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## THE EFFECTS OF ANXIETY, AGGRESSIVENESS AND RISK MANAGEMENT ON DECISION-MAKING BEHAVIOR IN ONLINE GAMBLING

EMIL-RAZVAN, GATEJ<sup>a</sup> STELIANA, RIZEANU<sup>a</sup>  
ANCA MARIA, MANOLACHE<sup>a</sup>

<sup>a</sup>*Hyperion University, Faculty of Psychology and Educational Sciences  
Department of Psychology*

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### **Abstract**

*The fastest growing form of gambling in the world is online gambling. That's why many psychologists suggested the direction of research focused on this area. Some previous studies have suggested that individual psychological characteristics (including personality traits) may predispose certain individuals to overuse the Internet, and past research has chiefly examined the effects of anxiety, aggression, depression and self-consciousness on the level of Internet use so far. In this study we are trying to explore possible correlations and significant differences regarding aggression, anxiety, risk-taking game strategies, number of rounds played and if the player is winning or losing. We have discovered that all these dimensions are strongly interconnected and in further research we will try to explain all this in a clinical spotlight.*

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**Keywords:** *anxiety, aggressiveness, risk-management, decision-making, gambling*

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### 1. INTRODUCTION

Due to the increased awareness that online game addiction is a legitimate concern, efforts to explain why and how people are deeply involved in these games have become important research issues. However, little has been researched about the characteristics linked to "at-risk" population with such an online gaming addiction, especially of aggressive nature, which is one of the important subcategories of Internet addiction. Therefore, in this study we tried to show the effects of anxiety, aggressiveness and risk on decision-making behaviour in online gambling (Başol and Kaya, 2018; Kuss, Griffiths, 2012; Rizeanu, 2013, 2018).

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*Corresponding author: Emil-Razvan Gatej*

*E-mail address: emilrgatej@gmail.com*

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In the most accurate sense, “risk” refers to probabilities of future events – events which may be negative or positive, or some combination thereof. However, as Mary Douglas (1992) indicates, the concept of risk has become fraught with negativity – “risk” tends to be associated with negative characteristics, events and behaviour. Yet gambling activity is centrally defined by consequences, or future events, with various gambling outcomes associated with losses or gains. These losses and gains, however, are not restricted to the economic dimension, as is perhaps the most common depiction of gambling, but may also include gains and losses in terms of social relationships (Douglas, 1992).

The notion of “risk” is commonplace throughout society today. For example, we hear of risk associated with playing the stock markets – individuals vary in their willingness to go “out on a limb” to reap financial rewards or possibly, suffer financial losses. Gamblers also “take risk” – they expose themselves to potential loss or gain when involving themselves in gambling activity. Some who play the stock market reap rewards for exposing themselves to potential loss; similarly, some gamblers “win big” by exposing them to possible financial loss through particular betting strategies (Rizeanu, 2012). Beyond those activities where there may be tangible gains or losses, one could argue that there are potential gains or losses associated with many of the behaviours that we engage in on a daily basis. Public speaking, for example, is infused with risk – we may embarrass ourselves (suffer loss) or we may effectively transmit our message (experience gain). Similarly, using illegal drugs may result in gain or loss – one may, for example, either get high or get caught.

The phenomenon of “online game addiction” has widely spread over recent years and the clinical evidence to support validity of this new syndrome is mounting, although researchers are not yet in agreement as to whether online game addiction is a legitimate mental disorder in the same category as pathological gambling. In reflecting such an observation, there comes AMA report that the American Psychiatric Association is considering video game addiction, including addiction to online games, a disorder (Van Rooji et. al, 2017).

Due to the increased awareness that online gaming addiction is a legitimate concern efforts to explain why and how people are deeply involved in these games have become important research issues (Gainsbury, 2015).

Existing gambling games are not just offered on new devices (e.g. playing poker on iPad or playing Blackjack on smartphone), but digitization also opens the door to entirely new models of gambling, such as the purchase of semi randomized virtual currency in video games, or even one-click speculation on stock market movement. The study conducted by King and his collaborators concluded that even simulated gambling might contribute to later pathological gambling (King, Delfabbro, Kaptsis & Zwaans, 2014). Online gamblers can now enter games anytime anywhere, they can also use software to play multiple tables

simultaneously, estimate odds, or even profile opponents in real-time. This advantage extends to the industry as well: gambling companies can now build massive datasets on consumer behaviour and do real-time A/B testing of game changes; they can also use these data to engage in responsible gambling initiatives (Griffiths & Auer, 2011). E-gambling thus offers both new risks and new opportunities (Van Rooij et al., 2015). Risks might involve the increased anonymity in an online environment, increased impulsive behaviour with one-click buying, or decreased awareness of spending. On the other hand, e-gambling platforms also allow for better monitoring of gambling behaviour, better enforcement of (self-imposed) limits, and opportunities for individual and tailored feedback on playing behaviour.

Gambling activity tends to be categorized according to participation and the relative disruption and exposure to harm that gambling may bring to an individual's life. Often, disruption is measured by the time spent at a particular activity in association with the resulting consequences of that activity. For example, Currie Shawn and colleagues (2006) indicate that the likelihood of experiencing harm from gambling-related activity climbs the more often one gambles and the more money is invested in gambling activity. As with studies of alcohol consumption, these authors refer to "risk curves" – the level of consumption (in the case of alcohol) that result in various degrees of harm: "low risk" participation, for example, has optimal limits based specifically on relatively low levels of participation (or consumption, in case of alcohol use). Categorizations of gambling behaviour tend to fall along a particular range, from "low-risk" gambling, at one end, to "at-risk" gambling, to "high-risk/problem" gambling at the other end (Langhinrichsen-Rohling et al, 2004). For many researchers, the goal has been to identify the factors that may contribute to an individual being placed within a certain category, as well as factors may result in advancing to more deleterious categories.

Addiction is a term often used in the context of problem gambling or other types of activities characterized by participants who appear to have lost control over their behaviours. It is important to note that the addiction associated with gambling behaviour is not necessarily a monetary reward. The types of rewards and reinforcements in gambling situations may be addictive yet the nature reinforcements may be multiple (Parke and Griffiths, 2004), going well beyond economic rewards alone. For example, some gamblers may not only gain economically, but may also reap physiological and social rewards as well.

The use of digital forms of money (e.g. credit cards, electronic bank transfers and e-wallets) appears to lead to increase gambling and losses, particularly for problem gamblers, as people feel that they are not spending "real" money. The study conducted by Hing and his collaborators (2017) concluded that 19-28% of

online gamblers consider that it is easier to spend more money online, while 15% believe this form to be more addictive than land-based gambling.

## **2. OBJECTIVE AND HYPOTHESES**

### **2.1. OBJECTIVE**

The main objective of this research is to reveal a possible connection between a series of psychological characteristics and the online gambling behavior. This connection may have multiple applications in the scientific field: first it can offer a clinical image of those who use online gambling in an addictive way, second these connections could be used in preventing addiction by advising players how to manage their emotions. Not least this study can represent a pilot study for finding new strategies in developing online gambling.

### **2.2. HYPOTHESES**

H1. There is a statistically significant correlation between aggressiveness, anxiety and risk taking.

H2. There is a statistically significant correlation between aggressiveness, anxiety and the number of rounds played that can predict addiction.

H3. There is a statistically significant correlation between aggressiveness, anxiety and the rate of success vs. failure in winning the online game.

H4. There is a statistically significant correlation between risk taking and the rate of success vs. failure in winning the online game.

H5. There are statistically significant differences between win / loss groups regarding the level of anxiety.

H6. There are statistically significant differences between win / loss groups regarding the level of aggressiveness.

H7. There are statistically significant differences between win / loss groups regarding risk taking score.

H8. There are statistically significant differences between win / loss groups regarding the number of rounds played.

## **3. METHOD**

### **3.1. PARTICIPANTS**

The sample included 100 subjects, online gamblers that were involved in this study in a period of 3 weeks. The subjects selected for the study had ages between

20 and 40 years old, 95% males and 5% females. All the subjects had Mexican nationality. In order to test hypothesis 5, 6, 7 and 8 we have split this sample in two: one consisted by those who have mostly winned and the other one consisted by those who have mostly lost.

### 3.2. INSTRUMENTS

In order to test our assumptions we used a series of psychological tests. The Buss & Perry questionnaire (1992) was used to reveal the values of aggressiveness, The Hamilton Anxiety Scale (1959) was used for testing the anxiety level. In order to measure the risk in gambling behaviour we used The Gambling Self Efficacy Questionnaire – GSEQ (May et. all, 2003) a special designed instrument for which the authors declare a high internal consistency ( $\alpha=0.96$ ) and a good test-retest reliability ( $r=0.86$ ). For counting the number of rounds and the win/lose situation we have used the scores recorded by the software designed and used in online gambling company which supported our study.

### 3.3. PROCEDURE

The procedure used for this research was based on applying the test in an online form after the subjects agreed to participate in this study being motivated by the relevance of the results in order to manage their gambling behaviour and to find out new things about their psychological structure. The subjects were random selected from the clients of an online gambling company, they have agreed to participate at the study and to fill in the forms of the test. The results at the gambling activity were recorded using a special software that is currently used in the gambling company.

## 4. RESULTS

In order to test possible correlations evoked by the first four hypothesis we have run the Pearson Correlation procedure using the SPSS® program. The results shown below revealed significant correlations for all the supposed factors involved in online gambling behavior.

Table 1 - Correlations

		WL	AGR	ANX	Risk	ROUND
WL	Pearson Correlation	1	-.792**	-.875**	-.824**	-.656**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	100	100	100	100	100
AGR	Pearson Correlation	.792**	1	.950**	.917**	.828**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	100	100	100	100	100

ANX	Pearson Correlation	.875**	.950**	1	.949**	.770**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	100	100	100	100	100
Risk	Pearson Correlation	.824**	.917**	.949**	1	.728**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	100	100	100	100	100
ROUND	Pearson Correlation	.656**	.828**	.770**	.728**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	100	100	100	100	100

\*\* . Correlation is significant at the 0.01 level (2-tailed).

There is a statistically significant correlation between aggressiveness, anxiety and risk taking ( $r=.95, r=.91, r=.94$ ).

The hypothesis that assumed a statistically significant correlation between aggressiveness, anxiety and the number of rounds played that can predict addiction was confirmed ( $r= .95, r=.82, r=.77$ ).

The results revealed a statistically significant negative correlation between aggressiveness, anxiety and the rate of success vs. failure in winning the online game ( $r= -.79, r= -.87$ ). There is a negative correlation between the level of hostility recorded by the Buss & Perry aggression scale and the lose/win score. This reveals a psychological fact that assume that players with high aggression levels tend to lose rather than win in the online gambling situations ( $r= -.79$ ). The same losing behaviour is applied for those who had high scores to anxiety scale ( $r= -.87$ ).

The results showed above confirmed that there is a statistically significant negative correlation between risk taking and the rate of success vs. failure in winning the online game ( $r= -.82$ ). As much as the risk assumed is higher, less that the gamblers will win the game rounds.

Table 2 - Group statistics

	WL	N	Mean	Std. Deviation	Std. Error Mean
AGR	2.00	70	8.39	1.906	.228
	1.00	30	3.27	1.617	.295
ANX	2.00	70	9.29	1.038	.124
	1.00	30	4.60	1.522	.278
Risk	2.00	70	9.57	1.057	.126
	1.00	30	6.33	.959	.175
ROUND	2.00	70	2207.14	1028.869	122.973
	1.00	30	558.33	294.221	53.717

Table 3 - Independent Sample T test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
AGR	Equal variances assumed	2.173	.144	12.853	98	.000	5.119	.398	4.329	5.909
	Equal variances not assumed			13.726	64.218	.000	5.119	.373	4.374	5.864
ANX	Equal variances assumed	4.054	.047	17.871	98	.000	4.686	.262	4.165	5.206
	Equal variances not assumed			15.396	41.015	.000	4.686	.304	4.071	5.300
Risk	Equal variances assumed	1.156	.285	14.418	98	.000	3.238	.225	2.792	3.684
	Equal variances not assumed			14.996	60.224	.000	3.238	.216	2.806	3.670
ROUND	Equal variances assumed	7.337	.008	8.605	98	.000	1648.810	191.602	1268.582	2029.037
	Equal variances not assumed			12.287	90.044	.000	1648.810	134.194	1382.212	1915.407

Based on the results shown above, the research hypothesis that assumes significant differences between win / loss groups regarding the level of anxiety is accepted for a sample of 100 subjects. Results on the anxiety scale were significantly different between the two samples ( $M_1 = 9.29$ ,  $M_2 = 4.60$ ,  $t = 17.87$ ,  $p < 0.05$ ). Data revealed by the table above accept the existence of significant differences between the two samples.

The sixth hypothesis that assumes statistically significant differences between win / loss groups regarding the level of aggressiveness was also confirmed by the statistical analysis ( $M_1 = 8.39$ ,  $M_2 = 3.27$ ,  $t = 12.85$ ,  $p < 0.05$ ).

The seventh hypothesis that assumes statistically significant differences between win / loss groups regarding risk taking score was confirmed by the statistical analysis that used the T test for independent samples ( $M_1 = 9.57$ ,  $M_2 = 6.33$ ,  $t = 14.41$ ,  $p < 0.05$ ).

The eight hypothesis that assumes statistically significant differences between win / loss groups regarding the number of rounds played was confirmed by the statistical analysis that used the T test for independent samples ( $M_1 = 2207.14$ ,  $M_2 = 558.33$ ,  $t = 8.60$ ,  $p < 0.05$ ).

## 5. CONCLUSIONS

This paper is connecting four important factors involved in gambling activities and is meant to be a stranding point for building new clinical outcomes based on the modern type of gambling, the online gambling. In a society where aggressiveness is everywhere but is undesirable, anxiety must be overcome in any way because it is also undesirable and the individuals with such symptoms are considered weak, sometimes gambling is the “solution” for all this. The virtual world is building a new individual, strong and capable of doing anything in a parallel world but with huge costs in real life. We, the psychologists should reveal the scientific reality in order to help the individuals maintain a balanced course of their life.

*Received at: 05.02.2019, Accepted for publication on: 10.02.2019*

## ACKNOWLEDGMENT

This research was done with the support of the Playtech Company.

## REFERENCES

- Başol, G. and Kaya, A.B. (2018). Motives and Consequences of Online Game Addiction: A Scale Development Study. *Noro Psikiyatrs Ars.* 55(3): 225–232.
- Buss, A. H., Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology*, Vol. 63(3), 452-459
- Currie, S.R., Hodgins, C.D., Wang, J. L, el-Guebaly, N., Wayne, H., Chen, S. (2006). Risk of harm among gamblers in the general population as a function of level of participation in gambling activities. *Addiction* 101:570-580.
- Douglas, M. (1992). *Risk and Blame: Essays in Cultural Theory*. London: Routledge.
- Gainsbury, S.M., (2015). Online Gambling Addiction: the Relationship Between Internet Gambling and Disordered Gambling. *Technology and addiction, Curr Addict Rep* 2:185–193.
- Griffiths, M. D., Auer, M. (2011). Approaches to Understanding Online Versus Offline Gaming Impacts. *Gambling Research*, (3), 45-48.
- Hamilton, M. (1959). The assessment of anxiety states by rating. *Br J Med Psychol* 32: 50-55.
- Hing, N., Russell, A.M. and Browne, M. (2017). Risk Factors for Gambling Problems on Online Electronic Gaming Machines, Race Betting and Sports Betting. *Front. Psychol.* 8:779. doi: 10.3389/fpsyg.2017.00779
- King, D.L., Delfabbro, P.H., Kaptsis, D., Zwaans, T. (2014). Adolescent simulated gambling via digital and social media: An emerging problem. *Computers in Human Behavior*, 31(1), 305-313. <http://doi.org/10.1016/j.chb.2013.10.048>



Kuss, D. J., Griffiths, M. D. (2012). Online gaming addiction in children and adolescents: A review of empirical research. *Journal of Behavioral Addictions. Volume 1, Issue 1:3-22.*

Langhinrichsen-Rohling, J., Rohde, P., Seeley, J.R., Rohlinh, M.L. (2004). Individual, Family and Peer Correlates of Adolescent Gambling. *The Economic Journal 118:515.*

May, R.K., Whelan, J.P., Steenbergh, T.A., Meyers, A.W. (2003). The gambling self-efficacy questionnaire: an initial psychometric evaluation. *J Gambl Stud. 19(4):339-57.*

Parke, J., Griffiths, M.D. (2004). Gambling addiction and the evolution of the “near miss”. *Addiction Research & Theory 12:407-411*

Rizeanu, S. (2018). Cognitive-behavioral therapy for gambling addiction. In Senormanci, O. (2018). *Cognitive Behavioral Therapy and Clinical Applications, p 61-81.* Rijeka: InTech. DOI:10.5772/intechopen.72671

Rizeanu, S. (2016). Romanian Pathological Gambler’s Psychology - A Review. *Abnormal and Behavioural Psychology 2:1.*

Rizeanu, S. (2013). Pathological Gambling in Relation to Anxiety and Identity Status. *Procedia - Social and Behavioral Sciences. Vol. 78, pp 748-752.* DOI: 10.1016/j.sbspro.2013.04.388

Rizeanu, S. (2012). The Specificity of Pathological Gambling. *Procedia - Social and Behavioral Sciences. Vol. 33, pp 1082-1086.* DOI: 10.1016/j.sbspro.2012.01.289

Van Rooij, A.J., Vanden Abeele, M.M.P. & Van Looy, J. (2017). *Gambling and Gaming in Belgium: Opportunities and Risks associated with Online Digital Gambling.* Ghent, Belgium: imec-mict-Ghent University.

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