of involvement in the act of gambling (amusement/gamble).



Psychosociological typology of gamblers (from Lewy, 1994)

Biographical information, personal accounts and portrait are also used in the qualitative sociological studies. A "sociological conversation with a gambler" shows that the history of gambling in the problem gambler is part of the person's life history and biography. This conversation also illustrates the ups and downs that some excessive gamblers battle with between "putting problem gambling at an aesthetic distance and the painful confrontation with reality".

Psychoanalytic approaches to gambling

The most famous psychoanalytic text on gambling is still Freud's "Dostoevsky and Parricide" (1928) which contains an essential part of the psychoanalytic considerations on gambling, which "no one could regard … as anything but an unmistakable fit of pathological passion".

According to Freud, this passion has the psychical function of self-punishing behavior: "When Dostoevsky's sense of guilt was satisfied by the punishments he had inflicted upon himself, his inhibitions against work disappeared, and he allowed himself to take a few steps along the road to success." Parricide, which haunts the writer's work, is the keystone of his masochistic conduct.

This text puts forward, as a profound mechanism of the pathological gambler's conduct, the problematic issue of the integration of the Law, to the extent that the father's murder, and the mechanisms of its repression or overcoming, lie at the base of the constitution of moral structures for the individual, as well as being, for humanity, a condition of the integration of the individual as a member of the human community, as a member of civilization.

Freud expressly connotes the gambling passion with a pathological dimension. Thus, gambling, a ruinous "pathological passion", assumes the value of "self-punishment" behavior correlative to the wish to "put the father to death".

According to Bergler (1936, 1957), like in the case of Dostoevsky, gamblers practice "gambling for gambling's sake" and for the mysterious thrill, the ineffable sensation reserved to initiates. The gambler is to be considered as a neurotic, driven by the unconscious desire to lose, in other words by moral masochism, the unconscious need for self-punishment. As an expression of a "base neurosis" corresponding to an oral regression, gambling would be the implementation of a sequence that is always identical, representing an illusory attempt to purely and simply eliminate the disagreeable side of the reality principle, in favor of the pleasure principle alone.

This operation requires a return to the fiction of infantile all-powerfulness, and the rebellion against parental law, which directly becomes a latent rebellion against logic for the gambler. Unconscious aggression (against the parents who represent law and reality) is followed by a need for self-punishment, implying the psychical necessity of loss in the gambler. The cynicism, the apparent coldness, the mastery flaunted by gamblers is, in Bergler's opinion, merely the mask covering a feeling of infantile weakness. The cynicism is an attempt to justify, or to attribute to everyone else, feelings as hostile as those that unconsciously the gambler harbors towards the parental figures. Superstition and "magic" rituals are the rule, despite the vehement protests of gamblers on this topic. Just like the systems or martingales that are supposed to lead to winnings, these artifices are merely the crude expression of the infantile megalomanic belief in the capacity to steer destiny.

In this way, Bergler draws up a list of criteria that make it possible to "define" the pathological gambler, in contradistinction to the "social" or recreational gambler: habitual

risk-taking, gambling taking over one's life, pathological optimism, the incapacity to stop gambling, the mounting stakes, the thrill of the gambling.

Fenichel (1945) describes gambling as a "fight against destiny", and pathological gambling as a loss of control: "Under the pressure of internal pressures, the playful character may be shed; the Ego can no longer control what it has got underway and is overcome by a vicious circle of anxiety and the violent need for reassurance, anxiety-provoking in its intensity. The primitive pastime has now become a question of life and death." Fenichel distinguishes elsewhere between "compulsive neuroses" in which the subject is obsessed by the idea, as if imposed from without, of committing an act, which he struggles against, and "impulsive neuroses" in which the act is committed in a way that is ego-syntonic. The basis for the classification of the DSM's "impulse control disorders" finds its origin here, and Fenichel classes pyromania and impulsive fugue states within the impulsive neuroses, alongside gambling.

Jacques Lacan (1978), in his "Seminar on The Purloined Letter", poses the gambler's question in a more philosophical and pithy way: "What are you, figure of the dice I roll in your chance encounter (tyche) with my fortune? Nothing, if not the presence of death that makes human life into a reprieve obtained from morning to morning…". In this "meaningful" approach, psychoanalysis meets up again with philosophical, even cosmological questions.

The imperative dimension of the passion takes precedence over the interrogative component of gambling: defying the "mechanical laws" of chance and their calculations, the gambler summons the Other to show itself and signify to him his right to existence, thus unveiling the terms of a terrifying mathematics of the relation to the Other, under the yoke of the "ordalic" procedure. The logic behind the gambler's compulsive ordalic behavior leads Marc Valleur (1991) to modify the Freudian equation of the gambler's compulsion to lose: "if he admittedly does not play to win, he does not play to systematically lose either, but rather for those breathtaking moments at which everything – absolute gain, ultimate loss – becomes possible."

Cognitive approaches

Several works have examined the "irrational" beliefs seen in gamblers. In particular these works highlight the illusion of control in gamblers, failure to recognize the "independence of throws", superstitions and illusory correlations. The illusion of control is that the gamblers attribute the results of purely random sequences to their ability or knowledge. This illusion of control is increased by all of the "pseudo-active" aspects of gambling (slot machines with levers, lottery tickets to be completed by the people themselves, etc.). They give themselves the ability to predict results more or less "magically", for example by making "martingales".

Whatever the gambling, slot machines, roulette or others, some gamblers believe that the results of a gambling sequence will depend on the results of previous "throws" whereas the systems in question are designed for each turn to be independent of the others. The gambler's mistake is in believing that a losing series must be followed by a winning series and the mistake with the "winning series" in believing conversely that the series will necessarily continue. These two mistakes are variants of non-recognition of the independence of throws. The "chase", the attempt to repeat a winning throw, is often described as being specific to excessive gambling but sometimes as a variant of these mistakes.

Finally, superstitions and illusory correlations, which are extremely common and varied, are sometimes encouraged by gambling advertising or systems. "Near wins" are reinforcing factors for the gambling behavior.

It should be noted however that semi-ability gambling do exist, in which knowledge (for example, prognostics) or the gambler's skill (for example poker) has some effect and which also leads to excessive gambling situations.

Cognitive errors are seen in all gamblers and are undoubtedly more common in excessive gamblers. This, however, does not establish a causal relationship. Greater knowledge of statistics, probabilities and the gambling systems only has very limited influence on gambling behavior itself.

Some authors describe a strategy of escape from reality or negative affect in problem gamblers and a search for distraction by involvement in a replacement activity. The gambling is also used to "fill a gap", to take the place of a socialization and to avoid responsibilities. A vicious circle develops in the gamblers themselves, the illusion of control playing a (secondary) role in maintaining the process.

Many works that have studied gamblers' excitement during gambling sequences in the "natural" situation show that excitement is greater with wins. The idea of tolerance vis-à-vis this excitement in regular gamblers has yet to be proven however.

The relationship between gambling, risk taking and sensation seeking is complex and requires the different types of gambling, the history of gambling behavior and the typology of gamblers to be taken into account. Sensation seeking can be seen as an indicator of a tendency towards gambling but does not distinguish between problem gamblers and other gamblers.

The risk-taking and sensation-seeking dimensions can also be placed in the person's trajectory, the gambling behavior not having the same significance in the different phases of the trajectory. Initially "adventurous" behavior when the gambling is discovered and initiation occurs can, as the habit develops, become a refuge in a now predictable routine.

Impulsivity and self-regulation capacity

Impulsivity, which results from difficulty in self-regulation or self-control lies at the heart of the definition of pathological gambling. Many studies have examined the relationships between problem/pathological gambling and controlled versus more automatic (motivational) aspects of self-regulation.

The relationships between problem or pathological gambling and controlled aspects of self-regulation have been examined in two ways: from questionnaires that assess impulsivity (which is considered to result from weak self-regulating ability), and using cognitive tasks examining executive functions (such as inhibition, planning and flexibility capacities) and decision-making capacities.

Most of the studies using impulsivity questionnaires have shown higher levels of impulsivity in pathological gamblers than in control participants. These studies have identified positive links between high level impulsivity and the profile of high-risk gamblers in the general population or in populations of university students. The level of impulsivity is also a predictive factor for the severity of the symptoms of pathological gambling and is also associated with a greater likelihood of abandoning psychotherapeutic management and of psychotherapeutic management being less effective.

The studies that have examined controlled aspects of self-regulation using cognitive tasks have produced more inconsistent results than those based on questionnaires. However, difficulties, linked to pathological and/or problem gambling, have been found in the ability to inhibit a dominant (or automatic) response, in the ability to take into account the positive or negative consequences of a decision, in the ability to defer rewards, to see oneself in the future and to estimate time.

The relationships between problem/pathological gambling and the automatic aspects of self-regulation (mostly examined by questionnaires assessing sensation seeking or related concepts) are markedly less clear that the relationships between problem/pathological gambling and controlled (executive) aspects of self-regulation. This problem is likely to be due to the fact that the scales used to examine sensation seeking do not assess the specific activities through which a gambler seeks reward and/or stimulation. Nevertheless, studies that have examined sensation seeking in gamblers have provided some useful data suggesting future avenues for research. A positive relationship has been found between sensation seeking and the number of different gambling activities performed. Regular gamblers are also found to be different in terms of their level of sensation seeking depending on the gambling activities they perform. Gamblers who prefer casino gambling have greater sensation-seeking desires than those who bet on horse races and people who bet at racecourses have higher sensation-seeking desires than those who gamble in cafes.

It appears for the most part that self-regulation difficulties are associated with problem/pathological gambling. However, the contribution made by those studies which have examined this question is still relatively limited as the studies were performed without clear reference to a theoretical model specifying both the different facets of self-regulation or impulsivity (with the associated cognitive and motivational mechanisms) and the contribution of each of these facets to development, maintenance and/or relapse of pathological gambling. In particular, this involves taking account of the complex relationships between the automatic (motivational) and controlled (executive functions and decision-making) aspects of self-regulation at different times in the creation of gambling habits. The shift in status from a "social" gambler to a "problem" gambler may occur as a result of the interaction between hypersensitivity to positive reinforcements from the game (motivational aspects of impulsivity) and weak executive abilities (executive aspects of impulsivity).

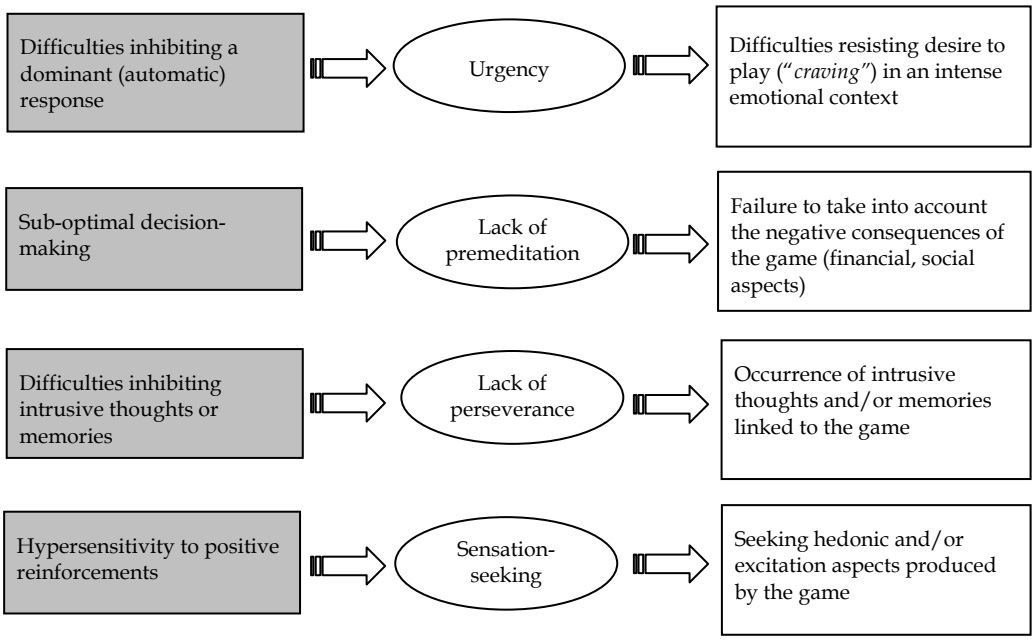


Illustration of the hypothetical relationships between problem/pathological gambling and the different executive and motivational mechanisms underpinning the different facets of impulsivity distinguished by Whiteside and Lynam (2001)

Finally it must be noted that the characterization of the pathological gambler as essentially impulsive, irrational and dependent (a characterization determined largely by the social and cultural context in which the "pathological gambling" concept is born) has considerably limited the investigation of the many psychological (conscious and unconscious) factors that motivate the gambler. In addition, this belief has led to transversal and static investigations of people considered to belong to a distinct delineated category rather than considering problem gambling as a specific stage, which may affect a large number of people in their gambling trajectory.

Vulnerability and trajectory factors

Risk and vulnerability factors are firstly those factors relating to the object of addiction, or structural factors, secondly those relating to the environment and context, or situational factors, and finally factors related to the subject, or individual factors.

From the perspective of the structural factors, the different types of gambling have attracted increasing attention in the international scientific literature, with the idea that not all include the same risk of addiction. To this end, several authors believe that the shorter the time between bet and expected gains the greater is the possibility that the gambling will be repeated and the greater is the risk. This finding undoubtedly merits confirmation via correctly conducted studies.

The impact of a large initial gain is one of the classical factors for the development of excessive gambling. This factor is seen in studies on pathological gamblers encountered during consultation visits.

The development of Internet gambling, which has been very evident for a few years, requires consideration to be given to the place and specific impact of this medium. The occasional studies on this subject emphasize the concepts of anonymity, accessibility, disinhibition and comfort which are liable to predispose to abuse and addiction practices. The impact of the offer and availability of the gambling in terms of risk factors have been considered in the same way as for other addictions.

From the perspective of the situational factors, it is above all the socio-economic factors which need to be stressed, with the clearly established concept that reduced social support and low level of income-employment often correlate with the prevalence of pathological gambling and high risk gambling. Several studies have examined the position and contribution of parents in terms of risk factors or protection against excessive gambling in their children. These stress that the place and acceptance of the gambling by the parents have an impact on the frequency of gambling behavior and gambling-related problems in children, and also that supervisory authority is a more protective position than a more lax, or conversely authoritarian family situation.

From the perspective of individual factors, initiation into gambling occurs in most cases during the adolescent period. This has been shown by studies on pathological gamblers attending specialist care structures. Early contact with gambling appears to be a severity factor reflecting what is seen in psychoactive substance addictions. The elderly are a high-risk population for lotteries and slot machines.

A family history of pathological gambling (with the concept of family aggregation), addictive behavior, anti-social personality and, to a lesser extent, other mental disorders, appears to be more prevalent in pathological gamblers. A past history of abuse in childhood has been found to be associated with earlier and more severe pathological gambling behavior.

Similarly, psychiatric co-morbidities are undisputable risk factors for beginning gambling behavior when they pre-exist and for worsening gambling behavior in all situations.

The risk and vulnerability factors appear to be similar to those found in all addictive behaviors, particularly addictions to psychoactive substances. The person who is most at risk of becoming involved in pathological gambling behavior would therefore appear to have the profile of a young unemployed male with low income, unmarried and poorly socially and culturally integrated.

Several studies have specifically examined the association between pathological gambling behavior and other addictive behaviors, notably alcohol and impulsive and delinquent behavior, particularly in young men. These reveal that early behavioral and attention disorders precede various addictive and behavioral disorders. As with most of the other addictive behaviors pathological gambling would appear to result from a combination of different risk and vulnerability factors (in variable proportions), a combination which characterizes the profile of each situation and trajectory on an individual case basis.

In terms of trajectories, there are few dedicated studies and most do not provide information about the exact chronology of the history of more or less well-controlled gambling practices.

A few correctly conducted studies over recent years have however made it possible to measure a lack of stability over time in the pathological gambler.

The fact that these gambling problems develop individually on a more transient and episodic basis, rather than continuous and chronic, is a strong argument for developing long-term general population cohort studies. These studies should better identify the complex reality of these pathways and the factors involved in periods of both remission and relapse in order to extract the maximum of information in terms of prevention and treatment indications.

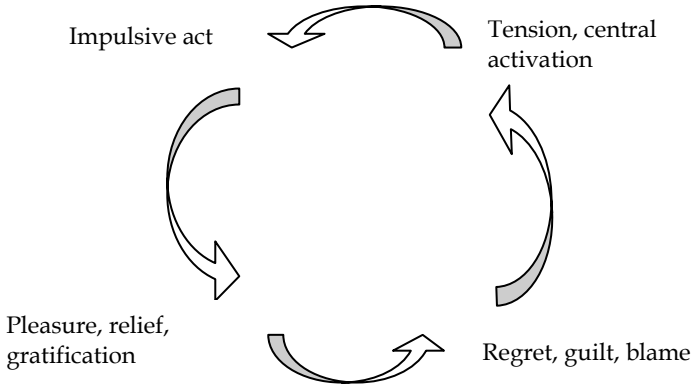
Input from the neurosciences

Most of the data published in the neurosciences field concern addictions to psychoactive substances. However, as non-substance addictions have the same symptoms and even a withdrawal syndrome, these clinical features can be considered to reflect the same cerebral dysfunction and to originate from a common pathophysiology, namely Addiction[6]. It is generally accepted that the Addiction syndrome is the end of a process which forms a cycle (or spiral) as 80% of cases relapse after withdrawal.

The shift from occasional to chronic use and Addiction is clinically characterized by progressive loss of control of the consumption behavior and compulsive seeking (craving) and consumption of the object, despite the serious consequences which may occur for the individual person, his family and close friends, and despite the development of a negative affective state which precipitates relapse.

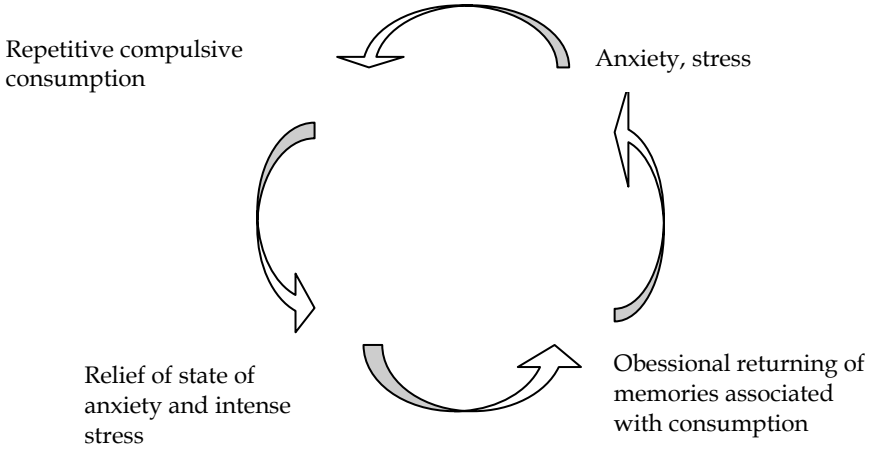
At an advanced stage of a consumption habit which becomes increasingly impulsive, the person enters an alienating spiral entirely centered on the object alone.

[6] Addiction (with a capital letter) represents the chronic relapsing disease and the symptoms common to all addictions and addiction (without capital letter) characterises addiction to an object.



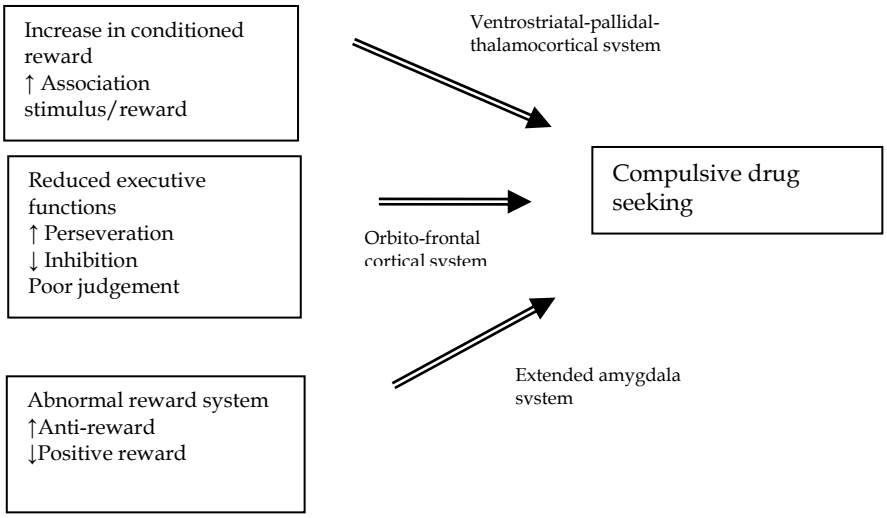
Impulsive consumption practice

Once Addiction is established, i.e. a compulsive state, the person falls into another spiral.



Compulsive consumption practice

At this end stage of the process, the person is extremely distressed and the cerebral changes are more difficult to reverse, leading to a chronic disease state of Addiction.



Neuropsychological representation of the common syndrome of Addiction: relationship between symptoms as described clinically and the corresponding regions and systems given the functions which they control (from Koob and Le Moal, 2001, 2006 and 2008)

The central stress and emotion systems (characterized by different neurotransmitters) contribute to a pathophysiological function which defines a powerful motivational state reflected by a shift from impulsive behavior to compulsive behavior.

It is important to stress that Addiction affects relatively few people compared to the number of occasional consumers of the object of addiction. Many authors consider that an object of addiction is only addictogenic when it is consumed by an already vulnerable person.

Understanding why some people succumb to addiction and others do not (up to the point of apparent resilience) is an essential question. It is accepted that a person will more easily develop a new addiction if he/she has previously succumbed to an object of addiction, although interchangeability of objects is classically seen. Vulnerable people are generally polyconsumers of addiction objects. In addition, this vulnerability may occur as a result of various psychopathological co-morbidities, poor conditions in terms of education and environment, personality disorders and stressful lifestyles. In order to understand the addiction process it must therefore be examined in a whole life context and, because of its early diathesis, be examined from a very young age onwards. Improved identification of vulnerability would help preventive intervention based on the solid concept of "why" inter-individual differences exist and "how" the addiction process is entered. Whilst vulnerability and co-morbidity have neurobiological translations, considerable progress is needed before obtaining scientific reference data. Although gambling addiction clearly has specific features it is accepted that the sources of vulnerability are the same as for other addictions.

Gaming addiction (particularly gambling and internet addictions) is a very interesting question for the neurosciences. The key factor in gamblers is the speed between perception and execution. Decision-making is based obviously on knowledge, skill and memories, the quality and relevance of which probably take account of the speed of decision and action. The involvement of pre-established mental sets also exists with drugs of abuse and are the cause of relapses; environment indices and mental representations almost immediately trigger imperious, impulsive, compulsive consumption and even a withdrawal syndrome in a person who has not consumed for several weeks. Neurobiological research is being directed towards identifying the substrates involved in the two situations which appear to be based on stimuli-response associations in memories, knowledge and cognitive systems.

Neuropsychological approaches

Considering excessive gambling to be a "non-drug addiction" raises the hypothesis that the risk of becoming dependent on the gambling and overindulging in it is related to a drug user's risk of drug dependency. This appears to be a central question in thinking about excessive gambling: is the gambling a drug in the same way as psychostimulants, opiates, alcohol or tobacco? Does this type of addiction involve the same neurotransmitters?

In drug consumption mechanisms, the dopaminergic system is a determining factor as it modifies the functioning of a specific set of neurons, the "reward circuit". This circuit relays all of the body's external and internal information and enables the person to recognize the existence of potential satisfactions of all sorts through external perceptions: food, heat, sexual pleasure, etc. Dopaminergic neurons are not strictly speaking part of the reward circuit although their activation stimulates the circuit and provokes a sensation of satisfaction. Results of neurobiological research over recent years have convinced the main part of the scientific community that dopamine is fundamental to all pleasure-related events.

The stage which still has not been widely studied is the involvement of dopamine in drug dependency. It is in fact tempting to think that it is the pleasure produced by the drug that

the consumer is no longer able to ignore. This would imply that the pleasure, and therefore dopamine, causes the drug addict to seek to consume his/her substance. It has long been noted by clinicians that drug addicts relatively quickly lose the pleasure from drug consumption in favor of seeking a state which more closely resembles a necessary or essential relief. Anglo-Saxon authors describe a shift from "liking" to "wanting". We also know that a drug addict's vulnerability to re-use a drug may last for several months or even years after he/she has given up the drug. Until now, all of the biochemical indices measured in animals following iterative administration of drugs have returned to normal after a few days or no more than one month after the last dose.

By studying modulators other than dopamine, i.e. noradrenalin and serotonin, these latter modulators have been shown to regulate each other (being coupled) in normal animals, i.e. in those which have never consumed drugs. This coupling reflects an interaction between noradrenalin and seritoninergic neurons with the result that both sets of neurons mutually activate or inhibit each other, depending on the external stimuli perceived by the animal or person. During repeated drug use this coupling disappears. The uncoupling and uncontrollable over-reactivity which it produces between the noradrenergic and serotoninergic systems may be responsible for the malaise experienced by drug addicts. Retaking the drug would then enable artificial recoupling of the neurons creating temporary relief which may explain the relapse. The drug in this case would be the most immediate way to respond to the malaise.

The question raised now is whether the uncoupling which is obtained with cocaine, morphine, amphetamine, alcohol or tobacco can be obtained by gambling. It has been clearly shown that the very great majority of excessive gamblers suffer from concomitant diseases. These diseases, particularly addiction to substances such as tobacco and alcohol which develop in parallel to the excessive gambling behavior, may account for the pathological form of the gambling.

However, psychiatrists point out that pathological gamblers exist who have no addiction or any other concomitant psychological disorders. It is not therefore possible to exclude the possibility that simply overindulging in gambling may, as for drug abuse, cause changes to the functioning of the central nervous system such as those described above. One of the hypotheses which could be put forward is that in some people, stress and distress which the gambling can cause chronically increase glucocorticoid secretion and, in the absence of the product, reproduce neuronal activations and analogous uncoupling to what is seen with addictive substances. Preclinical research should be conducted in order to study whether chronic stress situations or secretion of endogenous molecules such as glucocorticoids can alone reproduce the neurochemical effects produced by drug abuse.

Clinical approach

For the clinician, addiction can be defined as a condition through which behavior liable to give pleasure and relieve unpleasant feelings is adopted to an extent that it results in two key symptoms: repeated failure to control this behavior and continuation of the behavior despite its negative consequences.

There are some arguments to justify pathological gambling belonging to "impulse control disorders" according to the DSM-IV-TR by the inability to resist the impulse or the attempt to commit an act which is harmful to the person him/herself or to other people, particularly the high level of impulsivity in pathological gamblers confirmed in several studies. Impulsivity however appears to be only one of the features of pathological gambling. Several

published works also highlight the heterogeneous nature of this category in the DSM and have put forward the hypothesis that impulse control disorders belong to the behavioral addictions category, which would therefore group together pathological gambling, kleptomania, pyromania, trichotillomania, intermittent explosive disorder and also compulsive buying, compulsive sexual behavior and compulsive Internet use.

The following ideas emerge from the large literature on the relationship between obsessive compulsive disorders (OCD) and pathological gambling: clinical arguments (intrusive, incoercible thoughts, loss of control of mental activities) highlight the compulsive dimension of gambling ideas and suggest that pathological gambling belongs to the "obsessive compulsive disorders spectrum". There are many arguments however in the other direction: obsessive gambling ideas in the gambler are egosyntonic (driven by seeking well being) whereas the obsessive ideas in OCD are by definition intrusive and egodystonic (they cannot be ignored and are a source of distress). There are also no clear epidemiological arguments showing co-occurrence of OCD and pathological gambling. Neuropsychological findings are discordant, some works showing similar deficits in executive functions related to the frontal lobe in people with OCD and pathological gamblers, whereas these similarities have not been found in other studies.

Ultimately there are no formal arguments to enable pathological gambling to be seen as an OCD related disorder even though the compulsive dimension of the behavior is apparent.

In most of the recent publications, pathological gambling is considered to be a behavioral addiction. There are clinical arguments to support this position: the clinical phenotypes of the gambling and substance addiction (DSM-IV-TR) are very similar, including the presence of withdrawal symptoms and changes in tolerance (increased challenges over time) in the gamblers. Of the other clinical aspects common to gambling and addictions, a higher prevalence in young adults, the existence of early onset rapidly progressive forms, the existence of late onset rapidly progressive "telescoped forms" in women, and the impact of socio-cultural and ethnic factors. High rates of co-morbidities between pathological gambling and addictions and also between pathological gambling and numerous mental and personality disorders are reported in all of the studies.

Finally, some common aspects to treatment are seen: usefulness of motivational therapies to initiate a genuine request for withdrawal; use of group therapies ("Gamblers Anonymous" based on the model of "Alcoholics Anonymous"), usefulness of cognitive-behavioral therapies in pathological gambling as in most addictions.

There are therefore many clinical, epidemiological, biological and therapeutic arguments to consider pathological gambling as a non-drug addiction. Like all addictive diseases, the behavior requires impulsion and compulsion. Considering pathological gambling to be an addiction has the advantage of focusing interest on this frequently misunderstood disease, promoting its screening and management in addiction center treatment programs and finally considering a sub-syndrome category of "gambling abuse," based on the model of substance abuse in the successive versions of DSM.

Screening and diagnostic tools

The questions of screening and diagnosis must be considered with reference to their objectives: is the purpose to consider primary prevention activities, with the ambition of making the largest number of people at risk from their behavior aware of the situation, or is the purpose to identify behavior which is already sufficiently problematic to have resulted in a certain amount of characteristic damage in order to justify a specific treatment approach?

Several tools are used throughout the world for excessive/problem and pathological gambling.

The South Oaks Gambling Screen (SOGS) is a self-completed questionnaire designed from the DSM-III and containing twenty items. The SOGS is the reference tool used to identify pathological gambling which is by far the most widely used in the world. However, some limitations of this tool are regularly emphasized in terms of its psychometric properties. Several authors refer to a certain over-estimation of the prevalence of pathological gambling. As it is already an old tool some diagnostic changes have not been incorporated. Finally, the relevance of the tool in the youngest populations is debated despite the existence of a version adapted for adolescents (the SOGS-RA).

The pathological gambling section of the DSM-IV (DSM-IV-gambling) is a reference tool to diagnose pathological gambling. In this case, as is usual for the DMS, this involves diagnostic criteria which can be used by the clinician in his/her evaluation. In terms of its psychometric properties the reliability and validity of the DSM-IV-gambling have been demonstrated in many studies. The DSM-IV-gambling is recognized to be more discriminatory than the SOGS and the average prevalence of pathological gambling found with the SOGS is considered to be twice as high as with the DSM-IV-gambling.

Some adaptations of the DSM-IV-gambling need to be mentioned: the DSM-IV-J (juvenile) and DSM-IV-MR-J which are already adaptations of the DSM-IV-gambling for adolescents and the NODS[7] which is a general population screening tool using a self-completed questionnaire.

The pathological gambling section of the International Classification of Diseases (CIM-10-gambling) is an equivalent of the DSM-IV-gambling created by the World Health Organization (WHO) in 1993. The CIM-10 gambling is very widely used in clinical practice and very little used in research. There are few publications describing its psychometric properties.

The Gamblers Anonymous self-completed questionnaire (GA-20) is a twenty question self-evaluation tool very widely used in the United States and in many other countries, although there are practically no validation studies available for it. It is nevertheless considered to be very poorly discriminatory.

A number of other tools also need to be listed:

- the LIE/BET questionnaire is a pre-screening general population tool with 2 items equivalent to criterion 2 (need to play with increasing sums of money =BET) and criterion 7 (=LIE) of the DSM-III-R which seems to have useful psychometric properties;
- the Canadian problem gambling index (CPGI) is a nine item screening questionnaire adapted for Canada in two versions, English and French, which appears to offer good reliability and validity according to the literature. This tool has the merit of providing intermediary prevalence rates for pathological gambling between those seen with the DSM-IV-gambling and SOGS;
- the Structured Clinical Interview for Pathological Gambling (SCI-PG) is a clinical interview constructed from the DSM-IV and is therefore compatible with the SCID (Structured Clinical Interview for DSM Disorders) for gambling. It appears to offer good validity at different levels;
- the Gambling Self-Efficacy Questionnaire (GSEQ) and the Addiction Severity Index-Gambling (ASI-G) are two tools whose clinical interest remains to be demonstrated: the

[7] *National Opinion Research Center DSM Screen for Gambling Problem*

first is a self-completed evaluation questionnaire on the person's perceived effective control of his/her gambling behavior and the second is an attempt to validate a five item score for gambling to include in the Addiction Severity Index, the most widely used multi-dimensional evaluation tool in the world for psychoactive substance addictions.

Screening and diagnostic tools for pathological gambling have therefore existed for around twenty years and are described in validation studies which guarantee good psychometric properties for several of these tools (this applies particularly to the SOGS, DSM-IV and CPGI). The SOGS and CPGI are screening tools whereas the DSM-IV-gambling is more clearly a diagnostic tool.

Nevertheless, important differences in terms of the prevalence of pathological gambling and high risk gambling are found in some studies using these different tools, which raises questions about thresholds and calls for further studies. Similarly, the relevance of these tools in younger and older populations is currently hotly debated.

Main screening and diagnostic tools for pathological gambling

Tools	Estimate validity
South Oaks Gambling Screen (SOGS) Lesieur and Blume, 1987; translated into French by Lejoyeux, 1999	Sensitivity from 0.91 to 0.94 Specificity from 0.98 to 1 Positive predictive value 0.96 Negative predictive value 0.97
Pathological gambling section of the DSM-IV APA, 1994 translated into French by Guelfi et al., 1996	Sensitivity from 0.83 to 0.95 Specificity from 0.96 to 1 Positive predictive value from 0.64 to 1 Negative predictive value from 0.62 to 0.91
Gamblers Anonymous self-completed questionnaire (GA-20)	No validation study
Canadian Problem Gambling Index (CPGI)	Good reliability and validity
Structured Clinical Interview for Pathological gambling (SCI-PG)	No validation study
Gambling Self-Efficacy Questionnaire (GSEQ)	No validation study
Addiction Severity Index Gambling (ASI-G) (Mc Lellan et al., 1992)	No validation study

In a general population: 1 to 2% problem and pathological gamblers

More than 200 prevalence surveys were found in the international literature, conducted mostly in North America, Australia and New Zealand. The great majority of these were specific surveys centered on the question of gambling. The problem was examined in some instances as part of a broader investigation on a health or mental health subject. This approach offers additional value as it allows an in-depth analysis of the relationships between determinants and individual health characteristics and problem gambling behavior.

Most of the studies produce estimates of "life long prevalence" and/or "year prevalence", i.e. they define the proportion of the population surveyed which met the number of criteria set by the tools to identify problem or pathological gambling during their lives or during the previous year. A very clear change has been seen over time, with a progressive loss of interest in the concept of "life long prevalence", "year prevalence" being preferred. This is due both to the difficulty of correctly measuring the former, which is more sensitive to memory problems and also to the fact that the conceptual basis on which it was constructed

is fragile. Interest for this concept has waned since the chronic nature of pathological gambling has been put in question.

There is a very wide range of identification tests used in the prevalence surveys, meeting a similar wide range of concepts. Nevertheless, three main identification tools predominate in the application to epidemiology: the South Oaks Gambling Screen (SOGS) (by far the most widely used), the adapted DSM-IV test and the Canadian Problem Gambling Index (CPGI). Similarly, two concepts emerged:

- "pathological gambler" describing people whose state or behavior satisfies certain criteria of clinical diagnosis or a test questionnaire;
- "problem gambler" describing people who are not classified as pathological but who meet some of the criteria indicating difficulties with their gambling behavior. A fully extensive definition of problem gambling also includes pathological gambling.

The vast majority of the prevalence surveys on problem gambling involve adults. Most of the international literature examines the question of gambling. Studies on Internet addiction or video games (playing) are more recent, fewer in number and still centered on conceptual and methodological problems.

The prevalence level is highly dependent on the tool used, SOGS producing higher prevalence values than the DSM-IV and the CPGI producing intermediary prevalence values. This point was identified by some authors of meta-analyses and surveys which have simultaneously used several identification tools. However, it remains very controversial in the literature.

This situation does not facilitate prevalence comparisons in problem gambling in the different countries which have conducted national surveys on the subject. Nevertheless, two countries emerge with relatively high general population prevalence (problem gambling plus pathological gambling around 5%): United States and Australia. The prevalence found in the few European countries which have conducted these studies, mostly in Northern Europe, are far lower, between 1 and 2%, similar to the findings in Canada and New Zealand. Differences in prevalence between countries are still widely debated. The most common hypothesis put forward is differences in accessibility to gambling.

Average prevalence values for adults (2.5% for problem gambling, 1.5% for pathological gambling) and adolescents (15% for problem gambling, 5% for pathological gambling) have been established (using a complex weighting) from 160 prevalence studies in North America. These estimates should be seen as orders of magnitude. There is considerable dispersion of results around these mean values, particularly for adolescents.

Prevalence also depends on the population used as the denominator: the entire population, all gamblers or regular gamblers. In 2007 in Great Britain for example, the prevalence of problem gambling as defined by the DSM-IV was 0.6% in the general population, 0.9% in gamblers (people who had played at least once in the year) and 14.7% amongst "intensive" gamblers (gamble almost every day).

It is difficult to extract clear trends in the change in prevalence of problem gambling from a chronological analysis of the results produced by the surveys conducted over the last twenty years. Countries, states or provinces which have been able to repeat the surveys have found contradictory trends, which are difficult to compare in view of differences in the legal context or accessibility to gambling.

In this context, an increase in problem and pathological gambling was seen in the United States during the 1990s. Over the same period in New Zealand the problem remained stable. Internal trends in the United States, within the States which had been able to reproduce these

surveys over time, are discordant: falls, no change or increases are reported. In the United States, however, the large number of local studies available makes it possible to compare the levels reported by the oldest studies with those from the most recent ones. This comparison appears to show some increase in the prevalence of pathological gambling, problem gambling remaining stable.

Overall, however, we can assume it is relatively stable. This is not inconsistent with other findings showing limited increases in prevalence over time and increasing accessibility with prevalence returning to its previous level in the longer term.

These very general trends hide a few subtle changes showing that the phenomenon of problem gambling is constantly changing. Many studies have shown that when sub-groups of the population are examined different trends may be found. The prevalence of gambling in general and problem gambling in particular appears to have increased in women with the increase in the range of gambling offered. Prevalence in young people may be increasing. Within a given country, the social categories most affected by the phenomenon can change.

All of the epidemiological general population surveys identify males as being the gender most associated with problem gambling. In the opinion of some authors, however, this finding relates more to the fact that more men gamble and that it depends on the type of gambling. These gender differences are also tending to disappear.

Age is also an associated factor seen frequently in prevalence surveys. The prevalence level for problem and pathological gambling is higher among young people (adolescents and young adults) than among adults. This may be associated with an overall phenomenon of more common risk behavior at these ages.

Other associated factors are also highlighted in some studies: belonging to certain ethnic groups, income (low income), people with family, educational, occupational or legal difficulties, "past family history" (gamblers whose parents have had gambling problems) and early gambling behavior.

A comparison of the different social data available about factors associated with problem gambling does not reveal any invariant factor (in the different cultures or social organizations in countries which have conducted these surveys) as strongly associated with pathological gambling as sex and age (young male adults). In fairly general terms, whilst social factors play a role we must not forget that pathological gambling is seen in all social environments.

Some types of gambling appear to be more "problematic" than others (slot machines, some casino table games, electronic lotteries), although this has not been well assessed as study protocols are not designed to answer this question.

The relationship between the availability of gambling and the prevalence of problem gambling is complex. It has been interpreted in ways which can appear contradictory. Some analyses tend to show that countries (or provinces) where access is more limited also have a lower prevalence of problem or pathological gambling. However, some more "dynamic" approaches (trend analysis) put forward the hypothesis that the increase in prevalence effect associated with greater accessibility is "temporary", and only lasts as long as the change.

Important co-morbidities

There are few general population studies on the relationships between pathological gambling and other addictions or psychiatric disorders, and the available studies are mostly North American. No data are currently available for the general population in France.

All of the general population studies published show that pathological gambling is very commonly associated with other addictions.

Relative risks of associated addictions in pathological gamblers (from Petry, 2005)

Associated addiction	OR	IC 95%
Smoking	6.7	[4.6-9.9]
Alcohol	6.0	[3.8-9.7]
Drugs	4.4	[2.9-6.6]

The OR are adjusted for socio-demographic and socio-economic features

Amongst the addictions, smoking is the one found most commonly in pathological gamblers. Other addictions (alcohol, illegal drugs) generally precede the onset of pathological gambling (particularly in men). Pathological gamblers with a past history of drug addiction usually have a more severe problem associated with pathological gambling.

Many pathological gamblers have concomitant psychiatric disorders. These are most commonly associated with mood disorders, anxiety disorders or personality disorders.

Relative risk of concomitant psychiatric disorders in pathological gamblers (from Petry, 2005)

Concomitant disorders	OR	IC 95%
Personality disorders	8.3	[5.6-12.3]
Mood disorders	4.4	[2.9-6.6]
Anxiety disorders	3.9	[2.6-5.9]

The OR are adjusted for socio-demographic and socio-economic features

As with most addictive behavior, pathological gambling is closely associated with personality disorders (obsessive compulsive, avoidance, antisocial and schizoid). Antisocial personality appears to be associated with more severe pathological gambling.

Of the mood disorders, bipolar disorder is the most commonly associated with pathological gambling. Mood disorder often precedes pathological gambling and persists after it has stopped. The close association with mood disorder could also explain the high level of suicidal ideation and risk of suicide in pathological gamblers.

Of the anxiety disorders, panic disorder and post-traumatic stress syndrome are the most commonly associated with pathological gambling in the general population. No significant relationship has been found with obsessive-compulsive disorder.

Some psychiatric disorders are also risk factors for pathological gambling. The risk of developing pathological gambling behavior is three times higher than in a general population for people with substance abuse or use, and 1.8 times higher for people with depressive or anxiety disorders. People suffering from bipolar disorder are twice as likely to develop a gambling addiction than people with another mood disorder.

These significant associations are not clearly explained. The existence of co-morbidity with other psychiatric disorders (addictions, depression, personality disorders etc…) is a severity indicator for pathological gambling, justifying appropriate management.

Treatment approaches

Of the psychological techniques proposed for the treatment of pathological gambling, cognitive behavioral techniques have been examined in controlled studies. These studies are few in number and they are based on modest population numbers. Most have been for a relatively short observation period (rarely more than one year) and involve patients with few co-morbidities.

Of the behavioral therapies, only imagination sensitization techniques have been shown to have some effect.

Cognitive therapies in pathological gambling are based on "cognitive restructuring" and prevention of relapse.

Cognitive restructuring usually includes four components: understanding the concept of the law of chance (independence of throws), understanding the gambler's erroneous beliefs, awareness of erroneous perceptions during gambling, and cognitive correction of the erroneous perceptions.

Prevention of relapses usually involves learning and putting in place "coping"[8] strategies helping to avoid relapse. These cognitive techniques have been found to be significantly more effective in controlling pathological gambling behavior than no psychological intervention at all.

The question of type of management (individual or group) has also been assessed in the literature. The results appear to show that cognitive behavioral therapy on an individual or group basis produce almost equivalent immediate results. Individual management appears to be superior to group management to prevent relapses.

Whilst cognitive behavioral therapy appears to be effective in some pathological gamblers, the high level of poor adherence to this type of treatment is a limitation.

The association of a cognitive-behavioral approach and motivational techniques referring to a "transtheoretical change model" appears to increase the percentage of people who follow treatment very significantly. The transtheoretical behavioral change model identifies different stages:

- pre-contemplation: the person has no intention to follow treatment;
- contemplation: the person would like to follow treatment within the next six months;
- preparation: the person is seriously considering following treatment in the coming months;
- action: the person is following treatment regularly;
- maintenance: the patient has been following treatment regularly for more than six months.

In order describe movement from one stage to another other concepts are used which provide an understanding of how a person moves from one stage to the other:

- self-efficacy: being certain of not going back to prior undesired behavior even in a high risk situation;
- temptation: the intensity of desire to return to a particular habit in a difficult situation;
- decision equilibrium: balance between advantages and disadvantages.

[8] *Coping*: describes the process through which the individual tries to adapt to a problem situation.

In order to facilitate access to care, "brief" cognitive therapy forms have been proposed. This type of management appears to be effective in some patients.

All of the available data on psychotherapies in pathological gambling strengthen the concept that total abstinence from gambling is not a reasonable or realistic objective for most pathological gamblers. The approaches proposing gambling control and not abstinence need to be better assessed.

Management deriving from psychoanalysis or from Gamblers Anonymous, despite being frequently used, have not yet undergone robust evaluation. Similarly, "classical" management involving multiple interventions including residential care, have generally not been assessed rigorously even though they are widely offered.

In addition, the criteria defining success or failure differ between authors and studies: the most simple and readily accessible criteria is total abstinence, following the Gamblers Anonymous (GA) concept. However, a number of authors promote the concept of controlled gambling and consider a reduction in gambling activities (particularly as measured by the amount of money spent) as success.

Participation in the Gamblers Anonymous association meetings is described as one of the most widely used treatments, if not the most widely used throughout the world, for pathological gambling. It is embryonic in France but very important in North America where it has existed since 1957. Other groups occasionally form in parallel to GA (the "Gambler's Foundation " in Nordic countries). There is a treatment community dedicated to pathological gamblers in Great Britain: The Gordon House Association. This organization does not appear to be far from the spirit of GA, which it encourages its members to attend.

The "Alcoholics anonymous" model from which the Gamblers Anonymous association derives, has widely influenced the field of addiction medicine. This is a specific vision of the disease, considered to be incurable, and of the treatment, based on continued daily abstinence. This approach is based on mutual aid, goodwill, voluntary help and the particular socialization of groups in which the people support each other in their abstinence project. The program is based on twelve stages defining the principles of the structure of these voluntary associations and are a guarantee against possible sectarian diversions. Evaluation, investigation and objective demonstration are totally contradictory to the concerns of the members of Gamblers Anonymous, and this makes the approach structurally very difficult to assess. Many protocols include the possibility of taking part in GA meetings in parallel or following other treatments. Some studies tend to show that group participation is an additional success factor.

Few authors propose specific psychodynamic therapy for pathological gambling. Most of the psychoanalytical texts focus more on elucidating the meaning of the gambler's behavior than the pathological gambling itself. In the psychoanalytical approach it is difficult to separate, in the analysis, the role of the treatment from explanatory models as elucidating the meaning of the person's behavior falls simultaneously into both dimensions. It is a question of determining the reasons which led the person to over-indulge in gambling in order to work on deep determinants of behavior. Such behavior must therefore find meaning according to the subject's history. As in the case of narcissistic disorders, psychoanalysts stress specific transfer and counter-transfer methods in analyzing gamblers which are characterized both by idealization and by attempts to control.

Data on the use of psychotropic treatments in pathological gambling are still in the preliminary stages. No medical treatments for this indication have yet received marketing authorization. Three classes of medications have been studied: selective serotonin reuptake

inhibitor antidepressants (SSRI), mood regulators and opiate antagonists. The use of other molecules (atypical antipsychotics, etc.) has been reported anecdotally.

The conclusions of published studies are limited by several sources of methodological bias: few studies have been conducted placebo-controlled and double-blind; the observation period is generally short (rarely more than 16 weeks); various efficacy end points are used; the number of patients lost to follow up or who drop out of treatment is high; patients included are mostly male without major psychiatric co-morbidity.

A significant improvement compared to placebo was found in pathological gambling behavior in four double blind, placebo-controlled studies on the SSRI (fluvoxamine, paroxetine, citalopram). It is still difficult to distinguish a specific effect on gambling from an effect on depression or anxiety. Pathological gamblers with hyperactive characteristics may respond favorably to another type of antidepressant, namely bupropion.

Only one placebo-controlled trial is available for mood regulators, using lithium salts. The very significant effects of lithium on pathological gambling in this study were partly independent of its effect on mood.

The most widely studied opioid antagonist is naltrexone. Contradictory results are reported. The use of another antagonist, nalmefene, appears to be more promising in reducing some symptoms of pathological gambling, particularly impulses and craving (irresistible impulses to play).

It is difficult to generalize the results of the studies published in practice. A given pharmacological class can currently only be chosen empirically. Consideration of co-morbidities may guide towards certain types of pharmacological treatments. It would appear therefore that pathological gambling patients with bipolar co-morbidity would benefit from mood regulator treatment, mainly lithium. Studies are needed to compare different classes of treatment.

In practice, it would seem to be important for a patient to be able to benefit from a set of services, be they psychotherapeutic, pharmacological or social. A number of programs are proposed by teams who also deal with other forms of addiction (alcohol, drugs) and include various treatment methods, involving both hospitalization and outpatient care. Several of these programs, including group therapy, educational management, participation in GA meetings and debt planning, seem to produce good results (67% abstinence at 6 months).

As for all addictions, the treatment must incorporate a very wide range of dimensions. Ideally, it should even be possible to organize periods of separation in order for the patient to take time to think about the context of gambling and his/her family and friends. Even if addiction here is “variable” rather than “chronic”, it is a relapsing disease similar to drug addiction and characterized by a relative ease of withdrawal, but followed by extensive craving and relapses.

The attention and advice of family and friends are particularly important. The social component can include legal advice, the question of the protection of goods (trusteeship), and finally (but not strictly as an initial measure) assistance with establishing a debt file (relapses may lead to an inextricable situation).

Access to care

One of the major problems in the management of pathological gamblers is their low demand for care. According to two large American epidemiological studies, GIBS (Gambling Impact and Behavior Study) and NESARC (National Epidemiologic Survey on Alcohol and Related

Conditions), only 7 to 12% of people diagnosed as pathological gamblers sought aid from professionals or Gamblers Anonymous.

This finding requires actions to be put in place to improve management of these patients. In some countries (Canada, New Zealand), public health programs centered on pathological gambling have tried to improve amongst other things access to care.

There are several types of potential barriers limiting problem or pathological gamblers' access to care: accessibility of care, stigmatization associated with treatment, cost and assumed efficacy of treatment. Of the pathological gamblers questioned, 82% thought they could deal with the situation themselves.

Of the measures intended to improve access to care, the idea of not having abstinence as the sole treatment objective and of not constructing care programs based on this single objective can be put forward. For some pathological gamblers "inaccessible" treatment objectives such as abstinence may constitute a barrier to access to care. As is proposed in other addictions, the objective of care should also be to offer programs intended to limit the damage associated with the gambling behavior. It is possible to reduce gambling expenditure and some of the social consequences of pathological gambling, by offering some pathological gamblers an intervention based on gambling control. In Quebec and New Zealand the recommendations stress being able to offer a diverse range of care options and develop varied treatment programs.

Amongst the possibilities for diversifying care, apart from strategies targetting controlled gambling, the development of validated short management techniques has been proposed. These brief intervention techniques, even if conducted by telephone, have been shown to be effective in controlling features of pathological gambling. They are usually based on the transtheoretical change model.

A suggestion has also been made to put treatment programs on the Internet. This method probably helps to reduce reluctance about access to care because of its anonymity and ease of access. Many advice and care formats are already available on the Internet such as online therapy, cybertherapy and e-therapy.

The question of training first line caregivers (general practitioners, psychologists, social workers, etc.) and specialized caregivers is an important challenge in improving access to care. Since 2006 in New Zealand a government plan intended to minimize the health (suicides, psychological and medical disorders) and social (overindebtedness, etc.) consequences of pathological gambling has been in operation.

Training first line practitioners to identify pathological gambling is proposed in the measures intended to improve management and access to care. The great majority of general practice patients will agree to fill in self-completed questionnaires to screen for pathological gambling. The general practitioner emerges as a major partner in the identification and management of pathological gamblers, particularly those who complain of depression and anxiety. General practitioners are, however, not the only first line caregivers to be trained. Training programs to identify pathological gambling are offered in some countries (Canada, Australia, etc) to first line mental health workers (psychologists) and social workers. These programs are generally short (a few days maximum) but must be followed by more in-depth workshops.

It is estimated that amongst populations of patients who come into contact with the psychiatric care system or specialist care system for addictions, more than 15% have problems associated with pathological gambling. These are usually not identified and the patients are not managed specifically for this problem. There are several explanations for the low level of management of pathological gambling: limited understanding of the disorder,

lack of staff training, lack of knowledge of effective strategies for possible treatment. The importance of the association between pathological gambling and other addictions justifies the training of workers in the field of addiction to identify and manage pathological gambling.

Preventive actions for gambling

The rapid spread of gambling over the last ten years and the exponential increase in the sums invested in these gambling have caused a whole range of socio-economic problems, including pathological gambling. Several governments have acknowledged that pathological gambling has become a true public health issue.

Since the years 1999-2000, Canada, Spain and New Zealand have had tight legislation on gambling and surveillance and control organizations have been set up, under the auspices of the Ministry for Health (New Zealand) or Ministry of the Interior (Spain). In Canada, Quebec applied the Montreal strategic plan between 2003 and 2006. In New Zealand, a preventive policy was funded by a tax paid by 4 gambling operators and the responsibilities for excessive gambling were transferred in 2004 to the Ministry for Health. Since 1999, in Spain the Department for Gambling Control, which reports to the General Commission of the Criminal Investigation Department at the Ministry of the Interior, publishes on the internet a very detailed annual report on gambling, which includes preventive activities.

The preventive policies of Canada and New Zealand follow a three-level plan: levels 1 and 2 involve preventing and informing and level 3 involves therapeutic intervention for pathological gamblers. The strategies used in these two countries are intended to improve knowledge about the emerging problem of pathological gambling and its prevention by epidemiological and sociological studies, to improve the training of public and private sector caregivers involved in gambling addiction, to act by projects tailored to specific contexts (information media appropriate for the different ethnic groups, targeted groups such as the elderly). The actions can be classified according to three main themes. The first involves reducing the dangerousness of highly-addictive gambling, which are therefore also growing most quickly (particularly electronic machines), by reducing their number, trying to make these gambling less addictive, prohibiting access to them by minors and finally setting up hotlines for gamblers in trouble. The second area of intervention is the dissemination of information to young people in schools, associations and also to parents. Finally, actions intended to increase population awareness of the questions relating to gambling in order to create a favorable climate for prevention. Both Canada and New Zealand stress local community action, which is considered to be the only truly effective form of action.

Two preventive policies have been studied experimentally. The first one was educational and set up in Canada (Quebec). It promoted preventive programs among minors ("Lucky, le hasard ne peut rien y changer", Virage community tours) and also among the general population (television programs, chronicles from Loto-Quebec and its partners, flyers, newsletters). The aim is to counter-balance the advertising from gambling operators and increase the population's awareness, especially the most vulnerable people. The second policy, tested in New Zealand, and which has regular financial backing from gambling tax, supports continuing research, launches campaigns in the media and organizes public debates. The preventive action is carried out gradually: from the 2nd and 3rd levels of the "continuum", the gamblers can receive individual or group psychosocial assistance. Studies and actions are incorporated into the Public Health Monitoring Center.

The policies followed by Spain, Canada and New Zealand are firstly based on improved knowledge of the phenomenon of pathological gambling. In addition, Canada and New Zealand have developed preventive social policies placing an emphasis on information before developing addiction care policies. It must be noted, however, that the results of these recent policies still need to be assessed over a longer period of time in order to better measure their effectiveness.

Actions in France

Following the two reports by Senator Trucy in France (2002, 2006), a debate started on the consequences of gambling and the question of "pathological" gambling, leading the government, the three historical operators and the professional casino unions to take different measures. Information, prevention and training actions in the gambling places and/or on the gambling media themselves were undertaken, such as the distribution of toll free numbers and different products ("responsible gambling" posters, leaflets, brochures, flyers, slogans, logos) and communication activities to make the public aware of the responsible gambling policy of the public bodies and gambling operators.

The Casinos de France union funded "SOS Joueurs" in 1990 and began cooperating with this association to make people aware of excessive gambling (information sessions for staff in the gambling establishments) and to provide a contact (toll free number, Internet address) to gamblers with gambling problems. Some large casino groups have created their own structure and toll free number to "advise" gamblers in difficulty (Adictel) or train "reference people" among the managerial staff to identify and inform excessive gamblers.

Protective regulations, particularly for casino gamblers (systematic entrance controls) and gambling by minors (prohibition by Française des Jeux) have been set up. Documents committing operators to responsible gambling (protocol to promote responsible gambling for casinos, code of conduct for the three operators) have been drafted. In 2006, an advisory committee (Cojer) for the application of gambling and responsible gambling regulations applicable to the activities of Française des Jeux was established in the Ministry of Finance. It was decided that the staff and distributors in contact with gamblers should be informed about the features of excessive gambling and that people responsible for dealing with problem gambling should be designated within the gambling structures.

The casinos were the first to put in place specific actions to combat excessive gambling and inform their clientele about the risks associated with gambling abuse. The professional casino unions have undertaken to better block those prohibited from gambling and put in place preventive and information measures concerning excessive gambling in their establishments.

The actions taken by FDJ to apply its gambling regulation policy and promote responsible gambling are mostly recent (2006-2007). This has involved producing an "ethical charter" available on the FDJ website (which each gambler can receive free of charge) and moderation measures for Rapido: the maximum bet has fallen from 4,000 to 1,000 euros and the number of draws possible with a single ticket has been reduced from 100 to 50.

The PMU's actions in favor of responsible gambling are also very recent (2006-2007). The following main measures have been taken: distribution of a responsible gambling slogan ("Jouons Responsable!") on the different flyers and PMU publications, publication of a two-page dossier on the responsible bettor ("Pour que le pari hippique reste un plaisir" (So that horse race betting remains fun)) in an edition of the "PMU Mag: the bettor's magazine",

production of two flyers available in bars/PMU which contain telephone and Internet website contact details for "SOS Joueurs".

Other notable actions include: inclusion of gambling addiction in 2006 in the 2007-2011 Ministry of Health plan on the management and prevention of addictions; the initiation of initial research projects into pathological gambling in 2006 and 2007 as part of the Mildt, Inserm, Inca request for proposals on drugs and addictive behavior; a Mildt assignment in 2006 on the problem of gambling addictions; and the organization of a conference chaired by Senator François Trucy in October 2007.

Despite these initiatives, most of which are recent, the research gaps on gambling and modern gaming socialization, the absence of systematic multi-disciplinary studies (in the general population or in a specific gaming and gambling population), the heterogeneity of the measures taken (often in conditions of "European urgency"), different "instrumentalizations" and "lobbying actions" have prevented an objective measurement of the consequences of gambling (in terms of costs and benefits). In more general terms, these findings have not enabled the social, economic, historical and cultural issue which gambling represents to be understood.

Video game and Internet addiction: a recent phenomenon still poorly understood

The Internet and the passion which Internet video games arouse appear to be directly due to their technical features combined with the typical social phenomena of our modern age: performance and sensation seeking, living in the present, instant gratification and urgency.

For some people, video games are potentially addictive although there is as yet too little research to answer the question of addiction. Others consider that the object of addiction is of limited importance and that it is the anxiety-depressive co-morbidity which may result in a person turning to the game and not vice versa. In fact, many authors stress the ambiguous dimension of the Internet and video games: positive for socially well-integrated people and negative for isolated people and people suffering from psychological difficulties. The computer/Internet experience is pleasant in that it stimulates the senses. Several works have noted the "phasic" or transient nature of Internet abuse: the Internet user moves from a phase of total immersion to less intense use.

Specific addiction factors for MMORPG have been identified:

- unlimited playing time;
- the perpetually changing nature of the game and characters;
- the player's desire to maximize his subscription;
- the illusion of social contact;
- resemblance between the virtual and real world (substitution);
- the position of the player defined in the virtual world, seeking recognition from peers.

According to two Scandinavian general population surveys conducted in young people between 12 and 18 years old, the prevalence of Internet and video game addictions are equivalent, at 2%. This rises to 4% in the group of frequent players (at least once per week). A national survey in the general adult population in the United States found problem Internet use to be equivalent to 0.7% of the population.

All of the qualitative and quantitative studies note the predominance of the male population in video gaming, generally of high socio-cultural status and with an average age of 26. The addictive use of online stock market sites was identified in 2001, some mixing stock market and gambling.

This addiction has common traits with other addictions, but also has specific features: the incidence of the loss of control criterion (related to the impulsive dimension) is similar between gambling and video games; internet games are similar to slot machine behavior: need for a response to predictable stimuli constructed by algorithms, need for total concentration and eye-hand co-ordination, large range of games accessible thanks to the player's performance. Playing video games is believed to often lead to playing slot machine games.

As with gambling, the use of the computer accelerates subjective time. Is the particular attraction of video games not the fact that they combine the illusion of control or even power and the control of meaning? The only requirement in the games is logic and they then give access to a coherent world. According to some authors video games lead to delocalization although others consider that it is the ability to establish friendship links with the Internet which promotes excessive use. A further group of people consider that making contact through games prevents any risk of dependency. However, overall it is the quest for feelings of excitement and release which form the main risk of addiction.

One feature of these games is that they represent an industry enjoying growing turnover, now exceeding that of the cinema industry, and whose designers seek to achieve customer loyalty (and beyond) by creating consciously addictive reward structures or by using "tracking" techniques to reach players. These Internet games alter the usual game regulation modes by releasing the players from their social space and time constraints, and by shielding them from the inhibiting view of others.

Threats to social relations are low for video games. This is counter to the clichés depicting the player as being dissocialized by the virtual world. Cyberspace can however be seen as a relations and sensations machine which offers the ability to create one's own reality using virtual techniques, i.e. like a potential "drug".

Authors therefore differ in their assessment and analysis of excessive IT-based gambling. According to some, dependency is caused by the medium itself, the computer or Internet, whereas others consider that it is caused by the content (video game, gambling, chat, etc.). There are also differences as to the origin of the problem: the features of the game on these new supports, the features of the population concerned, the interaction between these different dimensions. It would currently seem essential to endeavor to better understand this new phenomenon which is complex and has been inadequately studied.

Preventive actions for video games and Internet games

Technology has always played a role in the development of gaming and gambling practices. It provides new market opportunities not only because of improvement in pre-existing games technology: far more sophisticated slot machines, video lotteries, interactive television, games on portable telephones, but also because the games arrive on the Internet which means in the player's home.

Informing the population about risks is essential. The content must consider the initial symptoms of abuse, addiction and relationship consequences. Joint multidisciplinary thought is needed on the risks from some of the games offered:

- risks from the way games are promoted and contribute to forging certain beliefs;
- risks from situational factors such as accessibility;
- structural risk relating to the nature of the gaming and gambling product.

From this perspective much needs to be done to understand the specific features of Internet and video games (time between the bet and obtaining a possible gain, possible repetitive frequency of the game in particular).

Some people stress the need for awareness in identifying symptoms (self-completed questionnaires), to help understand the phenomenon of "tunnel thought", to support the efforts to achieve dialogue. For young people, the emphasis must be placed on their skills, informing them about technological features and supporting the development of their critical mind, independence of thought, developing an argument and the ability to debate.

Parents have a key role: limiting time, mediation, checking content when the game is purchased, informing about the risks of excessive use, how to distance oneself and above all time to discuss the content of the games and programs.

Technology may be used for health promotion using the Internet and video games on CD-Rom. Gambling sites may contain links to awareness sites. For sites which use "tracking", the data may be used to identify problem players and help them rather than exploit them.

Internet sites such as YouthBet.net[9] are designed, based on a public health approach, to prevent gaming and gambling problems in the young. Extensive information about players' behavior and problems are presented on their site. Advice on time management, money management, perception of risk and gambling self-assessment are given. Telephone numbers and online help about gaming and gambling can be accessed by young people who feel they have problems with gaming and gambling. Many have said that this site made them realize that they were playing too much.

In addition, Internet gambling site designers should design home pages that present the logo of their socially responsible partner and a link to the partner, with information about sites providing assistance. Finally, they should manifest a commitment towards responsible gambling: they should not encourage replay, a confirmation should be required after a bet in order to provide an opportunity to change one's mind, impulse modes should be discouraged. Together this could constitute a code of good conduct.

[9] www.YouthBet.net

Recommendations

Gambling has become a true social phenomenon. The considerable change in what is offered makes the damage which gambling can cause in vulnerable people more visible. Against this backdrop, the difficulty of public policy is to reconcile the development of gambling which provide funds to the state, respecting the freedom of gamblers and protecting vulnerable people. Problem gambling and pathological gambling have individual family and occupational consequences, causing worry and distress in the people affected. Although we do not have French data, the prevalence of problem gamblers (estimated in other countries) is probably not insignificant (1 to 3% of the general population depending on the studies). Therefore, it would appear necessary to continue increasing the awareness of public bodies and training health professionals in the management of gamblers with a gambling problem.

The principle of developing a "public health" approach in gambling policy is now accepted. The concept of "pathological gambling" and the need for specific management appear in the "Addiction 2007-2011" plan.

However, it appears difficult to separate the question of problem and pathological gambling from all of the economic, political, social and ethical questions which gambling raise. There is a need for coherence in public policies. To this end, the Trucy reports (2002, 2006) stress the need for a "single regulatory authority".

At the public health level, there is a desire to combine medical and social action, and individual and community interventions. . These actions must be defined for the populations concerned and according to the different levels of risk. From informing the general population for the purpose of universal prevention, to managing individuals with gambling problems, the different intervention strategies must be complementary. The structures in France that have acquired expertise should be used as a basis for a policy of information and training for caregivers within the framework of a medium-term action plan.

The complexity of the issues involved justifies permanent interdisciplinary research including the human and social sciences. The programs must tie together research, action and evaluation.

New forms of games (video games, Internet games) are developing very quickly. The harm from excessive use, particularly in young people, raises serious questions. It would be useful to promote work on these new games and the consequences associated with their use.

According to the Trucy report (2006): "In order to ensure the promotion of required studies on gambling, and to promote the greater part of prevention of the dependency, the State would be its duty to do a specific funds".

The recommendations developed within the framework of this expert report, based on a critical analysis of the international scientific data on gaming situations (mostly gambling) and addiction problems, must be seen as a first stage to inform public decision-making. Their application will require prospective work (operational expertise) bringing together the main actors involved in gambling (operators, institutions, scientists, associations, etc).

Informing and preventing

A coherent prevention policy must consider several levels of risk and precisely define the actions' target population: general population, moderately at-risk population, high-risk population.

PROMOTE CLEAR AND OBJECTIVE INFORMATION ON GAMBLING

The massive publicity on gambling is by definition a factor which encourages use of the games. All social groups are now involved. The easy access to some types of gambling (slot machines, Rapido, scratch cards, etc.) allows the most economically disadvantaged population groups to access gambling behavior. Faced with this increasing supply of gambling, some countries (Canada, New Zealand, etc.) have put in place systematic education policies for young people and information for adults about the possible risk of excessive gambling. Actions in France can draw widely from the policies introduced in these countries.

The information must in particular describe the harm associated with gambling itself (problem gambling), i.e. the social, occupational and family damage (debt, loss of employment, divorce, etc.). It must clearly stress the risk of addiction (pathological gambling), defined as a loss of control of behavior and maintenance of the same behavior despite negative consequences. It must emphasize the individual nature of gamblers' trajectories and the possibility that the gambler's behavior can be altered.

The group of experts recommends that clear objective information be promoted which takes account of established scientific data on gambling behavior and excess gambling. This information, for which Inpes (National Institute for Prevention and Health Education) could be made responsible, must address the different audiences who take part in gambling in order for all age groups to feel involved. It must clearly describe the differences between recreational social gambling, excessive/problem gambling defined through its negative consequences, and truly pathological gambling. This clarification should allow each person to consider his/her gambling behavior. The information actions can use various supports and media.

The technological improvement in pre-existing gambling (slot machines, video lotteries, interactive television, mobile phone games, etc.) opens new market opportunities, especially as the gambling can be accessed at the gambler's home or at his/her place of work via the Internet. Online gambling is easier and more comfortable, since it is anonymous and solitary, and it eludes any advisory cautions. The group of experts draws attention to these new risks linked to the development of Internet gambling and recommends that these sites contain links to sites containing information about gambling problems and about places where gamblers with difficulties can turn to.

DEVELOP AND EVALUATE A TRAINING PROGRAMME FOR PEOPLE IN CONTACT WITH GAMBLERS

Informing groups considered to be "at risk" would appear technically difficult to achieve directly. It is however possible to develop training for gambling operators, retailers and employees who work in the gambling world. Some operators have already taken initiatives

in this direction although these efforts are neither co-ordinated, evaluated nor validated. It is therefore essential to fill this gap.

The group of experts recommends that efforts be continued to increase the awareness of all gambling professionals about the problem of excessive gambling. In addition to this awareness campaign, the group of experts recommends that a co-ordinated national training program be set up for different professional groups with three main objectives: knowledge of gambling-associated risks, identifying people in difficulty (through recognition of the principle signs), and learning appropriate behavior (establishing contact and directing to assistance systems). This program must be evaluated independently.

PROMOTING PREVENTIVE INTERVENTIONS FOR PEOPLE PROHIBITED FROM GAMBLING

The casino gambler who has become aware of the harmful effects of his/her behavior can voluntarily register with the authorities in a national file listing "prohibited gamblers". Such registration protects the person as he/she is refused admission to the casino. Once the gambler is in the file the decision is irrevocable for a period of three years. There is no equivalent measure for other types of gambling.

The group of experts recommends that self restriction and self prohibition conditions for gambling, inspired by those currently used in casinos, be proposed for other forms of gambling, including online gambling.

Internet gambling site producers should be asked to adhere to a good practice code. This process would help to control a number of points: confirming the gambler's age, credit card payment only authorized to gamblers of majority age, limited credit limit, possibility for self exclusion and request for assistance, messages inviting the gambler's to control their gambling, home pages with the logo of the socially responsible partner and link to the partner, information about sites to obtain help, confirmation should be required after a bet in order to provide the gambler with an opportunity to change his/her mind, impulse modes should be discouraged, and a commitment to "responsible gambling".

Managing excessive gamblers

Several lines of identification and management are needed for problem gamblers: this means better identifying problem or pathological gamblers in the non-specialized care system, optimizing the care offered in the addiction medicine sector, broadening the offer of care in the psychiatric sector, and inter-linking the addiction medicine care system with the psychiatry system.

SETTING UP HELP AND SUPPORT SYSTEMS

Self-management systems based on different supports have been studied experimentally and assessed in different countries.

Many advisory and care systems are available on the Internet including online therapy, cybertherapy and e-therapy. The anonymity, ease of access and low cost of these management methods probably reduce reticence against accessing care.

Several countries have developed techniques based on brief interventions such as a telephone call. These methods have been shown to offer some efficacy to control the features of pathological gambling or at least problem gambling.

However, the effectiveness of these interventions relies on an important prerequisite, namely the gambler's motivation for change.

The group of experts recommends distribution of advice (and addresses) via brochures in the gambling premises. It recommends that a national public telephone hotline be developed, which should be open to gamblers in difficulty with their gambling behavior (such as already exists for psychoactive substance users). It emphasizes the importance of providing aid and support (grouped support) to the gamblers' friends and family, who are often in considerable distress. It highlights the need to assess the different brief intervention methods.

IMPROVED IDENTIFICATION OF EXCESSIVE/PROBLEM GAMBLERS IN THE CARE SYSTEMS

Few gamblers with gambling problems consult spontaneously. However, the majority of them develop other problems which may lead them to consult. These are typically another addiction (smoking, alcohol, etc.), mood disorders, anxiety disorders, personality disorders or suicide attempts.

It is essential at the time of a consultation or specialist care setting (psychiatric or addiction medicine) to identify people who have a gambling problem, in order to offer them appropriate management that takes all of their health problems into account.

The group of experts recommends that practitioners working in addiction medicine departments and in psychiatric units systematically detect problem gambling behavior.

STRUCTURING THE CARE OFFERED AND RESEARCH

Gambling addiction undoubtedly has certain features in common with other addictions (to psychoactive substances and other behavioral addictions), although it has a number of specific features which are important to take into account when offering care.

In the overall addiction medicine system (2007-2011 addictions management and prevention plan) the role of support and prevention care centers (CSAPA) in addiction medicine must be reaffirmed. These proximity medical-social centers must acquire the appropriate skills to receive and help people with behavioral addiction problems, such as problem gambling. A psychosocial intervention should help reduce the damage associated with excessive gambling.

In the hospital system, where the care offered is classified into three levels (I, II, III) according to the addictions plan, specialist consultations for problem gamblers should be offered (at least in level III structures).

The group of experts recommends that a university reference center be opened in each inter-region. Such centers should be located in level III structures, be dedicated to pathological gambling problems, and provide care, teaching, research and training.

Finally, the group of experts recommends that coordination be set up for these centers, enabling coordinated, clinical and therapeutic approaches to be developed based on the use of diagnostic tools, therapeutic protocols and common evaluation procedures.

DEVELOP TRAINING FOR THERAPISTS IN THE MANAGEMENT OF EXCESSIVE/PROBLEM AND PATHOLOGICAL GAMBLERS

In order to improve the management of pathological gamblers it would appear important to increase the skill level of addiction medicine and psychiatry therapists in pathological gambling. This involves consolidating their knowledge about identification, diagnostic criteria, the very common co-morbidities and the management strategies which have been shown to be effective in pathological gambling.

The group of experts recommends that teams in centers with wide transverse skills in addiction medicine be trained initially. For this end, trainers who already have considerable national and international experience should be called upon.

The strength of the link between pathological gambling and other addictions merits the introduction of training for addiction caregivers in the identification and management of pathological gambling. Validated training should therefore be offered secondarily to teams who so desire (professionals in support and prevention care centers in addiction medicine, hospital consultations, etc.) by mobilizing the available resources.

Recent foreign studies show that the general practitioner is a major partner in the identification and management of pathological gamblers, particularly in those complaining of depression and anxiety. Patients state that their general practitioner is the appropriate person to help them and that they willingly agree to fill in self-completed screening questionnaires.

The group of experts recommends that training be proposed to first line caregivers such as general practitioners, mental health personnel (psychologists) and social workers. Short duration programs (lasting a maximum of a few days) have been studied experimentally in some countries. Beyond this training, the program sponsors offer more specialized workshops.

Developing research

In order to develop a public health policy, it is essential to determine the prevalence of problem gambling and pathological gambling in France. In addition, multidisciplinary research is needed to understand all of the modern gaming and gambling practices and socializations (including online games and video games), and to assess their individual and community consequences, for example by means of a gambling observatory. It is also important to understand how gambling addiction is defined compared, in terms of points of similarity and points of divergence, to other addictions that have already been extensively researched.

PROMOTING A NATIONAL PREVALENCE SURVEY AND ASSOCIATED STUDIES

The prevalence of problem gambling and pathological gambling is unknown in the general population in France. France is almost one of the only developed countries not to have set up this type of survey which enables the problem to be measured. This knowledge is essential for the drafting of a coherent public health action plan.

General population studies in the United States, Canada, Australia, New Zealand and Northern Europe indicate that the lifelong prevalence of pathological gambling is around 1%, to which can be added a 2% prevalence of problem or excessive gamblers. In the great

majority of cases these are surveys centered specifically on gambling. In some cases the problem is examined as part of a wider investigation on mental health or health more generally. This approach offers an interesting additional value as it enables an in-depth analysis of the relationships between individual determinants and health features and problem gambling.

The most recent surveys have opted for "annual prevalence" over "lifelong prevalence" since the chronic nature of pathological gambling has been open to discussion.

These studies reveal factors associated with this behavior which are identical overall to those already involved in other addictive behaviors. There is a strong relationship between pathological gambling, use of psychoactive substances and the presence of psychiatric disorders.

The group of experts recommends that a national prevalence survey be promoted, based on the body of experience accumulated in other countries. It highlights the use of linking this process to an approach examining addictions and mental health more generally. This prevalence study should enable the socio-demographic and economic features of the people most affected to be described.

DEVELOPING STUDIES ON NEW TYPES OF GAMES

Studies on Internet or video game (Playing) addiction are more recent (since the middle of the 1990s), few in number and are still centered on design and methodological problems. As elsewhere, it is therefore difficult in France to estimate the magnitude of the phenomenon of addiction to these new types of games. Two general population studies in young people (Scandinavian countries) and in adults (United States) report the prevalence of pathological gamblers to be 2% and 1% respectively. These prevalence figures appear similar to those found for gambling.

It would appear necessary for sociological research to be conducted to improve understanding of these games, both as a new form of pastime or as, for example, a quasi-sporting practice. This research could examine the change in cultural practices associated with the technological, imaginary and interactive universe.

The group of experts recommends that sociological research be carried out to understand the video games behavior which forms part of the changes in our society. As regards addiction to this type of game, it recommends firstly that the concepts and tools to identify problem playing be validated and that population studies then be performed.

PROMOTING COHORT STUDIES TO IMPROVE UNDERSTANDING OF GAMBLERS' TRAJECTORIES

The economic, social and pathological consequences of gambling have not yet been studied on sufficiently large cohorts for scientifically acceptable conclusions to be drawn. Information from other countries, mostly Anglo-Saxon, although interesting, cannot replace in situ studies.

Most of the studies available do not make it possible to establish the precise chronology of the history of more or less controlled gambling behavior. This highlights the lack of longitudinal studies over a sufficiently long period of time and also the inadequate documentation of "spontaneous recoveries" by stopping or restarting controlled behavior (which is not specific to pathological gambling behavior but regularly highlighted also for psychoactive substance addictions). The lack of stability of the status of a pathological

gambler over time is a feature which is frequently reported in the studies. Less than 40% of the gamblers who meet the criteria for whole life pathological gambling still have this diagnosis during their most recent gambling phases.

In addition, many authors have highlighted in recent years the merits of being able to identify sub-groups within the population of pathological gamblers, characterized by certain specific clinical features and also by a number of more or less specific factors (sociological, psychobiological, etc.) These studies show that the earlier the person is initiated into gambling the longer is the time between initiation and seeking treatment for pathological gambling and that this finding is identical in both sexes. Some studies on the other hand highlight the differences between men and women: later problem gambling in women, less association with psychoactive substance dependency and seeking care more rapidly. It would also be useful to determine whether delinquent behavior develops from problem gambling or whether problem gambling and delinquent behavior flow from personal history (vulnerability, antisocial behavior, at-risk behavior) or family history (excessive and transgressive parental behavior).

The group of experts recommends that cohort studies be developed over long time periods, both in the general population and in gamblers monitored in care structures for gambling problems. These studies should better reveal the complex reality of these trajectories and the factors involved in periods of remission and relapse in order to gain the maximum information for prevention and therapeutic indications.

DEVELOPING NEUROPSYCHOLOGY COHORT STUDIES

Impulsivity (result of a difficulty in self-regulation or self-control) lies at the heart of the definition of problem/pathological gambling. For the most part research confirms that difficulties in self-regulation are associated with problem/pathological gambling, although the contribution of these studies remains rather limited as they were performed without clear reference to a theoretical model specifying both the different facets of self-regulation (or impulsivity) and the contribution of each of these facets to the development and/or maintenance of problem/pathological gambling.

In future, research must be conducted based on recent models which have identified the different dimensions of self-regulation and the psychological (cognitive and motivational) mechanisms involved in these dimensions.

The group of experts recommends that work be conducted in a longitudinal, dynamic context focusing on the times of change in gambling behavior (starting, increased use, reduction, automation or habit creation, becoming aware of the problem, whether or not seeking assistance, interrupting treatment, spontaneous remission).

Besides the self-regulation processes, research should also longitudinally examine the aims and motivations, affects, cognitive style, beliefs and self perception (conscious and unconscious) of the gamblers associated with different types of gambling activity, taking account of different socio-demographic variables.

This research should consider pathological gambling, not as an entity in isolation, but as one of the manifestations of so-called externalized disorders (including antisocial behavior and substance abuse). A growing body of data suggests that there is a continuum within the general population with regard to the risk of developing multiple externalized disorders.

DEVELOPING STUDIES ON SOCIAL COSTS

There are no studies on the social costs of gambling in France. Estimating the social cost assumes firstly identifying all of the damage caused by the practice then allocating monetary values following a strict methodological framework. Constructing this indicator would appear particularly useful for measuring the problem and shaping public policies.

Because of the importance of the questions which are still debated, it is clear that social cost estimates of gambling made until now in other countries must be interpreted with caution. These estimates have the advantage of showing that the family costs and intangible costs (pain to family and friends, psychological costs of divorce or suicide, etc.) may constitute approximately 90% of the total estimated cost.

The group of experts recommends that available economic data on gambling be identified and that social cost studies be developed in the general population. These must be associated with a definition of the share attributable to gambling and specify the different types of gambling and gamblers. Other types of economic studies based for example on the benefits from gambling activities (calculations of consumers and producers surplus) and their relationships with economic development, inequalities and criminality (theft, vandalism, counterfeiting, etc.) would also be desirable.

ADAPTING AND VALIDATING TOOLS TO IDENTIFY PROBLEM GAMBLERS

The most widely used identification tests throughout the world for excessive/problem and pathological gambling are the South Oaks Gambling Screen (SOGS) (by far the most widely used), a test adapted from the DSM-IV and the Canadian Problem Gambling Index (CPGI). These are used as a screening method, the DSM-IV remaining the reference tool for diagnosis. However, their relevance to young gamblers and older people is debated.

The group of experts recommends that existing screening and diagnostic tools be adapted and validated firstly for adolescents and secondly for older people, for whom they appear to be inappropriate. Screening tools must be validated for traditional gambling, but also for online gambling.

DEVELOPING EVALUATION STUDIES ON THE MANAGEMENT PROTOCOLS

A set of policies and measures intended to prevent and treat the development of excessive gambling habits have been developed in several countries. Given the important co-morbidities the treatment protocols must take account of these concomitant disorders. These associations between pathological gambling and other addictions, on the one hand, and between pathological gambling and other psychiatric disorders, on the other, are seen particularly in pathological gamblers who have started their pathological gambling behavior early (in adolescence).

The group of experts recommends that evaluation studies, management protocols and impact studies on the psychotherapeutic, chemotherapeutic and social treatment approaches be developed.

CONTINUING FUNDAMENTAL RESEARCH ON THE CAUSATIVE MECHANISMS IN GAMBLING ADDICTION

Is gambling a drug in the same way as psychostimulants, opiates, alcohol and tobacco? This question is not currently resolved. One of the central questions about non-drug addiction is to determine whether validated models in addictions to psychoactive substances can be used to understand them.

Of these models, one has shown that repeated use of substances as different as psychostimulants (cocaine, amphetamine), opiates (morphine, heron) or alcohol causes dissociation (or uncoupling) of the mutual regulation of noradrenergic and serotoninergic neurons. This uncoupling is believed to cause, among other things, the malaise described by drug addicts. Retaking the drug would then allow artificial recoupling of the neurons and temporary relief, thus explaining relapses.

Can gambling in itself cause identical uncoupling? The answer is not simple as the very great majority of excessive gamblers suffer from concomitant diseases. It is therefore possible that it is these diseases, including the presence of smoking and alcohol addictions, which make the person vulnerable and that pathological gambling is then only one of the expressions, and not the origin, of the addictive disease.

It is not possible, however, to exclude the fact that simply overindulging the gambling could, as for a drug of abuse, cause changes to the central nervous system as pathological gamblers exist who have no concomitant addition or psychological disorder. One of the hypotheses which could be studied is that in some people the stress and depression which may be caused by gambling chronically increase glucocorticoid secretion, and that an absence of gaming entails neuronal activations and analogous uncoupling similar to that seen in addictive drugs.

The group of experts recommends firstly that preclinical research be conducted to test the role of stress in the development of gaming addiction, and secondly to analyze, focusing on the types of games to which pathological gamblers are attached, whether there are games which are more liable to trigger an addiction effect than others.

Moreover, one may consider an object of addiction to be addictogenic only if it is used/consumed by an already vulnerable person. This vulnerability could be the result of various co-morbidities seen in pathological gamblers, pre-existing adverse conditions in terms of education and environment, personality disorders and stressful lifestyle. The troubles which develop are therefore complex, specific to the object and to the co-morbidities. Whilst vulnerability and co-morbidity have neurobiological equivalents, considerable progress needs to be made before scientific reference data can be obtained.

The group of experts recommends that inter-individual differences underpinning vulnerability and the conditions under which people enter the gaming addiction process be studied. Neurosciences can contribute to these studies along with other disciplines. This research could contribute to establishing the bases of prevention and care policies.

APPENDIX

Inserm collective expert review

Methodology

An Inserm collective expert review[10] sheds scientific light on a given subject in the field of health on the basis of a critical analysis and synthesis of the international scientific literature. The expert reviews are implemented at the request of institutions wishing for access to recent research data pertinent to their decision-making process with respect to public policy. An Inserm collective expert review is to be considered as an initial stage that is necessary but most frequently not sufficient to result in decision-making. The conclusions of the collective expert review contribute to, but cannot replace, debate between the professionals involved or society debate if the questions addressed are particularly complex and sensitive.

At the request of an institution, the Inserm collective expert review may be accompanied by an 'operational' expert review addressing application of the knowledge and recommendations and taking into account contextual factors (existing programs, structures, players, training, etc.). The latter type of expert review elicits contributions from the players in the field able to respond to the feasibility aspects, representatives of the administrations or institutions responsible for promoting applications in the field involved, experts having contributed to the reviews, and representatives of patient associations. The sharing of varied cultures and experience enables a complementary approach to the collective expert review in an operational framework. Moreover, a variety of work (recommendations for good practices, public hearings, etc.) implemented under the auspices of the High Authority for Health (HAS) may follow an Inserm collective expert review.

Collective expert review has been an Inserm mission since 1994. Some sixty collective expert reviews have been implemented in numerous health fields. The Institute guarantees the conditions under which the expert review is implemented (exhaustiveness of the document sources, qualification and independence of the experts, transparency of the process).

The Inserm Center for Collective Expert Reviews organizes the various stages of collective expert review from the initial problem statement through to communication of the report, with the assistance of Inserm departments. The Center team, consisting of engineers, researchers and a secretariat, implements the document searches, logistics and chairing of the expert review meetings. The team contributes to the scientific writing and to compiling the expert review products. Regular exchanges with other public organizations (EPST) implementing the same type of collective expert review have enabled similar procedures to be set up.

Problem statement

The problem statement phase enables definition of the institution's request, checking that accessible scientific literature on the issue raised is available and drawing up specifications which state the framework of the expert review (status report on the perimeter and main themes of the subject), its duration and budget, documented by a convention signed by the sponsor and Inserm.

[10] Inserm accredited label

During the problem statement phase, Inserm also organizes meetings with patient associations in order to ascertain the questions those associations wish to have addressed and the data sources available to them. The information is incorporated in the scientific program of the expert review. For certain subjects, exchanges with industrial partners are indispensable in order to obtain access to complementary data not available in the databases.

Expert review monitoring committee and assistance unit setup

A monitoring committee consisting of the institution and Inserm representatives is set up. The committee meets several times during the expert review to monitor the progress of the review, discuss any difficulties encountered in addressing the issues, ensure compliance with the specifications and examine any new factors in the regulatory and political context pertinent to the ongoing review. The committee also meets at the end of the expert review for presentation of the conclusions and prior to compilation of the final version of the report.

For expert reviews addressing sensitive issues, an assistance unit is also set up and consists in representatives of the Directorate General of Inserm, scientific board, ethical committee of Inserm, communication department, human and social science researchers and specialists in the history of science. The role of that unit is to identify, at the start of the expert review, the issues liable to have strong resonance for the professionals involved and civil society, and to suggest hearings of professionals in related fields, representatives of civil society and patient associations. In short, the unit is responsible for measuring the perception that the various recipients may have of the expert review. Before publication of the expert review report, the assistance unit pays special attention to the wording of the synthesis and recommendations, including, if necessary, the expression of the various points of view. Downstream of the expert review, the unit is responsible for strengthening and enhancing the circulation of the results of the expert review, for instance by holding colloquia or seminars with the professionals of the field and players involved or holding public debates with representatives of civil society. Those exchanges are to ensure enhanced understanding and adoption of the knowledge generated by the expert review.

Literature searching

The specifications drawn up with the institution are translated into an exhaustive list of scientific questions reflecting the perimeter of the expert review with the assistance of referral scientists in the field and members of Inserm. The scientific questions enable identification of the disciplines involved and construction of a key-word arborescence employed in the systematic searching of international biomedical databases. The articles and documents selected on the basis of their pertinence with respect to answering the scientific questions constitute the document base, which is forwarded to the experts. Each member of the group is asked to add to the document base over the course of the expert review.

Institutional reports (parliamentary, European, international, etc.), raw statistical data, associations' publications and other documents from the gray literature are also inventoried (non-exhaustive) in order to complement the academic publications provided to the experts. The experts are responsible for taking or not taking into account those sources depending on the interest and the quality of the information supplied. Lastly, a review of the main articles in the French press is supplied to the experts during the expert review in order to enable them to follow developments on the theme and the social repercussions.

Constitution of the expert group

The expert group is formed on the basis of the scientific skills necessary for analysis of the bibliography collected and on the basis of the complementarity of the group members' approaches. Since an Inserm collective expert review is defined as a critical analysis of the academic knowledge available, the choice of the experts is based on their scientific skills certified by publications in peer-review journals and their recognition by their peers. The expert recruitment logic, based on scientific skills and not on knowledge in the field, is to be stressed in that it is a frequent source of misunderstandings when the expert reviews are published.

The experts are selected from the French and international scientific community. They are to be independent of the partner sponsoring the expert review and recognized pressure groups. The composition of the expert group is validated by the Directorate General of Inserm.

Several scientists outside of the group may be requested to contribute occasionally to a particular theme during the expert review.

Expert review implementation lasts between 12 and 18 months, depending on the volume of literature to be reviewed and analyzed and the complexity of the subject.

Initial expert group meeting

Before the first meeting, the experts receive a document explaining their mission, the scientific program (issues to be addressed), schedule, the expert review bibliographic database to date and articles more specifically addressing certain experts on the basis of the skills.

During the first meeting, the expert group discusses the list of issues to be reviewed and completes or modifies it. The group also examines the document base and proposes supplementary searches with a view to enriching that base.

Expert critical analysis of the literature

During the meetings, each expert orally presents a critical analysis of the literature with respect to the aspect allocated to the expert in his/her field of expertise and communicates the accepted facts, uncertainties and controversies with respect to current knowledge. The questions, remarks and points of convergence or divergence elicited by the group analysis are taken into consideration in the section that each of the experts compiles. The analysis report, consisting of various sections, thus constitutes the state of the art for the various disciplines pertinent to the issue under review. The bibliographic references used by the expert are cited in and at the end of each section.

Synthesis and recommendations

The synthesis summarizes the broad lines of the literature analysis and identifies the main findings and principles. Contributions from contributors outside the group may be summarized in the synthesis.

The synthesis is more specifically intended for the institution and decision-makers with a view to use of the knowledge presented therein. The wording of the synthesis is to take into account the fact that it will be read by non-scientists.

As of report publication, the synthesis is posted on Inserm's website. The synthesis is translated into English and posted on the NCBI/NLM site (National Center for

Biotechnology Information of the National Library of Medicine) and Sinapse site (Scientific INformAtion for Policy Support in Europe, European Commission site).

If requested by the institution, certain collective expert reviews include 'recommendations'. Two types of 'recommendations' are formulated by the experts group. 'Principles for action' based on a validated scientific reference system with a view to defining future public health action (mainly in screening, prevention and management) but which are not under any circumstances to be considered 'operational' recommendations insofar as no economic or political components have been taken into account in the scientific analysis. 'Research orientations' are also proposed by the experts group with a view to filling in the gaps in scientific knowledge observed during the analysis. Once again, these proposals cannot be considered 'priority' research without their being put into perspective. That is the task of the pertinent authorities.

Critical review of the report and synthesis by prominent 'readers'

For certain expert reviews addressing sensitive subjects, a critical reading memorandum is requested from several prominent 'readers' selected on the basis of the scientific or medical knowledge and managing or evaluating French or European research programs or having contributed to ministerial working groups. Similarly, the report and synthesis (and recommendations) may be submitted to figures with good knowledge of the 'field' and able to grasp the socioeconomic and political issues associated with the knowledge (and proposals) presented in the expert review.

Presentation of the conclusions of the expert review and debate

A seminar open to the various sectors involved in the subject of the expert review (patient associations, professional associations, unions, institutions, etc.) enables an initial debate on the conclusions of the expert review. On the basis of that exchange, the final version of the synthesis document incorporating the various viewpoints expressed is compiled.