

Impulsion and Addictive Gambling Behaviour

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Abstract

The study examined impulsivity: A predictor of addictive gambling behavior among youths. 150 participants were drawn from various locations in Jos metropolis comprising of 105 males and 45 females with age range of 18-45 years. The short form of Barratt Impulsiveness Scale (BIS) developed by Marcello Spinella (2005) consisting of 15 items was used to measure impulsivity while the Gambling Addictive Behavior Scale (GABS) developed by Hyun Sook and Sun Young (2012) was used to measure addictive gambling behavior. Three hypotheses were tested using one way analysis of variance (ANOVA). The findings of

the study showed that there was no significant effect of impulsivity on addictive gambling behavior $F(1, 148) = 0.479, p = 0.490 (p > .05)$; more so, there was a significant effect of impulsivity on addictive gambling behaviour among young and old participants, $F(1, 87) = 4.154, p = 0.045 (p < .05)$. Finally, there was a significant effect of impulsivity on addictive gambling behaviour among males and females participants. $F(1, 87) = 26.383, p = 0.0005 (p < .05)$. Based on the findings, it's recommended that there should be intensive enlightenment campaign to educate the public on the menace of engaging in addictive gambling behavior.

Introduction

Gambling as a hobby has existed from very early times. (Arnold, 1977). Nigeria has the fastest growth rate in gambling in Africa and is second to South Africa. According to research platform, Nigeria's casino gambling brought in \$40 million in revenue. (<http://www.gambling Africa.com>)

According to a recent investigative report by News Agency of Nigeria (NAN), about sixty million Nigerians between the ages 18 and 40 years may be spending up to 1.8 billion naira on sport betting daily. The report stated that the age group invests an average of N3, 000 sweepstakes daily on online soccer betting such as Nairabet, 1960bet, bet9ja, surebet247, Merrybet and Betcolony. It is a serious threat that is eating deep into the fabric of our society. It has tremendously promoted laziness among youths and promotes unwillingness to work and dormancy among the youths. While gambling may generate money for its owners and

government, it leads to crime, corruption and other vices, which may be occasioned by the desperation to win at all cost. Based on the problem, the present study seeks to investigate how impulsivity can bring about addictive gambling behaviour among youths. (<http://www.daargroup.com>) .DSM-IV Diagnostic Criteria pathological gambling is characterized by the persistence and recurrence of the gambling behavior. In DSM-5, gambling disorder is characterized by a persistent and recurrent maladaptive pattern of gambling behaviour. It is usually associated with impaired functioning, reduced quality of life, and high rate of bankruptcy, divorce, and incarceration (Hodgins, Stea & Grant, 2011).

The main objective is to examine the influence of impulsivity on addictive gambling behavior among youths and help young adults to understand how to make rational decisions instead of acting based on impulse and thus reduce their chances of gambling

Definition of concepts

Addictive Gambling Behavior: This refers to the process whereby an individual is unable to resist his or her impulse to gamble. Gambling involves the staking of an item of value on an outcome that is governed by chance, and comprises a wide range of

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commercial activities, including lotteries, electronic gaming machines, casino games, racing and sports-betting. (Potenza, 2008) **Impulsivity:** International Society for Research on Impulsivity defines it as the tendency to act with less forethought than most individuals of equal ability and knowledge, or a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these actions (<http://www.impulsivity.org>.)

Youths: Refers to boys and girls whose age ranges from 17 years to 41 years.

The basic tenet of learning models is that gambling is a behaviour governed by contingencies of reinforcement operating under operant and classical conditioning paradigms. Both positive and negative reinforcement increase the probability of a gambling response being elicited and explain persistence in gambling (Blaszczynski & Nower, 2002)

Although formally classified in DSM-IV as a disorder of impulse control, the addiction model is presently the dominant theoretical paradigm explaining pathological gambling (Blaszczynski & Nower, 2002; National Research Council, 1999). This is reflected in DSM's decision to incorporate modified items used in substance dependence in the criteria set used to diagnose pathological gambling (Lesieur & Rosenthal, 1991).

From a behavioral perspective, impulsivity can be defined as a wide range of actions that are poorly conceived, prematurely expressed, unduly risky, or inappropriate to the situations and that often result in undesirable outcomes (Evenden, 1999). More simply, it is described as the inability to delay gratification or the inverse of self-control (Monterosso and Ainslie, 1999)

Impulsivity

The importance of serotonin and dopamine neurotransmitters as well as its relationship with the two widely known experimental compounds: they argued that impulsiveness, is a very sensitive concept whenever it involves in decision-making processes. These decisions could include positive

decisions as well as risky behaviors such as addictive gambling (Arce & Santisthen 2006)

Bellman (2012) examined consumer impulsivity and risky decision making and accountability... Motivated reasoning and impulsiveness was considered within the context of consumer and other choice decisions. Consumer impulsivity was found to be related to both general measures of trait level. The cups task, a risky decision making task, was also administered and results revealed that participants who exhibit impulsivity indulge in risky spending like gambling. Additionally, both expected value and outcome magnitude influenced results. Individuals who scored higher on the UPPS urgency subscale made more risk advantageous choices when looking at sensitivity to expected value. The third task assessed differences in purchase time for hedonic and utilitarian items. Impulsive consumers reported they would purchase both hedonic and utilitarian items sooner than their less impulsive counterparts.

Johansen (2014) conducted a study to examine the effects of a mindfulness intervention on at-risk adolescents' decision-making about risky behavior. Results indicate that mindfulness does not significantly moderate the process of self-regulation as a moderating factor with respect to impulsivity and various decision making bases, as well as with respect to sensation seeking and various decision making bases.

Addictive Gambling Behaviour

Gatis (2000) investigated gambling addiction and personality type. The relationship between personality types of gamblers within the group, the relationship between the personality types of non-gamblers within the group and finally the relationship between the personality types of gamblers and non gamblers between groups. No statistically significant relationships were found, however, a high frequency of non- gamblers scored high in introverted feeling which signifies that introverts who usually think before they act are less likely to indulge in gambling.

Thrasher (2006) examined the gambling behaviour of college students and in particular, college student athletes, The study reveals that

males reported statistically more positive attitude towards gambling than females, Also it was found that gambling intention significantly and positively predicted gambling behavior in terms of specific gambling types, but gambling intentions did not significantly and positively predict gambling behavior in terms of amount of money gambled, meaning that gamblers spend their money based on impulse.

Cyders (2008) manipulated positive emotion to ascertain its role on gambling behaviors and alcohol consumption: Positive urgency role was above and beyond previously identified risk factors; these findings combined with prior cross-sectional and longitudinal field studies provide strong support for the role of positive urgency in rash action.

Similarly, Melilo (2014) examined the effects of emotional intelligence and mood manipulation on risk taking. A mixed model repeated measures analysis indicated that the mood induction was effective. The results indicate that MOE may play a prominent role in reducing risk taking when in a negative mood. This study has implications for addiction, as individuals with higher emotional intelligence may engage in less risk taking when in a negative mood, whereas individuals with lower emotional intelligence may be prone to risky behaviors like addictive gambling.

Hellstrom (2015) investigated adolescents gaming and gambling in relation to negative social consequences and health.. The findings of the study revealed that boys had a higher probability than girls of participating in online gambling in association with online gaming.

Impulsive and Addictive Gambling Behavior

Maar (2013) examined the relationship between impulsivity, time perception, gambling behavior and co-variables as age, gender, education and nationality. Impulsivity, time perception and risk for pathological gambling (PG). The result revealed that impulsive subject tend to perceive time intervals as shorter and they under produced time intervals more than self-controlled subjects. Impulsivity was strongly associated with Pathological Gambling (PG) to the extent that this association can be interpreted as causal but it is

mediated by time perception as hypothesized.

Romo, Kotbagi, Platey, Adelaide, Boz and Kern (2014) investigated the links between gambling behaviour and impulsivity through multidimensional approach in a French adolescent population and also to find out the prevalence of pathological gambling behaviour amongst adolescents who are not meant to have legal access to such games. The results indicate that 33% of participants have gambled at least once during the last year and that girls gambled as much as boys (17% and 16%) respectively. Also it was found that 1.6% of the population has problematic gambling behaviour. It was found that many dimensions of impulsivity (Urgency, Positive urgency, and Sensation seeking) are correlated to Gambling behavior, but only sensation seeking seems to be the strongest predictor of pathological gambling severity.

Froberg (2015) explored problem gambling among Sweden men and women Findings revealed that the incidence of first episode problem gambling was higher among Swedish youth, aged 16 to 24 years, than among 25 to 44 year-olds, and three times higher among young men. His findings suggest that the higher prevalence of problem gambling among Swedish youth compared to 25 to 44 year-olds is explained by a higher incidence of first episode problem gambling, and a lower proportion of recovery, among youth compared to 25 to 44 year-olds.

Hedayatmofidi (2015) explored the effects of stress-induced depressive behaviours on gambling like decision-making in rodents. It was hypothesized that stress will increase impulsive decision-making in rats. Their findings suggest that the observed effects of both types of shocks on decision-making could be modulated by baseline levels of impulsivity which may further increase the likelihood of gambling.

Luke (2015) stated that Pathological Gambling Now placed “substance-related and addictive disorders” in DSM-5, gambling disorder has similarities to other behavioral addictions, such as “food addiction” and “Internet gaming disorder. Haw (2015) conducted a study titled impulsivity predictors of problem gambling and impaired

control, the study assessed five facets of impulsivity as predictors of both gambling impaired control and problem gambling. Result revealed that perseverance was not a predictor of gambling measure and that negative urgency was the strongest predictor of both impaired control and problem gambling, he stated that from all the predictors of addictive gambling, impulsivity proved to be the most potent factor.

Hypotheses

1. Youths with high level of impulsivity will not engage more in addictive gambling behavior than youths with low level of impulsivity.
2. Younger participants with high impulsivity will not exhibit higher addictive gambling behavior than older participants with high level of impulsivity.
3. Male participants will likely engage more in addictive gambling behavior than female participants.

Methodology

Participants: The participants are male and female youths who were randomly selected at different game betting centers including Angwan Rukuba, Unity Junction and Gadabiu area in Jos Metropolis. A total of 150 respondents were drawn. Among the respondents, 38 (25.3%) are within the age range of 15-23 years, 76 (50.7%) are within the age range 24-31 years, 30 (20%) are within 32-40 years while 6 (4%) are 40 years and above. Among the participants, 105 (70%) were male, while 45 (30%) are females. Also, 114 (76%) indicated that they are Christians and 36 (24%) indicated that they are Muslims.

Research design: This study used survey design. The study has one Independent variable impulsivity with 2 levels of low and high. And one dependent variable, addictive gambling behaviour. One-way analysis of variance (ANOVA) at $p \leq 0.05$ significance level was used.

Instruments: Structured questionnaire was used. This is divided into three sections.

Section A: Respondents Socio Demographic Scale. It consists of participant's personal identity such as Age, Gender, Religion affiliation and Ethnicity.

Section B: Impulsivity Scale: The short form of Barratt Impulsiveness Scale (BIS) developed by Marcello Spinella (2005) consisting of 15 items was used to measure impulsivity. The instrument was responded to in a likert form;

1=Never, 2=Rarely, 3=Almost and 4=Always. The Scale is considered to be psychometrically sound with a very good test retest reliability of .94

Section C: Addictive Gambling Scale: This section measures Gambling Addictive Behavior, the Gambling Addictive Behavior Scale (GABS) developed by Hyun Sook and Sun Young (2012) was used to measure addictive gambling behavior in this study. The scale comprised of 25 items which are responded to in Yes or No form. The scale yielded a reliability coefficient of 0.9

Procedure: The sampling procedure was convenience sampling technique. The researcher visited the selected study area. Upon completion of the administrative protocol, the purpose of the study was explained to the youths interested in filling the questionnaire. Participants were approached individually and the researcher intimated the participants about the study. Respondents were encouraged to ask for clarification where not clear. On the completion, the researcher cross-checked each questionnaire to ensure that they were appropriately responded to as required of the participants.

Method of dataanalysis. Both descriptive and inferential statistics were employed in the data analysis of the study. 2-way Analysis of Variance (ANOVA) was used to test the research hypotheses.

Results

The descriptive result presents the frequencies for the socio-demographic characteristics, while the inferential result presents the results for the hypotheses tested.

Table 1: socio-demographic Characteristics of Study Participants

	Frequency	Percentage %
Age		
15-23 years	38	25.3
24-31 years	76	50.7
32-40 years	30	20.0
> 40 years	6	4.0
Gender		
Male	105	70.0
Female	45	30.0
Religion		
Christianity	114	76.0
Islam	36	24.0
Impulsivity		
Low	61	40.7
High	89	59.3

Table 1 shows that majority 76 (50.7%) of the study participants were between 24-31 years of age, the majority 105 (70%) of the study participants were males. The table further revealed that majority 114 (76%) of the participants were Christians. Based on scores on measures of impulsivity, the majority 89 (59.3%) of the participants had high level of impulsivity.

Inferential Results

The hypotheses stated in the study were tested with the One-way analysis of variance (ANOVA) at $p \leq 0.05$ significance level and the results are presented below.

Hypothesis One

Youths with high level of impulsivity will not significantly engage in addictive gambling behaviour than youths with low level of impulsivity.

Table 2: ANOVA Source Table for Impulsivity on Addictive Gambling Behaviour

Source	Type III Sum of squares	df	Means square	F-ratio	Sig.
Corrected					
Model	10.993	1	10.993	.479	.490
Intercept	166421.793	1	166421.793	7244.711	.000
Impulsivity	10.993	1	10.993	.479	.490
Error	3399.780	148	22.971		
Total	175318.000	150			
Corrected Total	3410.773	149			

Table 3: Mean Score of Addictive Behaviour across Levels of Impulsivity

Impulsivity	Mean score addictive gambling behaviour	Standard Deviation	95% Confidence Interval	
			Lower Bound	Upper Bound
Low	34.18	4.65	32.97	35.39
High	33.63	4.89	32.63	34.63

The result of hypothesis one showed that youths with high level of impulsivity did not significantly engage in addictive gambling behaviour than youths with low level of impulsivity, $F(1, 148) = 0.479$, $p = 0.490$ (table 2); with addictive gambling behaviour mean score of 34.18 for participants with low level of impulsivity; and addictive gambling behaviour mean score of 33.63 for participants with high level of impulsivity (table 3). The hypothesis was not supported.

Hypothesis Two

Older participants with high impulsivity would significantly exhibit higher addictive gambling behaviour than younger participants with high level of impulsivity.

Table 4: ANOVA Source Table for Young and Older Participants with High Impulsivity on Addictive Gambling Behaviour

Source	Type III Sum of squares	df	Means square	F-ratio	Sig.
Corrected					
Model	95.830	1	95.830	4.154	.045
Intercept	65267.965	1	65267.965	2829.347	.000
Age	95.830	1	95.830	4.154	.045
Error	2006.934	87	23.068		
Total	102755.000	89			
Corrected Total	2102.764	88			

Table 5: Mean Score of Addictive Behaviour across Younger and Older Participants with High Level of Impulsivity

Age	Mean score addictive gambling behaviour	Standard Deviation	95% Confidence Interval	
			Lower Bound	Upper Bound
Younger aged	33.13	4.99	32.00	34.25
Older aged	35.76	3.88	33.45	38.08

The result of hypothesis two showed that older participants with high impulsivity significantly exhibited higher addictive gambling behaviour than younger participants with high level of impulsivity, $F(1, 87) = 4.154$, $p = 0.045$ (Table 4); with addictive gambling behaviour mean score of 33.13 for younger participants with high level of impulsivity; and addictive gambling behaviour mean score of 35.76 for older participants with high level of impulsivity (Table 5). The hypothesis was supported. This implies that being older with a high level of impulsivity predisposes an individual to addictive gambling behaviour.

Hypothesis Three

Male participants with high impulsivity would significantly exhibit higher addictive gambling behaviour than female participants with high level of impulsivity.

Table 6: ANOVA Source Table for Male and Female Participants with High Impulsivity on Addictive Gambling Behaviour

Source	Type III Sum of squares	df	Means square	F-ratio	Sig.
Corrected					
Model	489.290	1	489.290	26.383	.000
Intercept	91857.470	1	91857.470	4953.040	.000
Gender	489.290	1	489.290	26.383	.0005
Error	1613.474	87	18.546		
Total	102755.000	89			
Corrected Total	2102.764	88			

Table 7: Mean Score of Addictive Behaviour across Male and Female Participants with High Level of Impulsivity

Gender	Mean score addictive gambling behaviour	Standard Deviation	95% Confidence Interval	
			Lower Bound	Upper Bound
Male	35.47	5.15	34.32	36.63
Female	30.63	2.33	29.18	32.12

The result of hypothesis three showed that male participants with high impulsivity significantly exhibited higher addictive gambling behaviour than female participants with high level of impulsivity, $F(1, 87) = 26.383$, $p = 0.0005$ (table 6); with addictive gambling behaviour mean score of 35.47 for male participants with high impulsivity; and addictive gambling behaviour mean score of 30.63 for female participants with high level of impulsivity (table 7). The hypothesis was supported. This implies that being male with a high level of impulsivity predisposes an individual to addictive gambling behaviour.

Discussion of Findings

The first hypothesis stated that Youths with high level of impulsivity will not significantly engage in addictive gambling behaviour than youths with low level of impulsivity. Result shows that youths with high level of impulsivity did not significantly engage in addictive gambling behaviour than youths with low level of impulsivity, $F(1, 148) =$

0.479, $p = 0.490$ (table 2); with addictive gambling behaviour mean score of 34.18 for participants with low level of impulsivity; and addictive gambling behaviour mean score of 33.63 for participants with high level of impulsivity (table 3). This is supported by the work of Maar (2013) who examined the relationship between impulsivity, time perception, gambling behavior and co-variables as age, gender, education and nationality. The result revealed that impulsive subjects tend to perceive time intervals as shorter and they under produced time intervals more than self-controlled subjects. Impulsivity was strongly associated with Pathological Gambling (PG) to the extent that this association can be interpreted as causal but it is mediated by time perception as hypothesized. Similarly, in support is the work of Johansen (2014) who examined the effects of a mindfulness intervention on at-risk adolescents' decision-making about risky behavior, Speculations regarding the results of this study include the notion that impulsivity more strongly affects the "in the moment," gratification-seeking, and/or emotional drive to engage in a particular *behavior such as gambling* than the reflective cognitive process measured by decision making bases.

Furthermore, Haw (2015) revealed that perseverance was not a predictor of gambling measure and that negative urgency was the strongest predictor of both impaired control and problem gambling, Haw (2015) stated that from all the predictors of addictive gambling, impulsivity proved to be the most potent factor.

The second hypothesis stated that older participants with high impulsivity would significantly exhibit higher addictive gambling behaviour than younger participants with high level of impulsivity. which was confirmed because older participants with high impulsivity significantly exhibited higher addictive gambling behaviour than younger participants with high level of impulsivity, $F(1, 87) = 4.154$, $p = 0.045$ (table 4); with addictive gambling behaviour mean score of 33.13 for younger participants with high level of impulsivity; and addictive gambling behaviour mean score of 35.76 for older participants with high level of impulsivity (table 5). This implies that being older with a high level of impulsivity predisposes an

individual to addictive gambling behaviour. The result is supported by Romo, Kotbagi, Platey, Adelaide, Boz and Kern (2014) found that 1.6% of the population has problematic gambling behaviour which is more common with participants that are older than younger participants.

Hypothesis three stated that Male participants with high impulsivity would significantly exhibit higher addictive gambling behaviour than female participants with high level of impulsivity. The result showed that male participants with high impulsivity significantly exhibited higher addictive gambling behaviour than female participants with high level of impulsivity, $F(1, 87) = 26.383$, $p = 0.0005$ (table 6); with addictive gambling behaviour mean score of 35.47 for male participants with high impulsivity; and addictive gambling behaviour mean score of 30.63 for female participants with high level of impulsivity (table 7). The hypothesis was supported. The findings is supported by Hellstrom (2015) who revealed that boys had a higher probability than girls of participating in online gambling in association with online gaming. Similarly, Frogberg (2015) revealed that Swedish young men have an increased risk of problem gambling compared to Swedish women.

Recommendations

The findings of this study have the following recommendations:

1. Enlightenment campaign to educate youths and adolescents on the menace of engaging in addictive gambling behaviour.
2. Government and Non-governmental Organizations should efficiently carry out its mandate of monitoring and counseling the society on the menace addictive gambling behaviour.
3. Taking into account the factors that may have influenced the outcome of this study, another study, with a larger sample size, should be conducted with modifications made to the test administration of the packet questionnaire. A larger sample size with modifications made in test administration should greatly enhance the ability to determine if a statistically significant relationship exists between impulsivity and gambling addiction.

Limitations.

Firstly, self-report questionnaire was used in assessing variables of interest among sampled participants. Self-reports measures have been faulted on the basis that participant sometimes do not know how they feel about some situations and their response might not be too exact in measuring the variables concerned.

Secondly, due to time constrain, the research carried out consisted of a relatively small sample of only 150 participants, also this study was conducted in Jos only. Therefore, the generalization of the findings from this study may be limited.

Conclusion

Based on the findings, it was concluded that older youths engage more in addictive gambling behaviour than younger participants. Also; male participants had a higher rate of engaging in addictive gambling behaviour than female participants.

References

- Arce, E. and Santisteban, C. (2006) Dimensions of impulsive behavior: Personality and behavioral measures. *Personality and Individual Differences*, 40, 305-315.
- Arnold, P. (1977) Redefining gambling: The production and consumption of gambling products. *Journal of the National Association for Gambling Studies*, 21, 51-54.
- Alessi, G., & Haslam, N. M. (2003). Pathological gambling severity is associated with impulsivity in a delay discounting procedure. *Behavioral processes*. 64(3), 345-354
- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders*. 3rd ed. Washington, DC: American Psychiatric Association.
- Barnes, G. M., Welte, J. W., Hoffman, J. H. & Tidwell, M. C. (2010). Comparisons of gambling and alcohol use among college students and non college young people. *Journal of American college health*. 58, 443-452.
- Bellman A. (2005) Decision making, impulse control and loss of willpower to resist purchasing of drugs: A Neurocognitive perspective. *National Neuroscience*, 8, 1458-1463.
- Blaszczynski, A. P. (1999). Pathological gambling and obsessive-compulsive spectrum disorders. *Psychological Reports*, 84, 107-113.
- Blaszczynski, A., & Farrell, E. (1998). A case series of 44 completed gambling-related suicides. *Journal of Gambling Studies*, 14(2), 93-109.
- Blaszczynski, A., & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction*, 97, 487-499.
- Blaszczynski, A., & Steel, Z. (1998). Personality disorders among pathological gamblers. *Journal of Gambling Studies*, 14, 51-
- Barratt, E. S. (1993). Impulsivity: integrating cognitive, behavioral, biological and environmental data. In W. McCowan, J. Johnson, & M. Shure, *The impulsive client: theory, research, and treatment*. Washington, DC: American Psychological Association.
- Cunningham-Williams, R.M., Cottler, L.B., Compton, W.M. & Spitznagel, E.L. (1998). Taking chance: problem gamblers and mental disorders - results from the St. Louis Epidemiological Catchment Area (ECA) study. *American Journal of Public Health*, 88, 1093-1096.
- Cyders, M.A. (2008) Integration of Impulsivity and Positive Mood to Predict risky Behavior: Development and Validation of a Measure of Positive Urgency. *Psychological Assessment*, 19, 107-118. <http://dx.doi.org/10.1037/1040-3590.19.1.107>
- Expósito and Andrés-Pueyo (1997). The neurobiology of pathological gambling and drug addiction: an overview and new findings. *Philos Trans R Soc Lond B Biol Sci*, 363, 3181-3189.
- Froberg, J. (2015). "The prevalence of problem gambling among Sweden Adolescents and young adults: Results from a national survey." *Journal of Gambling Studies* 24(2): 119-133.
- Gatis, M. A. (2000) Gambling addiction and personality type). *Theses and Dissertations*. Paper .
- Govoni, R. (2000). Gambling Behavior and the Distribution of Alcohol Consumption Model. Department of Psychology. Windsor, University of Windsor. Degree of Doctor of Philosophy
- Haw, J. (2015). Impulsivity as a predictor of Child and adolescent gambling behavior. "Current knowledge." *Clinical Child Psychology and Psychiatry* 7(2): 263-281.
- Hellstrom, T. (2015) Gambling-Related Harms among Adolescents: A Population- Based Study. *Journal of Gambling Studies*, 29, 151-159. <http://dx.doi.org/10.1007/s10899-012-9298-9>
- Hedayatmofidi (2015). Opposing Effects of Acute Stress in a Rodent Model of Gambling Behaviour. *An*

- M.Sc Thesis submitted to Institute of Medical Science University of Toronto .
- Holden, C. (2001). Behavioral addictions: Do they exist? *Science*, 294, 980-982.
- Hodgins D. S., Sten J. N., Grant J. E. (2011). Gambling disorders. *Lancet* 378(9806): 1874-1884. doi:10.1016/S0140-6736(10)62185-X. (PubMed)
- Hyder, A. A., & Juul, N. H. (2008). Games, gambling, and children: Applying the precautionary principle for child health. *Journal of Child and Adolescent Psychiatric Nursing*, 21, 202-204. <http://dx.doi.org/10.1111/j.1744-6171.2008.00155.x>
- Johansen, S.L (2014). Sensation Seeking and Impulsivity In Relation To Youth Decision Making About Risk Behavior: *Mindfulness Training To Improve Self-Regulatory Skill*. A Doctorate Dissertation Submitted to Department of Human Development and Family Studies Colorado State University Fort Collins, Colorado.
- In Psych. The Bulletin of the Australian Psychological Society. Special report: The psychology of gambling. December 2010. Available online at <http://www.psychology.org.au/assets/files/the---psychology--of---gambiling.pdf>
- Lesieur, H.R., & Rosenthal, R.J. (1991). Pathological gambling: a review of the literature (prepared for the American Psychiatric Association Task Force on DSM-IV Committee on disorders of impulse control not elsewhere classified). *Journal of Gambling Studies*, 7, 5-39.
- Luke, C. (2015) "Internet Gambling and pathological Gambling Among 13 to 18 Year Old Adolescents in Iceland." *International Journal of Mental Health* and Addiction 9(3): 257-263.
- Maar, A. (2013) Impulsivity and time perception as predictors of pathological gambling. A M.Sc Thesis submitted to Faculty of Social Sciences, University of Tartu.
- Mellilo (2014). The Effect of Emotional Intelligence on the Relationship between Negative Mood and Risk Taking. *An honors thesis presented to the Department of Psychology*, University at Albany, State University of New York.
- Nower, L., Derevensky, J., & Gupta, R. (2004). The relationship of impulsivity, sensation seeking, coping and substance use in youth gamblers. *Psychology of Addictive Behaviors*, 18(1), 49-55.
- Petry N. M. (2005). Pathological gambling: Etiology, Comorbidity, and treatment. Washington, DC: American Psychological Society.
- Potenza M.N, Smith, G. Hodgins, D. Cand. Williams R (2008). The Neurobiology of Pathological Gambling. *Research and Measurement Issues in Gambling Studies*, Elsevier: 345-370.
- Spinella, M. (2005). Neurobehavioral correlates of impulsivity. *International Journal of Neuroscience*, 114 (1), 95-104.
- Tamminga B.A & Nestler, C.C 2006). The Psychology of Gambling, Pergamon Press, Sydney.
- Thrasher, R.G. (2006). "Using the Theory of Reasoned Action to examine the gambling behaviors of college athletes and other students." (2006). *Electronic Theses and Dissertations*. Paper 1442. <http://dx.doi.org/10.18297/etd/1442>
- Volkow D.C & Fowler, J.E. (2002) Theories of Addiction. *Lancet*, 378, 1874-84.