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Anger and Aggression in Gambling Disorder

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ABSTRACT

Higher rates of anger and aggression have been observed in problem gamblers. In this cross-sectional study the relationship between anger, aggression and a community sample of problem gamblers was examined within two subtypes of gambling: Perceived Skill Gambling (sports, cards, track) and Chance Gambling (bingo, lotteries, slot machines) gambling. Aggression and anger were assessed by the Aggression Questionnaire (AQ) and the Trait Anger Scale (TAS), respectively. Results indicated that Perceived Skill Gamblers (i.e., sports, card, track) scored higher on expressing anger on the AQ as well as on the hostility, physical and verbal and aggression subscales of the TAS. There were no sex differences on any AQ subscale except for the Physical Aggression Subscale. We did not find gender differences on the TAS. The study shows evidence that Perceived Skill Gamblers experience more anger, hostility, physical and verbal aggression as measured by the AQ. The current findings contribute to an improved understanding of the complexity of the factors that are implicated in gambling disorder, and suggests that anger and aggression should be routinely assessed among disordered gamblers seeking treatment.

Keywords: problem gambling; anger; aggression; gambling treatment

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Introduction

The role of anger, aggression and violence has not been well studied in problem gambling research despite high proportions of individuals seeking treatment for problem gambling reporting these clinical issues (Aymami, Granero et al., 2014). Little is known about the relationship between types of gambling and the relationship with anger and aggression. The present research will explore the relationship between anger and aggression in six different types (slot, cards, bingo, sports, track, lottery) of gambling categorized into two main sub-types: Perceived Skill Gamblers (i.e., cards, sports, track) and Chance Gamblers (i.e., slot, bingo, lottery). By understanding how anger and aggression interacts with sub-types of gambling, therapists treating problem gamblers will be able to better tailor their interventions based on the psychological characteristic (i.e., in this case, the likelihood of higher levels of anger or propensity to aggression) that may be associated with a specific sub-type of gambling (Nower, Martins, Lin, & Blanco, 2013).

Anger and Disordered Gambling

Epidemiological studies have found higher rates of anger and aggression in disordered gamblers. Parke and Griffiths (2004) studied slot machine gamblers and reported a higher incident rate of aggressive behaviour as a result of disordered gambling. Korman, Collins, Dutton et al. (2008) investigated the severity and prevalence of domestic abuse among a group of pathological gamblers. They noted that 64% of their sample reported significant problems with anger expression. They also found a relationship with domestic violence, anger and lifetime substance use. Korman, Collins, Littman-Sharp, McMain, and Skinner (2005) reported rates of 74% for verbal abuse and 25% for acts of physical violence towards other individuals, in a group of untreated disordered gamblers. The authors further observed that the possibility of displaying similar kinds of violence increased when the individual also experienced alcohol problems.

The role of anger in problem gambling with comorbid psychopathology and personality traits

was studied by Aymami et al. (2014). They studied a sample of 71 problem gamblers and compared them with 37 controls. Contrary to many earlier findings, the authors did not find any significant difference between problem gamblers and their control group on measures of anger and aggression in this sample. However, Maniaci et al. (2017) found a positive relationship between anger, alexithymia and severity of gambling behaviour. The results showed higher levels of anger in pathological gamblers than in controls, and severity of gambling behaviour correlated positively with state-anger, trait-anger and alexithymia scores. Among the problem gambling group, the most prevalent gambling patterns included scratch cards (58%), slot machines (54%), sports betting (64%), lottery (32%), bingo (22%), and card games (24%). The authors also noted anger to be a predictive factor for gambling behaviour. Findings of this research were in line with earlier research like Toneatto and Nguyen (2007) who also found higher anger problem in pathological gamblers. There is considerable evidence showing that anger, gambling, and substance use frequently occur together (Walitzer, Deffenbacher, & Shyhalia, 2015; Rahman et al, 2014; Rodriguez-Monguio, Errea, & Volberg, 2017). It has been observed that individuals seeking treatment for substance use also reported high level of anger and violence (Rodriguez-Monguio, Errea, & Volberg, 2017).

Little is known about the relationship between gender, gambling and anger. Women experience a different course of illness than men and this has been well studied by researchers. The course of disordered gambling in women has been defined by some researchers as having a later age of onset and shorter time of involvement in problematic gambling (Grant, Odlaug, & Mooney, 2013). Gambling motivation among women is more likely to be related with feelings of loneliness, escape from personal or family issues, and dysphoric mood. Men are involved in gambling more for excitement, action, thrill and arousal to win (Grant & Kim, 2002; Raylu & Oei, 2002). This study investigated the relationship

between trait anger and gender in problem gamblers.

Gambling as Anger Regulation

Failures in anger regulation can undermine the ability to tolerate intense emotions (Maniaci et al., 2017). As a form of coping, gambling behavior may serve to moderate a wide range of dysregulated emotions, including anger. Maniaci et al. (2017) studied the emotional regulation process in gambling addiction in 100 treatment-seeking problem gamblers compared with control subjects. They found a positive correlation between anger, alexithymia and severity of gambling disorder. Korman et al. (2008) conducted structured interviews with problem gamblers about recent serious episodes of anger and violence that caused considerable harm to them and/or others. The results showed that with anger episodes involving serious consequences to self, 45% of respondents gambled after the anger episodes, and 60% of them reported a decrease in anger while gambling. As for the anger incidents involving serious consequences to others, 30% of the sample described that they had gambled after the anger episodes, and 68% of these stated that their anger reduced while gambling. These outcomes support the observation that gambling serves to modulate dysregulating anger.

Korman et al. (2008) conducted the first randomized control trial of emotion-focused integrated treatment for anger, problem gambling and substance use. They hypothesized that an integrated treatment focusing on anger and emotional regulation would provide better outcomes than a usual gambling and substance use treatment (treatment as usual, TAU). The participants received an average of nine sessions in each treatment condition. The researchers found a significant decrease in gambling behaviour, trait anger and substance use as compared to the TAU subjects. There was significant reduction in state and trait anger scores in both groups but no reduction in substance use in the TAU group. The results of the research provide evidence for the advantage of a comprehensive integrated approach for treatment of comorbid

anger, substance use and problem gambling and the importance of screening patients for anger and substance use when treating for problem gambling.

The present research was a quantitative cross-sectional study to examine the relationship between anger and aggression in problem gambling and was comprised of a secondary analysis of data on the heterogeneity of problem gamblers conducted by Toneatto, Turner, et al. (2005). The full report of the study can be found via the following link,

[https://www.greo.ca/Modules/EvidenceCentre/files/Toneatto%20et%20al\(2007\)The_heterogeneityof_problem_gambling.pdf](https://www.greo.ca/Modules/EvidenceCentre/files/Toneatto%20et%20al(2007)The_heterogeneityof_problem_gambling.pdf)

Method and Materials

Self-defined problem gambling for each of these gambling categories was the primary inclusion criteria. The primary exclusion criteria were the presence of an active psychotic disorder, suicidal ideation, inability to read and write in English, or any other disorder that might impede participation in this study. Participants were initially screened on the telephone to ensure they meet the inclusion and exclusion criteria. Upon completion of the study, the subjects were financially compensated.

The research questions guiding the research included the following:

Research Question 1: What is the relationship between Perceived Control over Gambling (i.e., Skill vs Chance) and Type of Aggression (Physical, Verbal, Anger, Hostility) as measured by the Aggression Questionnaire?

Research Question 2: What is the relationship between gender (i.e., Male, Female) and Type of Aggression (Physical, Verbal, Anger, Hostility) as measured by the Aggression Questionnaire?

Research Question 3: What is the relationship between Perceived Control over Gambling (i.e., Skill vs Chance) and Trait Anger (i.e., Angry Temperament, Angry Reaction) as measured by the Trait Anger Scale?

Research Question 4: What is the relationship between gender (i.e., Male, Female) and Trait Anger (i.e., Angry Temperament, Angry Reaction) as measured by the Trait Anger Scale?

Assessment

The following instruments were chosen for the study because of high reliability and validity, and they are among the most widely used tools in the research setting:

The Aggression Questionnaire (Buss & Perry, 1992) is a 29-item measure of 4 aspects of aggression (physical, verbal, anger and hostility). Internal consistency coefficients ranged from $\alpha = 0.72$ to $\alpha = 0.85$ for the 4 sub-scales, with high correlations with other measures of aggression; the total scale had an alpha coefficient of 0.89. Test-retest reliability was also good with alpha coefficients ranging between 0.72 and 0.80 for the 4 sub-scales and 0.80 for the total scale (Buss & Perry, 1992).

The Trait Anger Scale (TAS; Spielberger & London, 1983) is a 10-item scale to measure individual differences in the disposition to experience

anger. It is a subset of the State-Trait Anger Scale (STAS; Spielberger & London, 1983). The TAS is comprised of two subscales: Angry Temperament (a general disposition of experience and expression of anger) and Angry Reaction (which measures individual differences in the disposition to express anger when provoked). The TAS has been found to possess very good reliability with an internal consistency coefficient of 0.87 in a sample of college students. The TAS had an internal consistency of 0.87 and 0.84 for male and female navy recruits, respectively. The Angry Temperament sub-scale of the TAS had internal consistency coefficients ranging between 0.84 and 0.89 for male and female navy recruits and university students, and between 0.70 and 0.75 for the Angry Reaction sub-scale (Spielberger, Jacobs, Russel, & Crane, 1983).

Table 1. shows results for age, marital status, education, employment status, earning, and gender by gambling sub-types. Demographic Variables by Subtype

Variable	Bingo	Cards	Lottery	Track	Slots	Sports
Age M (SD)	44.39 (10.78)	41.25 (11.35)	45.05 (10.78)	52.54 (10.41)	50.89 (15.38)	42.53 (9.70)
% (n) Married/ common-law	19.0 (8)	22.2 (8)	14.3 (5)	22.2 (8)	42.9 (21)	23.3 (7)
% (n) post-secondary education	34.1 (14)	37.1 (25)	45.7 (15)	52.8 (19)	63.3 (31)	53.3 (16)
Employed full/part-time	17.5 (14)	69.4 (25)	42.9 (15)	52.8 (19)	63.3 (31)	53.3 (16)
% (n) earning <20k	65.9 (27)	37.1 (13)	45.7 (16)	50.0 (18)	20.8 (10)	30 (9)
% (n) male ⁶	18.6 (8)	89.2 (33)	50.0 (19)	97.3 (36)	32.0 (16)	87.1 (27)

¹F = 5.61, df = 5, 220, p < .0001;

² $\chi^2 = 11.61$, df = 5, p < .05, Cramers V = .23

³ $\chi^2 = 53.61$, df = 15, p < .0001, Cramers V = .26

⁴ $\chi^2 = 28.37$, df = 10, p < .002, Cramers V = .25

⁵ $\chi^2 = 32.28$, df = 10, p < .0001, Cramers V = .27

⁶ $\chi^2 = 91.77$, df = 5, p < .0001, Cramers V = .62

Data Analysis

In the current study, subjects were assigned to their sub-type based on the self-declaration of

the gambling behavior of greatest subjective concern. Based on this subtype classification, subjects with a primary gambling problem of

sports, race track or cards were considered Skill Gamblers as the gambling outcomes of these types of gambling is often perceived to be related to the personal skill and strategy of the gambler. Subjects with a primary gambling problem of lotteries, bingo or slot machines were considered Chance Gamblers as the gambling outcomes of these types of gambling are not perceived to be related to personal skill and strategy, but to random chance.

Results

Participants differed on key demographic variables (see Table 1). Whereas about half of the participants were male (59%), proportions varied between the sub-types. For example, lottery players were half men and half women; however, over 80% of the bingo gamblers were females whereas only 2.7% of the track gamblers

were males. This variability suggests the differential tendencies of men and women to participate in these forms of gaming (Ledgerwood & Petry, 2006). Rates of marriage were highest among the slot machine players and lowest among the lottery players. Educational level was lowest among the bingo players. Lastly, the sub-types differed greatly in age (age range 19 to 58). The slot machine and track gamblers were the oldest sub-types and significantly older than the bingo, card and sports gamblers.

Research Question 1

The results evaluating the relationship between Perceived Control over Gambling (i.e., Skill vs Chance) and Type of Aggression (Physical, Verbal, Anger, Hostility) as measured by the Aggression Questionnaire are summarized in Table 2.

Table 2. The means, standard deviations and sample sizes comparing perceived skills and chance gambling type on the subscales of the Aggression Questionnaire.

Aggression Questionnaire Subscales	Gambling Type	N	M	SD
anger	Chance	106	15.69	5.29
	Skill	85	17.37	5.55
hostility	Chance	106	19.16	6.82
	Skill	85	21.22	6.67
physical	Chance	106	17.33	7.03
	Skill	85	20.58	7.68
verbal	Chance	106	12.30	4.16
	Skill	85	13.88	3.94

Anger, $t = -2.13$, $df = 189$, $p < .05$. Hostility, $t = .20$, $df = 189$, $p < .05$. Physical, $t = 1.96$, $df = 189$, $p = .005$. Verbal, $t = .92$, $df = 189$, $p < .01$.

The t-test for all the four variables were significant. There was a significant difference between perceived skill and chance gamblers on how they express anger, hostility, physical and verbal aggression. On the Aggression Questionnaire, the results indicate that gamblers who perceive skill when gambling score higher on expressing anger (Skill: $M = 15.69$ [$SD = 5.29$]; Chance: $M = 17.37$ [$SD = 5.55$], $t = -2.13$, $df = 189$, significant at 0.35). Similarly gamblers in the perceived skill category score higher on hostility, physical and verbal and aggression as indicated by the means shown in Table 2. However, there were

no sex differences on any AQ subscale except for the Physical subscale. Gamblers who perceive skill when gambling thus scored higher on all four subscales of the Aggression Questionnaire than did those games in which chance is a greater factor.

Research Question 2

The results evaluating the relationship between gender (i.e. Male, Female) and Type of Aggression (Physical, Verbal, Anger, Hostility) as measured by the Aggression Questionnaire are summarized in Table 3.

Table 3. The means, standard deviations and sample sizes comparing males and females on subscales of aggression questionnaire.

Aggression Questionnaire Subscales	Gender	N	M	SD
anger	Male	116	16.43	5.49
	Female	79	16.24	5.62
hostility	Male	116	20.00	6.27
	Female	79	19.81	7.60
physical	Male	116	19.56	7.64
	Female	79	17.40	7.37
verbal	Male	116	13.12	3.98
	Female	79	12.55	4.53

Anger, $t = .24$, $df = 193$, ns. Hostility, $t = .20$, $df = 193$, ns. Physical, $t = 1.96$, $df = 193$, $p = .05$. Verbal, $t = .92$, $df = 193$, ns.

Table 3 indicates that there were no sex differences on any AQ subscale except for the Physical subscale which indicate a higher mean score among male gamblers. Therefore we conclude that there is a no significant difference between perceived skill and chance gamblers on anger, hostility, and verbal aggression.

Research Question 3

The results evaluating the relationship between Perceived Control over Gambling (i.e., Skill vs Chance) and Trait Anger as measured by the Trait Anger Scale are summarized in Table 4. Table 4 indicates that there were no significant

differences on Trait Anger Scale between perceived skills and chance gamblers as indicated by the M and SD. There is no significant relationship between perceived skills and chance gamblers on trait anger scale.

Research Question 4

The results evaluating the relationship between gender (i.e., Male, Female) and Trait Anger as measured by the Trait Anger Scale are summarized in Table 5. Table 5 indicates that there were no differences on Trait Anger Scale between male and female gamblers as indicated by the M and SD.

Table 4. Means and standard deviations of perceived skills and chance categories on the Trait Anger Scale.

Trait Anxiety Scale	Type	M	SD
	Chance	30.50	8.52
	Skill	30.53	7.34

$t = .029$, $df = 242$, ns

Table 5

Trait Anxiety Scale	Gender	Mean	SD
	Male	29.94	8.12
	Female	31.49	7.69

$t = 1.51$, $df = 249$, ns

The t-test result is non-significant indicating that there is no significant relationship between male and female gamblers on trait anger.

Results and Discussion

The present study compared several components of anger and aggression in individuals with disordered gambling, and assessed whether there were gender differences in anger and aggression between perceived skill and chance gamblers. National statistical reports show a gender imbalance in those seeking treatment for problem gambling, with 80% representation by males (Serpelloni & Rimondo 2012). Demographic data shows that males comprise the majority of card, track and sports gamblers, while females comprise the majority of bingo and slot machine gamblers. Lottery gamblers displayed an equal balance of men and women. Gender factors seemed to impact other demographic factors. Bingo players were overall less educated, less gainfully employed, and earned less income. Card and sports gamblers, on the other hand, had more advanced levels of education and were more likely to be employed. Track and slot machine players were about a decade older than the other sub-types.

The results of the present study provided preliminary evidence for the benefit of an integrated approach for treating comorbid anger and disordered gambling. To the author's knowledge, this is one of the first studies evaluating the relationship of anger and aggression in sub-types of disordered gambling (i.e., perceived skill and chance gambling). The data analysis clearly showed evidence that perceived gamblers experience more anger, hostility, and physical and verbal aggression. Although the literature on the role of anger and aggression in disordered gambling is scarce, this finding is in line with earlier research (Korman, Collins, Dutton et al., 2008; Korman, Collins, Littman-Sharp et al., 2008).

The first research question, "What is the relationship between Perceived Control over Gambling (i.e., Skill vs Chance) and type of aggression (Physical, Verbal, Anger, Hostility) as measured by the Aggression Questionnaire?" showed that the perceived skills group scored significantly

higher on anger, hostility, physical and verbal aggression. This is in keeping with the earlier literature which showed a high frequency of anger expression in disordered gamblers (Maniaci et al. 2017; Aymami et al., 2014; Parke & Griffiths, 2004; Cunningham-Williams et al., 2009; Good-year-Smith et al., 2006; Sacco et al., 2008). Birkley and Eckhardt's (2016) meta-analysis of 61 studies also suggested that intimate partner violence was moderately associated with anger, hostility, and internalizing negative emotions. The few studies of this topic have observed that the presence of aggressive behaviors, both verbal and physical, could be related to the consequences of gambling, including financial problems (Korman, Collins, Dutton et al., 2008; Muellemann et al., 2002). However, it can also be posulated that aggression could be modulated by other problems such as comorbid disorders or personality traits such as impulsivity, among others. Yet, these studies assessed anger only tangentially and therefore their findings are not conclusive. Whether anger is the cause or consequence of pathological gambling, the cross-sectional design of this study does not allow for such conclusions.

Bonnaire, Lejoyeux, and Dardennes (2004) proposed that problem gamblers who preferred skill gambling played largely for the excitement itself, whereas gamblers who prefer nonstrategic games, did so to regulate negative emotional states. It can be inferred that the perceived skill gamblers may be more impulsive than the chance gamblers. Furthermore, the results are in agreement with the findings of other studies, which have found significant relationships with anger expression and lack of anger control in problem gambling (Aymami et al., 2014; Cunningham-Williams et al., 2009; Fernandez-Aranda et al., 2006). The results also suggest that individuals showing high scores on Anger Expression, also scored higher on the Hostility, and Verbal and Physical Aggression subscales. This finding agrees with other researchers who have described aggressive behaviors (e.g., hostile or impulsive aggression, lack of modulating physiological arousals and loss of behavioral control)

in disordered gambling (Aymami et al., 2014; Blaszczyński & Nower, 2002; Stewart et al., 2008).

The second research question explored the relationship of gender with types of aggression (Physical, Verbal, Anger, Hostility). No differences were found except for physical aggression. This finding is in line with the most recent research conducted by Aymami et al. (2014). They did not find gender differences on STAXI-2 subscales in their sample, except on one variable (physical aggression) where the data showed that males experienced more aggression than women. Several studies have shown that anger is a sex related variable (Fox et al. 2008) and that men and women express anger in varied ways. It was noted in earlier literature earlier that gender plays a role in both gambling behavior and expression of anger. Much recent research has shown that men comprise a larger proportion of disordered gamblers (Castren, Grainger et al., 2015; Wong, Zane & Chan, 2013; Billieux, Achab et al., 2016). Several authors have argued that anger and physical aggression are risk factors for gambling, which may help with emotional regulation, especially in men (Nichols, Graver, Brooks-Gunn, & Botvin, 2006). Gambling provides men with action, excitement, thrill and arousal (Grant & Kim, 2002; Raylu & Oei, 2002).

In this regard, some other researchers have noted that the *escape factor* was significantly related to female gender (Ledgerwood & Petry, 2006). Female participants with greater general dissociation appear to be more likely to use gambling as a means of escape from painful emotional experiences. Additionally, disordered gamblers generally scored higher on generalized dissociation than non-problem gamblers (Diskin & Hodgins, 1999). Similarly, other studies suggest that male gamblers score higher on narcissism and antisocial personality (Kaare, Mottus, & Konstabel, 2009). In summary, the results suggest that escape and narcissism play an important role in verbal aggression. These findings are important because the validity and reliability of these constructs has not been

widely assessed empirically.

With the third research question, "What is the relationship between Perceived Control over Gambling [i.e., Skill vs Chance] and Trait Anger as measured by the Trait Anger Scale?", no significant difference was found between the two groups. As noted earlier in the literature, anger involves a combination of components of cognitive, physiological, behavioral and social natures (Edmondson et al., 2013). Trait anger refers to a long-standing personality characteristic evidenced by an ingrained disposition to display anger with even small prompts. Other researchers (e.g., Aymami et al., 2014) found some group differences between disordered gamblers and healthy controls on individual subscales of the STAXI-2, and noted that disordered gamblers with high scores on impulsivity and novelty seeking would score higher in anger expression. However, in the present study, the author compared two groups of gamblers. One explanation for the lack of a significant difference in trait anger between the chance gamblers and perceived skills gamblers may be that disordered gamblers are homogeneous in terms of personality and associated impulsive traits, as discussed by Alvarez-Moya et al. (2007).

In the last research question "What was the relationship between gender (i.e., Male, Female) and Trait Anger (i.e., Angry Temperament, Angry Reaction) as measured by the Trait Anger Scale?," the author did not find a significant relationship between male or female gender and trait anger. This is in agreement with the above-noted findings with the aggression questionnaire and the most recent publication of Aymami et al. (2014). However, some of the findings contradict with the Miguel-Tobal et al. (1997) study, where the researchers found that females scored higher on the Anger Internal Control scale than males. But these authors did not find significant differences across gender in the Anger Expression Out subscale and the Anger Expression Index. The results of the present study are also in agreement with a study by Campbell & Muncer (2008). However, they assessed general psychiatric patients and did not focus exclusively on

disordered gambling. Most studies that have looked at anger in disordered gambling have not focused on gender differences in the sample, making comparisons with the current study's results rather difficult.

There were a number of limitations to the present research. The study sample consisted of a relatively small number of subjects in each subtype. Secondly, there are few females in the perceived skilled type and, similarly, there are relatively fewer male subjects in the chance gambling type. This makes the generalizability of the study between genders more limited. Additionally, the original data was collected a few years ago and there have been continuing changes in gambling, especially with changes in technology over time. There have been growing electronic and internet opportunities for gambling, with new forms of gambling being introduced every day; the study was not able to take those into account. The principal study looked at testing in a broad range of categories, but this original research focuses on those related to anger and aggression.

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