Characterization of controlled gamblers and pathological gamblers using the social representation theory

Abstract

Introduction. In industrialized countries, gambling disorder tends to become a major issue. The use of the social representation theory provides clues for a better understanding of pathological gamblers.

Objective. This paper investigates the representation of risk in a gambling context among lay people (Study 1) and among controlled gamblers and probable pathological gamblers (Study 2).

Method. In the first study, 1,106 people answered a free association task based on the target expression 'risk in a gambling context'. In the second study, a small sample of gamblers, half of them being probable pathological gamblers (based on their score at the SOGS), participated in a semi-structured interview about risk in a gambling context. Interview guidelines were constructed based on the results obtained from Study 1.

Results. In Study 1, results indicate that the overall representation of risk in a gambling context differs from the one in a general context. The results are interpreted through the prospect theory and the decision-making dual-process model. Results from Study 2 show that, contrarily to those being probable pathological gamblers, controlled gamblers orient their discourse around the notion of pleasure and do not perceive gambling as a threat for their ego.

Conclusion. Controlled gamblers fear to lose money, while probable pathological gamblers fear to lose the game.

Keywords: Risk; Gambling disorder; Social representation; Dual-process model; Prospect theory

Que peuvent nous dire les jeunes adultes sur le risqué dans les jeux de hasard ?

Une étude qualitative du discours à l'aide de la théorie des représentations sociales

Résumé

Introduction. Dans les pays industrialisés, les jeux de hasard commencent à devenir un problème majeur. L'utilisation de la théorie des représentations sociales permet d'appréhender de façon originale le jeu pathologique.

Objectif. Cet article examine les représentations du risque dans un contexte de jeu de hasard auprès d'individus tout venants (Etude 1), de joueurs sains ainsi que de joueurs pathologiques probable (Etude 2).

Méthode. Dans la première étude, 1 106 personnes ont répondu à une tâche d'associations libres avec comme terme inducteur « le risque dans un contexte de jeu de hasard ». Dans la seconde étude, un petit échantillon de joueurs, la moitié étant des joueurs pathologiques probable (selon les scores obtenus au SOGS), a participé à des entretiens semi-structurés sur la thématique du risque dans un contexte de jeu de hasard. Le guide d'entretien a été construit à partir des résultats obtenus lors de l'Etude 1.

Résultats. Globalement, les résultats de l'Etude 1 indiquent que la représentation sociale du risque dans un contexte de jeux de hasard est différente de la représentation sociale du risque dans un contexte général. Les résultats sont interprétés à l'aide de la théorie des perspectives et des modèles de prise de décision à processus duaux. Les résultats de l'Etude 2 montrent que, contrairement aux joueurs pathologiques probable, les joueurs sains ont un discours orienté autour des notions de plaisir et ne perçoivent pas les jeux de hasard comme une menace pour leur égo.

Conclusion. Les joueurs sains ont peur de perdre leur argent alors que les joueurs pathologiques probable ont peur de perdre le jeu.

Mots clés : Risque ; Jeu pathologique ; Représentation sociale ; Théorie des perspectives ; Théories à processus duaux

1 Introduction

About 60% to 90% of the adult population in industrialized countries gambles at least occasionally (Giroux, Jacques, Ladouceur, Leclerc, & Brochu, 2012). Based on a review of the literature, Williams, Volberg, and Stevens (2012) identified that the rate of gambling disorders is about 2.3% of the overall population. In France, the prevalence of gambling disorders is estimated at 1.1% of the French population aged between 18 and 75 years (Williams et al., 2012). According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5), multiple risks are associated with gambling, such as the impulse of gambling, the difficulty of cutting back with gambling, or the financial and relational consequences linked to gambling disorders.

Risk in general is a multidimensional construct with no consensual definition (Renn, 1998). A distinction can be made for example between rational definitions of risk, such as in relation with engineering, and the subjective definitions of risk used in psychology. Experts use probabilities and consequences amplitude to estimate risk, whereas lay people's estimation of risk is influenced by hazard characteristics, such as the threat for future generations (Slovic, 1987). From a psychology perspective, it is assumed that people suffer more a loss than they enjoy a win of the same magnitude (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992).

In the risk literature, the influence of the social context on cognitions has been disregarded until the 1990s. This gap has been filled in by the researches on the influence of worldviews (Dake, 1991, 1992; Peters & Slovic, 1996; Slovic, 1999). Worldviews are generalized attitudes towards the world with a social organization role (Dake, 1991, 1992). They influence people's judgments and behaviors. According to Dake (1991, 1992), worldviews are orienting dispositions, used as pathfinders, to position people's responses when they are confronted with complex situations. Worldviews could be considered as a manner of conceptualizing risk and life in general. In this line of research, Joffe (2003) proposed another prism in order to study risk's perception for lay people in a qualitative way; she proposed to study risk perception with the help of the social representation theory.

According to Moscovici, a social representation belongs to "a culture, social class or group's specific world of opinions towards objects of the social environment" (Moscovici, 1961, p. 66). For Leiser and Aroch (2009), it is the public discourse or knowledge that shapes social representations. Social representations may serve as a basis for understanding new objects in order to facilitate dealing with them (Moscovici, 1984). In a given social group, the emergence of a new social object may lead to the construction of a new social representation, as for example with the arrival of the Euro as a new currency (Meier & Kirchler, 1998; Roland-Lévy, 2002). New social

representations are created by the combination of two main processes: objectification and anchoring (Moscovici, 1961).

The objectification process defines the way in which social representations are created, and shows how the identification of content and structure of a representation are formed. Anchoring defines how new representations are integrated into pre-existing frames of references. Two theoretical approaches derive from these two processes: the structural approach, which focuses on the objectification process, and the socio-dynamic approach, which focuses on the anchoring process. This paper studies the two approaches through two interdependent studies. While the first study falls within the structural approach, the second study falls within the socio-dynamic approach, but the methodology of the second study is based on the results of the first study.

The study of the structure of a representation, through the central core theory, enables to identify the relation between various parts of a representation (Abric, 1993). It allows organizing the different elements of a social representation, distinguishing the most important and shared elements (i.e., the central core or central system) from the others (i.e., the peripheral system). The central system is composed of few elements, which are characterized by their stability and non-negotiability due to their historical social anchoring. The central system provides the meaning, the organization and the coherence of a social representation, as well as its permanence. Moreover, elements of the central system influence the ones located in the peripheral system. The peripheral system, which includes individual differences and specificities, may explain why some people can have the same representation of a social object, but different behaviors towards it.

While the structural approach focuses on the objectification process of the social representation, the socio-dynamic approach focuses on the anchoring process of the social representation (Doise, 1985, 1992). In the socio-dynamic approach, representations are studied at an intergroup level: analyses are carried out by comparing different social groups' representations. According to this approach, the study of the anchoring process involves the identification of the content, followed by a between group comparison, which is done on the content of the representation itself (Gangl, Kastlunger, Kirchler, & Voracek, 2012; Leiser & Drori, 2005). During the anchoring process, social representations are integrated in a set of former representations and are modulated by them. In line with the socio-dynamic approach, individual's position towards the object changes according to their groups' affiliation, as well as according to the importance granted to the given object (Clémence, Doise, & Lorenzi-Cioldi, 1994).

Kmiec and Roland-Lévy (2014) studied the social representation of *risk in general* (i.e., without a particular identified context). They identified one key element in the central system of the representation of *risk*: the idea that risk is basically connected to 'danger'. In their study, 'danger' is shared and essential for the studied population. Moreover, according to the participants themselves, it clearly provides a negative connotation to *risk*. Three terms compose the near periphery: *risk* is connected to 'fear', but also to the need of being 'courageous' in order to confront the fear related to risk and to the fact that risk produces 'adrenaline'. The studied population shares these three ideas, but they are not essential, as they were not quickly associated to risk. Based on the participants' own evaluation, 'fear' has a negative connotation, while 'courage' and 'adrenaline' both hold a positive valence. As always, the distant periphery is composed of numerous terms. Some of them have a negative connotation, such as 'losses' or 'accident', others have a positive connotation -i.e., 'challenge' and 'opportunity'- while others have a neutral connotation, such as 'uncertainty'. These results show that the social representation of *risk in general* is oriented around the central notion of danger, but it is not only composed of negative terms, as positive terms also hold an important place in this representation. Specifying a context to the social representation of *risk* will add an interesting dimension to the target inductor; it could yield terms and expressions related to *risk in general*, such as danger or fear, as well as others related to gambling, such as luck (Zhou et al., 2012).

In response to Spurrier and Blaszcynski's review, which concludes that "Despite an extensive focus in the literature on cognitive biases and errors associated with disordered gambling, there has been a paucity of research addressing gamblers' perceptions of potential harms and risk related to gambling." (Spurrier & Blaszczynski, 2013, p. 272), this paper was designed to help filling this gap by studying the social representation of *risk in a gambling context*. It tests if differences in risky gambling behaviors could be related to differences in the social representation of *risk in a gambling context*. Social representations are often investigated through free association tasks (e.g., Kirchler, Maciejovsky, & Schneider, 2003; Roland-Lévy, Kmiec, & Lemoine, 2016). When using this procedure, participants have to produce associations of words or expressions based on a given inductor. However, the classical free association task has a major limitation: it requires a high number of participants. For studying a specific population, such as one composed of probable pathological gamblers, the classical association task did not seem to be the most appropriate technique. Interviews seemed more adapted. First, it is a relevant technique even with small samples. Second, it enables to get a deeper understanding of the representation. Therefore, as in Salès-Wuillemin, Morlot, Masse, and Kohler (2009), two methodologies were combined in two studies in order to examine the social representation of *risk in a gambling context* and to

investigate the perception of risk among gamblers. The first study is conducted among lay people while the second one is conducted among gamblers both controlled and probable pathological gamblers. Controlled gamblers are people who gamble regularly (i.e., at least once a month) but who do not appear to be pathological gamblers according to their score on a screen questionnaire (SOGS), while the probable pathological gamblers obtain high scores (i.e., 5 or more) on the SOGS, which suggests that they may be pathological gamblers. Controlled and pathological gamblers can be distinguished on various aspects including "biological, personality, developmental, cognitive, learning theory and environmental factors" (Blaszczynski & Nower, 2002, p. 491); there is also a potential stronger presence of illusion of control and erroneous beliefs among pathological gamblers (Blaszczynski & Nower, 2002; Joukhador, Blaszczynski, & Maccallum, 2004). The main goal of the first study is to investigate the impact of a gambling context on the social representation of *risk*. It is postulated that the introduction of a gambling context will modify the general social representation of *risk in general,* where no specific context is mentioned. Our main hypothesis in Study 1 is that the social representation of *risk in a gambling context* is different from the representation of *risk in general*. It was postulated that the social representation of *risk in a gambling context* has two different origins: one from the concept of risk and the other one from the gambling context. Therefore, it was hypothesized that, besides words or expressions related to *risk in general*, such as danger or fear, the social representation of *risk in a gambling context* will also include terms related to gambling, such as luck. The information collected from the first study will be used to create interview guidelines for the second study. In Study 2, the main hypothesis states that probable pathological gamblers have a social representation of *risk in a gambling context* which differs from the one of controlled gamblers, with a stronger presence of erroneous beliefs.

2 Study 1

2.1 Methods

2.1.1 Participants

As prototypical analyses require large samples, university students were used as a convenience sample. Further, as the two studies are related, we wanted to have participants from the same parent population in both studies. Young adults are known to be an at risk population towards risky gambling behavior. Gambling behavior and disorders tend to decrease with age (Gray, 2004; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002), with adolescents and young adults having more propensity of having gambling disorders (Messerlian, Gillespie, & Derevensky, 2007; Splevins, Mireskandari, Clayton, & Blaszczynski, 2010) than older adults. Therefore, this

population appears to be suitable for the second study. Hence, university students, from different fields of studies, were recruited through mailing lists, which enabled us to gather a large sample. Only participants aged between 18 and 25, who answered all questions, around the free association task, were kept for the analysis. 1,106 participants correspond to these two criteria. Among them, 708 (64%) were females and 398 (36%) were males. The respondents' average age was 20.94 years ($SD = 1.96$).

2.1.2 Measures[1]

Free association. Participants had to produce 5 to 10 free associations based on the inductor expression: *risk in a gambling context*.

Valence. Participants had to score from minus three to plus three, the terms that they produced in the free association task according to their perceived positive, neutral (0) or negative connotation towards *risk in a gambling context*.

2.1.3 Procedure

Students of the University of Reims Champagne-Ardenne received an email inviting them to answer a survey about gambling games, with a link leading to the online questionnaire. Each measure was presented on a different page in order to maximize the concentration of participants on one measure at a time. On the first page, participants had to produce 5 to 10 words or expressions for the free association task based on the inductor *risk in a gambling context*. On the second page, they had to attribute the valence (from minus three to plus three) for each word or expression provided. Finally, on the last page, they had to fill in some socio-demographic information. Participants took part in this study on a voluntary basis and they did not receive any incentive.

2.1.4 Data analyses

Based on the words and expressions produced by the participants during the free association task, a prototypical analysis (Vergès, 1992) was carried out in order to identify both the content and the structure of the social representation. It enabled to identify the composition of the two systems and to hypothesize what belongs to the central system and what does not (Abric, 2003). The prototypical analysis is based on the organization of terms expressed by participants based on the combination of two distinct indices: (i) the frequency and (ii) the mean rank of appearance of a term or expression. The frequency is presented with the percentage of evocations of a

---

[1] Both studies were conducted in French. However, in order to make them accessible for non-French speaking readers, the data are presented in English in the text and the tables are presented in French in the tables available online in the supplementary material section.

term divided by the number of participants; the more participants mention a term, the higher its frequency is. The mean rank index represents the mean of the ranks of evocation of a produced term or expression; overall, the sooner participants mention a term, the lower the mean rank will be. The prototypical analysis orders terms in four classes organized in four quadrants: the first one covers the central system, while the three others are qualified as being part of the peripheral system. The first one is composed of terms and expressions which are frequently and quickly mentioned. According to Vergès, this first class is composed of terms that could be considered as most central: they are "in the cell that shows positive congruence between both criteria (to be very frequent and well positioned)" (Vergès, 1992, p. 205). The second and third categories represent the near periphery. They can be considered as ambiguous because they are composed of terms that could be classified as central according to one criterion but not according to the other; they are either frequently cited but not quickly (first zone), or quickly cited but not frequently (second zone). These two classes are considered as "a potentially destabilizing source of change" (Vergès, 1994, p. 238). The last class constitutes the distant periphery. It is composed of terms which are neither frequently mentioned nor quickly cited. Thus, they are neither shared by many participants of the group, nor considered important for those who produce them.

2.2 Results

2.2.1 Descriptive analysis

The corpus of the analysis is composed of 6,005 occurrences for 1,755 terms, including 1,240 hapax legomenon[2]. A lemmatization was done on the corpus; this implies using for all the terms produced the *lexeme* of the word (masculine, singular, infinitive). Besides this, no other categorization of terms was realized. Two indices, diversity and hapax, were calculated. The first, diversity, enables to calculate the consensus of the discourse among participants by dividing the numbers of terms by the number of occurrences (Flament & Rouquette, 2003). A high consensus in the participant's responses suggests the existence of a social representation of the social object used as the inductor. The lower the diversity is, the higher the consensus is. The hapax index refers to the cognitive organization of the representation (Flament & Rouquette, 2003). It is calculated by dividing the number of hapax legomenon by the number of terms; the lower the hapax is, the stronger the cognitive organization is. Here, the diversity is equal to .29 and the hapax is equal to .71. Thus, the hapax index, being high, shows that this representation is not cognitively well organized. Nevertheless, the

---

[2] Hapax legomenon defines terms which only appear once.

diversity index shows a strong consensus of the representation of *risk in a gambling context*, for students, confirming the existence of an overall structured social representation of *risk in a gambling context.*

2.2.2 Prototypical analysis

The binomial distribution allows calculating the minimum threshold for which the production of a term does not depend on chance (Salès-Wuillemin, Castel, & Lacassagne, 2002). It is based on the number of participants, the maximum number of words that each participant could produce and the number of different words or expressions produced. Among all the terms spontaneously produced, the binomial distribution enables to select terms/expressions, which were cited by enough participants to be statistically significant. For a $p < .001$, only terms mentioned by at least 21 participants (1.90%) will be considered as having been cited with a statistically significant probability. This implies that the presence of these terms in the social representation cannot be attributed to chance. It corresponds to 43 terms, which is too high to make a prototypical analysis. Therefore, an arbitrary minimum threshold of 5% was chosen; this includes in this study the 15 terms which have been mentioned by at least 56 participants.

The frequency categorization (high frequency versus low frequency) is based on the mean frequency of occurrence of these remaining 15 terms, which is equal to 16.61%. It implies that each term mentioned by more than 16.61% of the participants is considered as frequently produced, while the remaining terms are considered as not frequently produced. This threshold is not far from the threshold suggested by Vergès, Tyszka, and Vergès (1994). According to them, a term, which is produced by a minimum of 20% of the participants, is considered as having a high frequency, whereas a term produced by less than 20% of the participants is considered as having of low frequency. In our data, there is no term with a frequency between 16.61% and 20%, therefore there is no difference in the results whether the threshold is set at 16.61% or at 20%. The mean rank categorization (low mean rank of appearance versus high mean rank) is based on the mean rank of the 15 kept terms, which is equal to 3.10. This implies that each term with a mean rank which is lower than 3.10 is considered as early mentioned (low rank: among the first terms mentioned), while the remaining terms are identified as not quickly mentioned (high rank: among the last terms mentioned).

Thus, the social representation of *risk in a gambling context* appears to be composed of 15 terms: three of them are in the quadrant related to the central system; three terms are either in the second or the third quadrant, those related to the near periphery; and the nine remaining terms are located in the fourth quadrant, thus they belong to the distant periphery (see Table 1).

In the first quadrant, on the top left, the terms that were frequently and early mentioned are 'to lose', 'money' and 'danger'. These three terms hold an important place in the social representation of *risk in a gambling context*. These three terms were frequently mentioned and moreover they were mentioned among the first terms, which suggests, according to the theory, that they are the most important ones for the members of this group and that the group shares them as representing *risk in a gambling context*. The second quadrant, on the top right, corresponds to terms, which were frequently produced, but among the last terms to be mentioned; this quadrant is composed of 'gain' and 'luck'. As suggested by their place in the social representation, they correspond to shared knowledge: they are shared by one fourth of the participants, but they do not correspond to the most important ideas associated to *risk in a gambling context*. The third quadrant, on the bottom left, corresponds to terms, which were mentioned among the first ones, with a low mean rank, but not by many participants. It is composed of only one idea: 'losing money'. This suggests that, even if it is not a term shared by many participants, it plays an essential role in the representation of those who produced it. The fourth and last quadrant, on the bottom right, represents the distant periphery, and is composed of the nine remaining terms; this quadrant provides space for individual differences in the shared representation. The terms in this quadrant are included in the social representation since they are produced by at least 5% of the participants - which corresponds to a minimum of 56 participants -, but they are neither shared by the majority of the members of this population, nor essential for those who produced them as they are produced among the last terms given.

The social representation of *risk in a gambling context* is organized around three main notions: to lose, money and danger. To lose is by far the most shared element as it was mentioned by almost 60% of the participants. Money also holds an important place in the representation, and it can be hypothesized as being part of the central system. The presence of losing money in the near periphery is in line with this and confirms the importance of to lose and money in reference to *risk in a gambling context*. Losing money was not categorized with to lose and/or money as the only reduction procedure performed was lemmatization, and not categorization. Even if, at this point, it could appear judicious to group losing money and to lose in the same category, since most of the time losing in a gambling context implies losing money, results of the second study will justify to keep a distinction between to lose and losing money. In Kmiec and Roland-Lévy's (2014) study, 'lost/a loss' only holds a marginal place and money was not even present in the social representation of *risk in general*. Danger holds a central place in both *risk* social representations. Nevertheless, in the social representation of *risk,* in the absence of any specific context, danger stands alone in the central system, whereas in the social representation of *risk in a*

gambling context, danger is combined with two other ideas: to lose and money. As the theory suggests that two representations are considered different as long as a minimum of one element differs in the two central systems (Abric, 1993), results showed that the introduction of a gambling context modifies the social representation of *risk*.

The idea of gain represents a consequence of taking risk in gambling. Risk-taking in gambling usually leads to two possible outcomes: losing or winning. Losing is represented by the two terms: 'to lose' and 'losing money'; wining is mainly represented by 'gain', which is shared by an important number of participants, but it is not mentioned as early as the other terms, which implies that is does not hold an essential place in the representation. Nevertheless, it is situated in a more important place in the social representation of *risk* when a gambling context is activated, whereas it appeared in the fourth quadrant in the study based on *risk in general*.

Two other terms also refer to consequences of risk-taking, but they are associated with consequences of gambling disorders rather than consequences in terms of outcomes: 'addiction' and 'dependence'. Both these terms are located in the distant periphery. It suggests that not many participants associated the risk taken in gambling to gambling disorders.

Even if according to the prototypical analysis, 'luck' does not seems to be a candidate of the central system, it holds an important place in the representation, as it was postulated. This result is in line with numerous studies, which also found that luck was associated to gambling (Chiu & Storm, 2010; Rhéaume, Freeston, Léger, & Ladouceur, 1998; Wohl & Enzle, 2002; Zhou et al., 2012).

Three terms are related to emotions or physical reactions in connection to *risk*: 'adrenaline', 'fear' and 'stress'. These three terms are in the distant periphery, suggesting that they are not central in the shared social representation of *risk in a gambling context*. The results from the study based on *risk in general,* indicate that adrenaline and fear have a strong relation in the social representation of risk in a general context (fear and adrenaline were respectively produced by 32% and 20% of the participants). Whereas stress was not present at all in the social representation of *risk* when no context was activated, in the present study, it is present, but it only holds a marginal place.

The last four terms in the social representation of *risk in a gambling context* are: 'probability', 'chance', 'gambling games' and 'to try'. The first two terms characterize important features of gambling, while gambling games refer to the object of gambling itself, and finally the verb to try is the core of risk-taking.

2.2.3 Valence Analysis

Seven of the terms belonging to the social representation of *risk in a gambling context* have, according to the participants, a negative valence, such as losing money (-2.35), dependence (-2.29) or danger (-1.52). Five have a positive valence, including gain (2.40), adrenaline (1.91) and gambling games (1.09). The three remaining ideas are neutral (e.g., money, -0.11). Therefore, the overall valence of the terms belonging to the social representation of *risk in a gambling context* is not solely identified as negative. This is a similar result than the one found for the social representation of *risk in general*.

Correlation tests were used in order to study the relations between the two indices: mean rank index and absolute mean valence index. The Pearson's correlation is considered as a parametric measure that requires the normality of distribution of the results, whereas the Spearman's rank correlation coefficient is considered as a nonparametric measure. As the sample, which corresponds to fifteen (the number of terms), is small, the Spearman's rank correlation was used instead of the Pearson's correlation. The mean rank index and the absolute valence index are highly negatively correlated; this result is significant ($r = -.68$, $p = .005$) and suggests a strong negative relation between the time of production of a term and the absolute valence associated to the relation between the term and *risk in a gambling context*. This implies that terms mentioned among the first ones have a higher absolute valence than terms produced later.

3 Study 2

The main goal of the second study is to approach the perception of *risk in a gambling context* among gamblers. While Study 1 aimed at identifying the social representation of *risk in a gambling context* among a general population of young adults (students), Study 2 aims at comparing the social representation of *risk* among both controlled gamblers and probable pathological gamblers. It was hypothesized that probable pathological gamblers have a social representation of *risk in a gambling context* which differs from the one of controlled gamblers, with an expected stronger presence of erroneous beliefs.

3.1 Methods

3.1.1 Participants

Seventeen participants took part in this study, which includes 3 females and 14 males. All of them were gamblers who gambled regularly (at least once a month). In order to keep consistency with the previous study, all of the participants are students from various fields of studies, aged between 18 and 25 years; the average age is 21.00 years ($SD = 2.21$). Based on their score on the South Oaks Gambling Screen (SOGS, Lesieur & Blume,

1987), eight of them were classified as probable pathological gamblers, while the nine remaining ones were classified as controlled gamblers having no gambling disorder.

3.1.2 Measures

Gambling disorder propensity. Participants answered the validated French version (Lejoyeux, 1999) of the South Oaks Gambling Screen, which is a 20-item questionnaire about lifetime gambling habits. A score of 0 indicates having no problem with gambling, a score between 1 and 4 indicates having potential problems with gambling, while a score of 5 or more indicates probable pathological gamblers. Participants were categorized into two groups, based on those criteria, those having a score below 5 were categorized as controlled gamblers, while those having a score of 5 or higher were categorized as being probable pathological gamblers.

Interview guidelines. Based on the "explicative interview methodology" (Salès-Wuillemin et al., 2009), guidelines were constructed for the interviews. The starting question was "What does risk in a gambling context make you think of?" Then, thirty questions were based on the fifteen terms, which composed the social representation of *risk in a gambling context*, identified in Study 1; these 15 terms were: to lose, money, danger, gain, luck, losing money, addiction, adrenaline, probability, fear, chance, gambling game, to try, dependence and stress. For each term, two questions were formulated. For example, for the term adrenaline: "What does adrenaline in a gambling context make you think of?" and "What relation do you see between adrenaline and risk in a gambling context?". The 15 terms were proposed randomly across participants in order to avoid an order of presentation effect.

3.1.3 Procedure

Students of University of Reims Champagne-Ardenne received an email that invited those who gamble at least once a month to take part in an interview for a study about gambling. Those who answered received a second email with a link to an online survey composed of the SOGS and socio-demographic questions. Then, based on the scores obtained from the SOGS, those who gambled at least once a month, and who were between 18 and 25 years old, were contacted to schedule a phone interview. Phone interviews were preferred over face-to-face interviews for various reasons. First, several studies support the validity of the phone interview methodology (e.g., Sabin & Godley, 1987; Winters, Stinchfield, & Fulkerson, 1993). Second, according to Thomas, Lewis, Westberg, and Derevensky (2013), this technique may be preferred by gamblers, who have gambling disorders, because it preserves a stronger degree of anonymity. Finally, it was more convenient in terms of organization, time and cost. With the permission of the participants, all interviews were audio-recorded. Each interview took

approximately 30 minutes (between 24 and 39 minutes). Participants took part in this study on a voluntary basis and they did not receive any incentive.

3.1.4 Data Analysis

Analyses based on the directed content analysis methodology (Hsieh & Shannon, 2005) were organized into two parts. First, the most common topics of the discourse of the 17 participants were identified. Second, a comparison was performed between the discourse of controlled gamblers and the discourse of probable pathological gamblers. The content analysis grouped into thematic topics extracts from the participants' discourse. Only topics that have been mentioned by a minimum of four different participants were kept, which stands for almost one fourth of the participants[3].

3.2 Results

3.2.1 Qualitative Content Analysis of all Gamblers

Among all the topics mentioned by the gamblers, 29 were proposed by at least four of them (see Table 2). Among these 29 topics, only those with meaningful and interesting implications in terms of *risk in a gambling context* will be discussed here.

- Insert Table 2 about here -

The first topic referred to 'losing money': 15 participants (out of 17) indicated that *losing money is a risk*. It was the most common and shared idea among the interviewed participants. Some gamblers described it as the main risk in gambling. For example, Participant 6 said "The only risk you have will be the loss of your earnings". Hence, for our sample of gamblers, the major risk in gambling is to lose money.

The second most frequently mentioned topic was about 'losing': 13 participants said that *to lose drives to gamble again in order to win back the stake*. For example, Participant 5 described it in the following way: "Someone like me who loses at sports betting would like to bet again to try to get my money back". Losing leads to gambling again in order to compensate the amount of money lost.

---

[3] Topics that have been cited more than four times, but by less than four different participants, were not kept. This occurred when participants broached the same topic several times during the same interview.

The third most frequent topic concerned the idea of 'a never-ending cycle': 11 participants defined the game as *a spiral* implying difficulties to stop and leading to serious negative consequences. Here, gambling games are perceived as a vicious circle, which is difficult to quit once you have started.

Among the three topics connected to 'gain', one evoked by eight participants should call attention. Gain is described as a *source of motivation that causes to gamble again*. Once people have gambled and won, they have the desire to try another time, to win more. This is in line with the vicious circle suggested above, and shows that it can be connected both to losing or winning.

The fourth and fifth most frequently mentioned topics were about the 'consequences of gambling': 11 participants expressed that *gambling may lead to bad financial consequences,* and nine participants expressed that *gambling may lead to problematic relational consequences*. For example, Participant 3 mentioned that "There is a state in which we think only about gambling and not about the world around us and our family". These two topics implied that gambling produces various types of risks in the long term.

Three distinct topics were related to 'chance': the first one describes chance as an *at random* concept, the second one, as something *not related to risk*, while the last one, as something *inherent to gambling games*. They were respectively expressed by seven, five and four participants. The first one is a descriptive topic, which emphasized the idea of randomness of chance; the second one suggests that the concepts of chance and risk are independent; and the last one describes chance as a concept very closely linked to gambling games.

Among the three topics related to 'luck': two were similar to the topics related to 'chance'. For five participants in each case, *luck is a random* concept and *luck is not related to risk*. Six participants described luck as something that *helps to win*. For example, Participant 9 explained that "Risk requires luck to succeed, to win".

3.2.2 Comparison of Discourse of Controlled Gamblers and Probable Pathological Gamblers
The comparison was made by emphasizing the topics which were more present in one group or in the other. The first group was composed of controlled gamblers with no gambling disorder, while the second group was composed of probable pathological gamblers. Topics, which were cited by at least two more participants in one group compared to the other, were kept for this comparison. It concerned 13 topics: seven of them were more often mentioned by controlled gamblers, while the six remaining ones were more often mentioned by probable pathological gamblers. The most specific topic for controlled gamblers was the *fear of losing money*. Eight participants, among which six were controlled gamblers, expressed this topic. For example, Participant 17 said

that "You necessarily fear to lose what you have bet". It can be opposed to another topic also connected to fear: the *fear of losing the game*. This fear was not related to the loss of the stake or money, but just to losing the game. For example, Participant 7 explained that "Gambling is risky so we are afraid of the result. We don't know before gambling if we will win or not". It is more the idea of losing which threatens those gamblers, than the amount that they might lose. This topic was expressed more clearly by probable pathological gamblers: five among the six participants who mentioned this topic are probable pathological gamblers. It was the most specific topic for probable pathological gamblers. This suggests that the former were more afraid of the idea of losing money, while the latter were more afraid of the idea of losing the game itself.

The second most specific topic for controlled gamblers is that *luck is not related to risk*. This topic was expressed by five participants, including four controlled gamblers. It should be differentiated from another topic also connected to luck, that is: *luck helps to win*, which was discussed by six participants, among which four probable pathological gamblers. These two topics were not antagonistic, but suggested that for probable pathological gamblers, luck may be an important factor in determining the outcome of gambles, whereas it only played a small role in association with the concept of risk in gambling for controlled gamblers.

The second most specific topic for probable pathological gamblers is that *in order to increase gains it is necessary to take greater risks*. This topic was expressed by six participants, among which five were probable pathological gamblers. It suggested that probable pathological gamblers may be more willing to increase their risk in order to win more. It can be paralleled to another topic connected to gain: *money temptation as a motivation to gamble*. This topic was mentioned by eight participants, among which five who were controlled gamblers. This suggested that gamblers might have a strong desire to gamble mainly in order to gain money.

The third most specific topic for controlled gamblers is that *losing is a risk*. This topic was expressed by five participants, among which four controlled gamblers. It can be compared to another topic which suggested that *dependence is a risk*. Eight participants, among which five were probable pathological gamblers, expressed this idea. These results suggested that controlled gamblers may be more concerned about the risk related to the game itself, whereas probable pathological gamblers may be more concerned by the consequences of gambling and the risk of becoming dependent and addicted to the game.

This leads to the next topic which is about addiction. Addiction was defined, by controlled gamblers, as an *elevated level of gambling* and, by probable pathological gamblers, as a *desire to gamble*. While the notion of

addiction was described with reference to facts by controlled gamblers, probable pathological gamblers emphasized the longing for gambling.

Three other topics were specific of controlled gamblers. They were connected to adrenaline, money and gambling games. Controlled gamblers linked adrenaline *to a source of pleasure*. For example, Participant 16 said: "When you start gambling you bet for pleasure, but then you will take risks to win money and then you will produce a hormone that is adrenaline, I guess, it gives you more and more pleasure". They also described that *the amount of money involved in the game regulates risks*. This was in line with the topic suggesting that losing money is one of the main risks in gambling. Finally, they expressed that *risk is inherent to gambling games*.

4 General discussion

The present study, in line with the research carried out by Spurrier, Blaszczynski and Rhodes (Spurrier & Blaszczynski, 2013; Spurrier, Blaszczynski, & Rhodes, 2014a, 2014b), sought to study, among lay people and among gamblers, the perception of risk in gambling. More precisely, this paper investigates the relation of social representation and risk associated to gambling. It is organized around two studies, which analyze the social representation of *risk in a gambling context*, through two distinct approaches: the structural approach in Study 1 and the socio-dynamic approach in Study 2. The main aims of Study 1 were first, to investigate the existence of a social representation of *risk in a gambling context* among young adults, and second, to compare it to the one of *risk in a general context*. This was realized thanks to a free association task and a prototypical analysis. The main aim of Study 2 was to investigate the anchoring process of the social representation of *risk in a gambling context* among a population of gamblers, composed of both controlled gamblers and probable pathological gamblers. Based on the results of Study 1, interview guidelines were constructed for Study 2, which used semi-structured interviews.

First, the results of the descriptive analysis based on the diversity and hapax indices in Study 1 suggest that there is a social representation of risk in a gambling context. However, this social representation is not cognitively well organized.

Second, the results suggest that, in the social representation of *risk in a gambling context*, three notions can be hypothesized as being central elements: to lose, money and danger. This clearly differs from Kmiec and Roland-Lévy's (2014) results, which showed that in the absence of any specific context, only danger belonged to the central system of the social representation of *risk,* whereas to lose belonged to the peripheral system; last but not least, in the social representation of *risk in general,* money was absent. When a gambling context is activated,

danger remains central, but to lose and money reach a stronger significance. Thus, as hypothesized, since two of the terms located in the central system differ for each of the target expressions, one can assume that there are two distinct representations: the social representation of *risk* in a context in which gambling is activated is different from the social representation of *risk in general*. It may be argued that the social representation of *risk* in a gambling context has a double origin: the concept of risk and the gambling context. Moreover, results of the first study also suggest that, when risk is associated to gambling, emotions play a major role.

The analyses of the valence showed two interesting results. First, the social representation is composed of both negative and positive terms, with the presence of more terms with a negative valence. It is in line with the fact that for the participants, losing (i.e., to lose, losing money) appeared to be more important than winning (i.e., gain). These results can be interpreted thanks to the prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992), which states that feelings connected to losing are stronger than those connected to winning.

Second, the highly negative correlation between the mean rank index and the absolute valence index indicates a dependence between the speed of associations and the absolute valence of the relations between *risk in a gambling context* and the terms composing the social representation of *risk* in that specific context. Thus, terms mentioned among the first ones have a higher absolute valence than terms mentioned later; it indicates that they are highly related to affects and emotions. This result can be interpreted with the dual-process model of decisions (e.g., Sloman, 1996; Stanovich & West, 2000) that postulates the existence of two systems of thinking: System 1 and System 2. On the one hand, System 1 is automatic, fast, effortless, based on associations, and influenced by experiences and emotions (Epstein, 1994; Stanovich & West, 2000). On the other hand, System 2 is controlled, slow, effortful, based on deductions and logic, neutral and free from emotions (Epstein, 1994; Stanovich & West, 2000). Our results support the dual-process model: terms mentioned among the first ones come from System 1 (fast and influenced by emotions), whereas terms which were mentioned later come from System 2 (which is slow and free from emotions).

In Study 2, the content analysis allowed to identify 29 topics, which are shared by at least one fourth of the participants. The most shared idea is that losing money is a major risk in gambling. This supports the importance of losing money in the social representation of *risk in a gambling context*. Money is described as a modulator of risk. Further, the idea of gambling seen as a vicious circle is very present. Financial problems, as well as relational consequences of gambling, also hold a key place in the gamblers' discourse.

Spurrier and Blaszczynski (2013) found that gamblers with disorders differ from controlled gamblers in their risk perception. They perceive risk in a more optimistic way and have more expectations, both positive and negative about the outcome. In line with this, a comparison of the discourse of controlled gamblers and probable pathological gamblers, was carried out. It allowed to identify 13 topics, which are distinct according to the category of gamblers and specific to each of the two groups of gamblers. The most important differences are connected to the type of fear associated with gambling. In our sample, controlled gamblers associate fear with the loss of money, whereas probable pathological gamblers associate fear with losing the game. Specifically, it seems that for our sample of controlled gamblers, the material loss was the most prominent fear, while it was the idea of losing which appeared to be most substantial for the probable pathological gamblers. It suggests that for the latter there is a loss which is more important than the material loss. The gambling disorder literature describes individual characteristics (e.g., personality, cognitions, and psychological states) of people with gambling disorders (Raylu & Oei, 2002). For instance, pathological gambling was associated with higher neuroticism and lower conscientiousness (Bagby et al., 2007). Further, among a sample of people with gambling disorders, Steel and Blaszczynski (1998) found a high proportion of gamblers with high level of impulsivity, ego-threat and intolerance for frustration. In line with the results from Steel and Blaszczynski (1998), our results could suggest that the major fear for our sample of probable pathological gamblers could be related to ego threat.

The Pathways Model (Blaszczynski & Nower, 2002) postulates that gamblers with gambling disorders, from the three different pathways, whether "Behaviorally Conditioned", "Emotionally Vulnerable" or "Antisocial Impulsivist" gamblers, have wrong believes about gambling and are subject to numerous bias, such as the illusion of control (Langer, 1975). This model describes that gamblers with gambling disorders believe that their skills and knowledge may influence the outcomes (Blaszczynski & Nower, 2002). However, none of the topics which are specific of the probable pathological gamblers indicate that they have erroneous believe, thus our hypothesis that states that there is a stronger presence of erroneous beliefs in our sample of probable pathological gamblers was not confirmed by the data. Nevertheless, another interesting result in Study 2 is the presence of pleasure in the discourse. The idea that adrenaline causes pleasure was shared by 5 gamblers, among which 4 were controlled gamblers. In this study, it seems that the notion of pleasure is more specific of controlled gamblers. Through its qualitative approach and practical orientation, social representations provide a background which help to understand lay knowledge and peoples' actions (Lemoine, Darriet, Kmiec, & Roland-lévy, in press).

This paper is not without a number of limitations. The lifetime SOGS has been used in order to distinguish probable pathological gamblers from controlled gamblers. Despite the fact that it is a widely used gambling screen questionnaire, the SOGS was constructed based on DSM-III-R criteria. At that time, problem gambling was conceptualized as an addiction to gambling, while nowadays it is viewed as a gambling behavior which causes harm. Precisely, gambling problem can now be defined as "the situation when a person's gambling activity gives rise to harm to the individual player, and/or to his family, and may extend into the community" (Dickerson, McMillen, Hallebone, Volberg, & Woolley, 1997, p. 106). More recent tools, such as the Canadian Problem Gambling Index (CPGI, Ferris & Wynne, 2001), which has been created on this new vision of gambling problem, would have been more appropriate in our study. Additionally, because some participants may have had past gambling problems but do not have them anymore, framing questions on last year gambling behaviors would also have been more pertinent than framing them on lifetime behaviors.

Even though convenience samples, such as university students, have been found to be reliable (Roulin, 2015), there are some limitations related to the recruitment methodology of Study 1 which may have influenced the results. Namely, the study was advertised as a study about gambling, hence it is possible that participants who were more interested in that particular topic were more disposed to take part in this study and were consequently overrepresented in our sample compared to the parent population. Furthermore, as participants' gambling behavior was not investigated, the same critic can be made about the number of probable pathological gamblers in the sample. However, the diversity index shows a strong consensus among our sample, stronger than what is usually observed in studies using this index (e.g., Luiz de Andrade & Wachelke, 2011; Orosz & Roland-Lévy, 2013). Although this result cannot refute the argument that our sample could have been composed of participants particularly interested in the topic of gambling, it suggests that it is unlikely that the results have been skewed by the overrepresentation of probable pathological gamblers. Notwithstanding, the use of young adults in both studies and the low number of participants in the second study limit the generalization of the findings. Moreover, risk judgment is inconsistent. It is influenced by numerous factors, including the context (Weber, Blais, & Betz, 2002), the framing effect (Tversky & Kahneman, 1981) and the way of assessing risk (Dislich, Zinkernagel, Ortner, & Schmitt, 2010), which also makes it more difficult to generalize our results. Multiplying qualitative studies could allow gathering more information concerning non-expert perception and knowledge. Since social representation furnishes important information about the lay perception of *risk in a gambling context*, future studies should continue to explore the role played by this non-expert knowledge in gambling behavior. If

responses to risk are highly social (Joffe, 2003) and emotional (Loewenstein, Weber, Hsee, & Welch, 2001; Slovic, Finucane, Peters, & MacGregor, 2007), it is necessary to integrate social knowledge in risk studies.

Results on the structure of the social representation of risk in a gambling context show that it is fairly balanced between positive and negative terms; nevertheless, there are more negative terms and those are more central (among the three terms belonging to the central system, two have a negative valence while the third one has a neutral one). It will be interesting to investigate if this result is specific of our French sample or if it is influenced by certain aspects of the French culture related to gambling (Hofstede, 1980, 2001), such as the uncertainty avoidance dimension (Minkov & Hofstede, 2014). Besides, it would be interesting, in a future research, to investigate the discourse of larger groups of gamblers both controlled and pathological. First, it would allow to confirm or not the results obtain in our small sample of gamblers and second it would permit to compare different groups of pathological gamblers based on the Pathway Model subtypes ("Behaviorally Conditioned", "Emotionally Vulnerable" or "Antisocial Impulsivist").

5 Conclusion

Through the use of the social representation theory, this paper provides a better understanding of risk perception among probable pathological gamblers. In contrast with controlled gamblers, probable pathological gamblers perceive gambling situations as a threat for their ego and do not express pleasure in their discourse about risk in gambling.

References

Abric, J.-C. (1993). Central system, peripheral system: their functions and roles in the dynamics of social representations. *Papers on Social Representations, 2*(2), 75-78.

Abric, J.-C. (2003). *Méthodes d'étude des représentations sociales [Study method of social representations]*. Paris: Erès.

Bagby, R. M., Vachon, D. D., Bulmash, E. L., Toneatto, T., Quilty, L. C., & Costa, P. T. (2007). Pathological gambling and the five-factor model of personality. *Personality and Individual Differences, 43*(4), 873-880. doi: 10.1016/j.paid.2007.02.011

Blaszczynski, A., & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction, 97*(5), 487-499. doi: 10.1046/j.1360-0443.2002.00015.x

Chiu, J., & Storm, L. (2010). Personality, perceived luck and gambling attitudes as predictors of gambling involvement. *Journal of Gambling Studies, 26*(2), 205-227. doi: 10.1007/s10899-009-9160-x

Clémence, A., Doise, W., & Lorenzi-Cioldi, F. (1994). Prises de position et principes organisateurs des représentations sociales [Individual positionings and organizing principles of social representations]. In C. Guimelli (Ed.), *Structures et transformations des représentations sociales [Structure and transformations of social representations]* (pp. 119-152). Paris: Delachaux et Niestlé.

Dake, K. (1991). Orienting dispositions in the perception of risk an analysis of contemporary worldviews and cultural biases. *Journal of Cross-Cultural Psychology, 22*(1), 61-82. doi: 10.1177/0022022191221006

Dake, K. (1992). Myths of nature: Culture and the social construction of risk. *Journal of Social Issues, 48*(4), 21-37. doi: 10.1111/j.1540-4560.1992.tb01943.x

Dickerson, M., McMillen, J., Hallebone, E., Volberg, R., & Woolley, R. (1997). Definition and incidence of problem gambling, including the socio-economic distribution of gamblers. Melbourne: Victorian Casino and Gaming Authority.

Dislich, F. X., Zinkernagel, A., Ortner, T. M., & Schmitt, M. (2010). Convergence of direct, indirect, and objective risk-taking measures in gambling. *Zeitschrift für Psychologie/Journal of Psychology, 218*(1), 20-27. doi: 10.1027/0044-3409/a000004

Doise, W. (1985). Représentations sociales chez des élèves : Effets du statut scolaire et de l'origine sociale [Social representation among students: Effects of school status and social origin]. *Revue Suisse de Psychologie, 44*, 67-78.

Doise, W. (1992). L'ancrage dans les études sur les représentations sociales [The anchoring in social representations' research]. *Bulletin de Psychologie, 45*(4-7), 189-195.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist, 49*(8), 709-724. doi: 10.1037/0003-066x.49.8.709

Ferris, J., & Wynne, H. (2001). The Canadian Problem Gambling Index: Final Report. Ottawa: Canadian Centre on Substance Abuse.

Flament, C., & Rouquette, M.-L. (2003). *Anatomie des idées ordinaires [Anatomy of ordinary ideas]*. Paris: Armand Colin.

Gangl, K., Kastlunger, B., Kirchler, E., & Voracek, M. (2012). Confidence in the economy in times of crisis: Social representations of experts and laypeople. *The Journal of Socio-Economics, 41*(5), 603-614. doi: 10.2139/ssrn.2034792

Giroux, I., Jacques, C., Ladouceur, R., Leclerc, M., & Brochu, P. (2012). Prévalence des habitudes de jeu en Gaspésie et aux Îles-de-la-Madeleine en 2009 [Prevalence of the habits of game in Gaspésie and in the Îles-de-la-Madeleine in 2009]. *Canadian Journal of Psychiatry, 57*(3), 192-199.

Gray, P. B. (2004). Evolutionary and cross-cultural perspectives on gambling. *Journal of Gambling Studies, 20*(4), 347-371. doi: 10.1007/s10899-004-4579-6

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations (2nd Ed)*. Thousand Oaks, CA: Sage.

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288. doi: 10.1177/1049732305276687

Joffe, H. (2003). Risk: From perception to social representation. *British Journal of Social Psychology, 42*(1), 55-73. doi: 10.1348/014466603763276126

Joukhador, J., Blaszczynski, A., & Maccallum, F. (2004). Superstitious beliefs in gambling among problem and non-problem gamblers: Preliminary data. *Journal of Gambling Studies, 20*(2), 171-180. doi: 10.1023/b:jogs.0000022308.27774.2b

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society, 47*(2), 263-291. doi: 10.2307/1914185

Kirchler, E., Maciejovsky, B., & Schneider, F. (2003). Everyday representations of tax avoidance, tax evasion, and tax flight: Do legal differences matter? *Journal of Economic Psychology, 24*(4), 535-553. doi: 10.1016/s0167-4870(02)00164-2

Kmiec, R., & Roland-Lévy, C. (2014). Risque et construction sociale : Une approche interculturelle [Risque and social construction: An international approach]. *Les Cahiers Internationaux de Psychologie Sociale, 101*(1), 69-99. doi: 10.3917/cips.101.0069

Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology, 32*(2), 311-328. doi: 10.1037/0022-3514.32.2.311

Leiser, D., & Aroch, R. (2009). Lay understanding of macroeconomic causation: The good- begets- good heuristic. *Applied Psychology, 58*(3), 370-384. doi: 10.1111/j.1464-0597.2009.00396.x

Leiser, D., & Drori, S. (2005). Naïve understanding of inflation. *The Journal of Socio-Economics, 34*(2), 179-198. doi: 10.1016/j.socec.2004.09.006

Lejoyeux, M. (1999). Echelles de dépistage du jeu pathologique : Le jeu pathologique [Screening scale of pathological gambling: Pathological gambling]. *Neuro-psy, 14*(2), 67-71.

Lemoine, J., Darriet, E., Kmiec, R., & Roland-lévy, C. (in press). Financial threat during the economic crisis: Connections with the social representation of the economic crisis and the willingness to act. *International Review of Social Psychology*.

Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*(9), 1184-1188. doi: 10.1176/ajp.144.9.1184

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*(2), 267-286. doi: 10.1037/0033-2909.127.2.267

Luiz de Andrade, A., & Wachelke, J. (2011). The association of structural configurations of romantic relationships with beliefs about couple relationships: A social representations study. *Anales de Psicología/Annals of Psychology, 27*(3), 834-842.

Meier, K., & Kirchler, E. (1998). Social representations of the euro in Austria. *Journal of Economic Psychology, 19*(6), 755-774. doi: 10.1016/s0167-4870(98)00036-1

Messerlian, C., Gillespie, M., & Derevensky, J. L. (2007). Beyond drugs and alcohol: Including gambling in a high-risk behavioural framework. *Paediatrics & Child Health, 12*(3), 199-204.

Minkov, M., & Hofstede, G. (2014). A replication of Hofstede's uncertainty avoidance dimension across nationally representative samples from Europe. *International Journal of Cross Cultural Management, 14*(2), 161-171. doi: 10.1177/1470595814521600

Moscovici, S. (1961). *La psychanalyse, son image et son public [Psychoanalysis, its image and its public]*. Paris: Presses Universitaires de France.

Moscovici, S. (1984). The phenomenon of social representations. In R. M. Farr & S. Moscovici (Eds.), *Social representations* (pp. 3-69). Cambridge: Cambridge University Press.

Orosz, G., & Roland-Lévy, C. (2013). Social representation of competition and fraud. *Citizenship Teaching & Learning, 8*(2), 157-177. doi: 10.1386/ctl.8.2.157_1

Peters, E., & Slovic, P. (1996). The role of affect and worldviews as orienting dispositions in the perception and acceptance of nuclear Power. *Journal of Applied Social Psychology, 26*(16), 1427-1453. doi: 10.1111/j.1559-1816.1996.tb00079.x

Raylu, N., & Oei, T. P. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review, 22*(7), 1009-1061. doi: 10.1016/S0272-7358(02)00101-0

Renn, O. (1998). Three decades of risk research: Accomplishments and new challenges. *Journal of Risk Research, 1*(1), 49-71. doi: 10.1080/136698798377321

Rhéaume, J., Freeston, M. H., Léger, E., & Ladouceur, R. (1998). Bad luck: an underestimated factor in the development of obsessive- compulsive disorder. *Clinical Psychology & Psychotherapy, 5*(1), 1-12. doi: 10.1002/(SICI)1099-0879(199803)5:1<1::AID-CPP145>3.0.CO;2-J

Roland-Lévy, C. (2002). Passage du Franc à l'Euro : Représentation sociale et attitude [Going from the Franc to the Euro: Social representation and attitude]. *Les Cahiers Internationaux de Psychologie Sociale, 55*, 39-48.

Roland-Lévy, C., Kmiec, R., & Lemoine, J. (2016). How is the economic crisis socially assessed? *Social Science Information, 55*(2), 235-254. doi: 10.1177/0539018416629228

Roulin, N. (2015). Don't throw the baby out with the bathwater: Comparing data quality of crowdsourcing, online panels, and student samples. *Industrial and Organizational Psychology, 8*(02), 190-196. doi: doi:10.1017/iop.2015.24

Sabin, M. C., & Godley, S. H. (1987). Mental health citizen surveys: A comparison of two within household telephone sampling techniques. *Evaluation and Program Planning, 10*(2), 137-141. doi: 10.1016/0149-7189(87)90049-8

Salès-Wuillemin, E., Castel, P., & Lacassagne, M.-F. (2002). Social Representation of "Maghrebins": effect of the inductive word on elements activated in a verbal association task. *European Journal for Semiotic Studies, 14*(3-4), 643-662.

Salès-Wuillemin, E., Morlot, R., Masse, L., & Kohler, C. (2009). La représentation sociale de l'hygiène chez les professionnels de santé : Intérêt du recueil par entretien et de l'analyse discursive des opérateurs de liaison issus du modèle des Schèmes Cognitifs de Base (SCB) [Social representation of hygiene among health professionals: The advantage of interview and of discursive analysis from linking operators from the model of Basic Cognitive Schemes (BCS)]. *Les Cahiers Internationaux de Psychologie Sociale, 81*, 43-72. doi: 10.3917/cips.082.0043

Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin, 119*(1), 3-22. doi: 10.1037/0033-2909.119.1.3

Slovic, P. (1987). Perception of risk. *Science, 236*(4799), 280-285. doi: 10.1126/science.3563507

Slovic, P. (1999). Trust, emotion, sex, politics, and science: Surveying the risk- assessment battlefield. *Risk Analysis, 19*(4), 689-701. doi: 10.1111/j.1539-6924.1999.tb00439.x

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2007). The affect heuristic. *European Journal of Operational Research, 177*(3), 1333-1352. doi: 10.1016/j.ejor.2005.04.006

Splevins, K., Mireskandari, S., Clayton, K., & Blaszczynski, A. (2010). Prevalence of adolescent problem gambling, related harms and help-seeking behaviours among an Australian population. *Journal of Gambling Studies, 26*(2), 189-204. doi: 10.1007/s10899-009-9169-1

Spurrier, M., & Blaszczynski, A. (2013). Risk perception in gambling: A systematic review. *Journal of Gambling Studies, 30*(2), 253-276. doi: 10.1007/s10899-013-9371-z

Spurrier, M., Blaszczynski, A., & Rhodes, P. (2014a). An expert map of gambling risk perception. *Journal of Gambling Studies, 31*(4), 1579-1595. doi: 10.1007/s10899-014-9486-x

Spurrier, M., Blaszczynski, A., & Rhodes, P. (2014b). Gambler risk perception: A mental model and grounded theory analysis. *Journal of Gambling Studies, 31*(3), 887-906. doi: 10.1007/s10899-013-9439-9

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences, 23*(5), 645-665. doi: 10.1017/cbo9780511808098.026

Steel, Z., & Blaszczynski, A. (1998). Impulsivity, personality disorders and pathological gambling severity. *Addiction, 93*(6), 895-905. doi: 10.1046/j.1360-0443.1998.93689511.x

Thomas, S. L., Lewis, S., Westberg, K., & Derevensky, J. L. (2013). What influences the beliefs, behaviours and consumption patterns of 'moderate risk' gamblers? *International Journal of Mental Health and Addiction, 11*(4), 474-489. doi: 10.1007/s11469-013-9432-7

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science, 211*(4481), 453-458. doi: 10.1126/science.7455683

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty, 5*(4), 297-323. doi: 10.1007/bf00122574

Vergès, P. (1992). L'évocation de l'argent : Une méthode pour la définition du noyau central d'une représentation [The evocation of money: A method for defining the central core of a representation]. *Bulletin de Psychologie, 45*(4-7), 203-209.

Vergès, P. (1994). Approche du noyau central : Propriétés quantitatives et structurales [Central core approach: Quantitative and structural properties]. In C. Guimelli (Ed.), *Structure et transformations des représentations sociales [Social representations structure and transformations]* (pp. 233-253). Neuchâtel: Delachaux et Niestlé.

Weber, E. U., Blais, A.-R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making, 15*(4), 263-290. doi: 10.1002/bdm.414

Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M.-C., & Parker, J. (2002). Gambling participation in the US—results from a national survey. *Journal of Gambling Studies, 18*(4), 313-337. doi: 10.1023/A:1021019915591

Williams, R. J., Volberg, R. A., & Stevens, R. M. (2012). The population prevalence of problem gambling: Methodological influences, standardized rates, jurisdictional differences, and worldwide trends: Ontario Problem Gambling Research Centre.

Winters, K. C., Stinchfield, R. D., & Fulkerson, J. (1993). Toward the development of an adolescent gambling problem severity scale. *Journal of Gambling Studies, 9*(1), 63-84. doi: 10.1007/bf01019925

Wohl, M. J., & Enzle, M. E. (2002). The deployment of personal luck: Sympathetic magic and illusory control in games of pure chance. *Personality and Social Psychology Bulletin, 28*(10), 1388-1397. doi: 10.1177/014616702236870

Zhou, K., Tang, H., Sun, Y., Huang, G.-H., Rao, L.-L., Liang, Z.-Y., & Li, S. (2012). Belief in luck or in skill: Which locks people into gambling? *Journal of Gambling Studies, 28*(3), 379-391. doi: 10.1007/s10899-011-9263-z

Table 1

Prototypical Analysis of the Social Representation of Risk in a Gambling Context

			Rank						
			Low (< 3.10)			High (> 3.10)			
Frequency	High (> 16.61%)	To lose	57.69%;	1.95;	-2.29	Gain	27.03%;	3.15;	2.4
		Money	24.77%;	2.48;	-0.11	Luck	25.77%;	3.27;	1.73
		Danger	23.96%;	2.31;	-1.52				
	Low (< 16.61%)	Losing money	10.94%;	1.43;	-2.35	Addiction	12.93%;	3.24;	-2.24
						Adrenaline	11.30%;	3.60;	1.91
						Probability	9.49%;	3.33;	0.28
						Fear	9.04%;	3.23;	-1.13
						Chance	8.14%;	3.91;	0.08
						Gambling game	7.96%;	3.93;	1.09
						To try	7.96%;	3.85;	0.95
						Dependence	6.15%;	3.15;	-2.29
						Stress	5.97%;	3.64;	-0.76

Note. The first figure is the frequency in percentage, the second is the mean rank of appearance of the term and the third is the valence. The lemmatization yield to group together to lose and a loss; a gain and to win; losing money and a loss of money; to try and a try; a gambling game, a game, to gamble and a gambler. For each group, the most frequently cited term represents the group.

Table 2

Content Classification of Topics of the Discourse of the 17 Participants

Category	Number of participant who mentioned it
Losing money is a risk	15 (8/7)
To lose pushes to gamble again in order to win back the stake	13 (7/6)
Game is a spiral	11 (6/5)
Gambling may conduct to bad financial consequences	11 (6/5)
Gambling may lead to problematic relational consequences	9 (4/5)
To try is risky	9 (5/4)
Fear of losing money	8 (6/2)
The probability of profit is inversely proportional of risk	8 (4/4)
Dependence is a risk	8 (3/5)
Winning is a source of motivation that causes to gamble again	8 (4/4)
Money temptation is a motivation to gamble	8 (5/3)
Chance is random	7 (4/3)
The amount of money involved in the game regulates risks	7 (5/2)
Fear of losing the game	6 (1/5)
In order to increase gains it is necessary to take greater risks	6 (1/5)
Luck helps to win	6 (2/4)
Luck is not linked to risk	5 (4/1)
Luck is random	5 (3/2)
Stress is caused by risk	5 (3/2)
Stress is proportional of risk	5 (2/3)
The danger is to lose money	5 (2/3)
Chance is not related to risk	5 (4/1)
Adrenaline is a source of pleasure	5 (4/1)
Losing is a risk	5 (4/1)
Adrenaline is caused by risk	5 (3/2)
Addiction is an elevated level of gambling	4 (3/1)
Addiction raises risk taking	4 (2/2)
Addiction is the desire to gamble	4 (1/3)
Chance is inherent to gambling games	4 (2/2)
Risk is inherent to gambling games	4 (1/3)

Note. The first figure is the total number of participants, the second is the number of controlled gamblers and the third is the number of probable pathological gamblers.

Table 1 (in French)

Analyse Prototypique de la Représentation Sociale du Risque dans les Jeux de Hasard

			Rang						
			Faible (< 3.10)			Elevé (> 3.10)			
Fréquence	Elevée (> 16.61%)	Perdre	57.69%;	1.95;	-2.29	Gain	27.03%;	3.15;	2.4
		Argent	24.77%;	2.48;	-0.11	Chance	25.77%;	3.27;	1.73
		Danger	23.96%;	2.31;	-1.52				
	Faible (< 16.61%)	Perdre de l'argent	10.94%;	1.43;	-2.35	Addiction	12.93%;	3.24;	-2.24
						Adrénaline	11.30%;	3.60;	1.91
						Probabilité	9.49%;	3.33;	0.28
						Peur	9.04%;	3.23;	-1.13
						Hasard	8.14%;	3.91;	0.08
						Jeu de hasard	7.96%;	3.93;	1.09
						Tenter	7.96%;	3.85;	0.95
						Dépendance	6.15%;	3.15;	-2.29
						Stress	5.97%;	3.64;	-0.76

Note. Le premier nombre est la fréquence en pourcentage, le second est le rang moyen d'apparition du terme et le troisième est la valence. La lemmatisation a permis de regrouper les termes suivants : perdre et perte ; le gain et gagner ; perdre de l'argent et la perte d'argent ; tenter et une tentative ; un jeu de hasard, un jeu, jouer et un joueur. Pour chacun des groupes, le terme le plus fréquemment cité représente le groupe.

Table 2 (in French)

Classification du Contenu du Discours des 17 Participants

Catégorie	Nombre de participants qui ont mentionné la catégorie
Perdre de l'argent est un risque	15 (8/7)
Perdre pousse à rejouer pour regagner sa mise	13 (7/6)
Le jeu est un engrenage	11 (6/5)
Jouer aux jeux de hasard peut entraîner de mauvaises conséquences financières	11 (6/5)
Jouer aux jeux de hasard peut entraîner des conséquences relationnelles problématiques	9 (4/5)
Tenter c'est prendre un risque	9 (5/4)
La peur de perdre de l'argent	8 (6/2)
La probabilité de gain est inversement proportionnelle au risque	8 (4/4)
La dépendance est un risque	8 (3/5)
Gagner est une motivation qui pousse à rejouer	8 (4/4)
L'appât du gain est une motivation qui pousse à jouer	8 (5/3)
Le hasard est aléatoire	7 (4/3)
La somme d'argent en jeu module le risque	7 (5/2)
La peur de perdre	6 (1/5)
Pour augmenter le gain, il faut augmenter les risques	6 (1/5)
La chance permet de gagner	6 (2/4)
La chance n'a pas de lien avec le risque	5 (4/1)
La chance est aléatoire	5 (3/2)
Le stress est provoqué par le risque	5 (3/2)
Le stress est proportionnel au risque	5 (2/3)
Le danger est de perdre de l'argent	5 (2/3)
Le hasard n'a pas de lien avec le risque	5 (4/1)
L'adrénaline procure du plaisir	5 (4/1)
Perdre est un risque	5 (4/1)
Le risque provoque de l'adrénaline	5 (3/2)
L'addiction c'est jouer énormément	4 (3/1)
L'addiction augmente la prise de risque	4 (2/2)
L'addiction c'est avoir envie de jouer	4 (1/3)
Le hasard est inhérent aux jeux de hasard	4 (2/2)
Le risque est inhérent aux jeux de hasard	4 (1/3)

Note. Le premier nombre est le nombre total de participants, le second est le nombre de joueurs contrôlés et le troisième est le nombre de joueurs probablement pathologiques.