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The present investigation attempted to determine what variables would predict participants' endorsing of gambling as an escape on the Gambling Functional Assessment – Revised (GFA-R). Study 1 employed 224 university students as participants. Results of a hierarchical linear regression showed that responses on the GFA-R escape subscale were predicted by their GFA-R positive reinforcement subscale, Problem Gambling Severity Index (PGSI), and South Oaks Gambling Screen (SOGS) scores, but not by the risk factors of pathological gambling. Study 2, which employed 188 university students, replicated those findings and also found that participants' self-reported locus of control and gambling expectancy scores, cumulatively, also accounted for a significant amount of variance in endorsing gambling as an escape. Together, these results suggest that people endorse gambling as an escape because they gamble for a variety of reasons, have experienced negative consequences due to their gambling, have a relatively lengthy history with gambling, and have potential emotional-regulation problems. The present results shed light on why people may gamble as an escape, which is important to understand given its strong relationship with pathological gambling.
Keywords: Gambling, Escape, Positive Reinforcement, University Students

Gambling behavior is potentially maintained by two general contingencies: positive reinforcement and/or escape (i.e., negative reinforcement). People who research gambling have long known that gambling maintained by escape might be problematic. For instance, theoretical explanations for the development and maintenance of pathological gambling have cited escape as playing a major role in the disorder (e.g., Blaszczynski & Nower, 2002). Interestingly, however, the inclusion of the contingency of escape has not necessarily been categorized in behavioral terms. For example, Blaszczynski and Nower (2002) identified three potential pathways to problem gambling. One of them was labeled "behaviourally conditioned problem gamblers," which was driven by positive reinforcement contingencies and classical conditioning. Escape played a role in the other two proposed pathways, but those pathways were labeled "emotionally vulnerable problem gamblers" and "antisocial impulsivist problem gamblers." Thus, while such a model recognized escape as an important aspect of problem gambling, it relegated the contingency to being a by-product of other underlying causal factors that could be labeled more "psychological" than "behavioral."

When one leaves the realm of theory, the importance of escape as a major factor in problem/pathological gambling remains. Empirical research that has focused on participants with potential "psychological" problems has supported that there is a strong relationship between gambling problems in people with reporting certain psychological problems such as mood disorders and endorsing gambling maintained by escape (e.g., Rockloff & Dyer, 2006; Rockloff, Greer, Fay,

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& Evans, 2011; Wood & Griffiths, 2007). However, research that has not focused on participants with such problems has also reported finding a strong relationship between gambling problems and endorsing gambling as an escape (e.g., Miller, Dixon, Parker, Kulland, & Weatherly, 2010; Weatherly & Derenne, 2012). Also, gambling as an escape is an official symptom of pathological gambling (American Psychiatric Association, 2003) and, importantly, this symptom is not linked to any specific underlying cause for the escape.

Given that proposing a link between gambling as an escape and problem/pathological gambling is not a novel, one might be surprised that relatively few attempts have been made to create measures to identify gambling maintained by escape.[1] Perhaps the first attempt was the Gambling Functional Assessment (Dixon & Johnson, 2007), which was a self-report measure designed to identify four possible maintaining contingencies for the respondent's gambling behavior, with escape being one of them. Subsequent psychometric work, however, showed that this measure was not identifying four distinct contingencies as proposed nor was it cleanly measuring gambling maintained by escape (i.e., some items written to measure gambling maintained by escape loaded with other items written to measure gambling maintained by positive reinforcement; Miller, Meier, Muehlenkamp, & Weatherly, 2009).

Given these psychometric deficiencies, Weatherly, Miller, and Terrell (2011) devised the Gambling Functional Assessment – Revised (GFA-R). This instrument contains 16 self-report items, half of which are written to identify gambling maintained by positive reinforcement and half written to identify gambling maintained by escape. Research has thus far indicated that the GFA-R performs as designed (Weatherly et al., 2011), is psychometrically superior to the original measure (Weatherly et al., 2011; Weatherly, Miller, Montes, & Rost, 2012), and retains these characteristics when used in different cultural settings (e.g., Japan; Weatherly, Aoyama, Terrell, & Berry, in press a; United Kingdom; Weatherly, Dymond, Samuels, Austin, & Terrell, in press b).

Recent research has supported the idea that endorsing gambling as an escape on the GFA-R is related to problem gambling both as measured by the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987; see Weatherly & Derenne, 2012; Weatherly et al., in press a, b) and the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001; Ferris et al., 1999; see Weatherly, 2013). Further, it has also suggested that endorsing gambling as an escape on the GFA-R is associated with neuropsychological and emotional deficits (Weatherly & Miller, in press), which would be expected given the literature on gambling problems and the contingency of escape (e.g., Blaszczynski & Nower, 2002; Wood & Griffiths, 2007).

STUDY 1

Study 1 was designed as an attempt to better understand what factors contribute to, predict, or potentially explain why individuals might endorse gambling as an escape. Participants were asked to complete the GFA-R, as wells as the PGSI, SOGS, and demographic information. The resulting data were then entered into a hierarchical linear regression analysis with participants' GFA-R escape subscale scores serving as the dependent measure. Research has demonstrated that the GFA-R subscales are significantly correlated (e.g., Weatherly & Derenne, 2012; Weatherly et al., in press a, b). Thus, the first step of the

[1] The lack of research in this respect can likely be linked to the idea that researchers have theorized that problem gamblers are escaping underlying psychological problems and thus these researchers have focused their efforts on trying to identify the presence of these "problems."

analysis was to identify the amount of variance in the escape subscale scores that could be accounted for by the positive reinforcement subscale scores.

The scores on the PGSI, which was designed to measure gambling problems and the negative consequences associated with gambling in the general population, were then entered into the regression model to see if their addition produced a significant increase in the amount of variance accounted for by the model. In the following step, scores on the SOGS, which was designed to screen for potential pathology based on the respondent's history with gambling, were entered to determine if they would account for additional variance in escape scores above and beyond that captured by the previous variables. In the final step, demographic variables known to be risk factors for pathological gambling were entered into the model. The hypothesis was that each addition to the regression model would result in a statistically significant increase in the amount of variance accounted for in GFA-R escape subscale scores.

METHOD

Participants

The participants were 224 students (166 female; 58 male) enrolled in a psychology course at the University of North Dakota. Twenty participants self-reported as an ethnic minority whereas the remaining 204 participants self-reported as Caucasian. The mean age of the participants was 19.9 years (*SD* = 3.8 years) and they self-reported a mean grade point average of 3.4 out of 4.0 (*SD* = 0.5). In terms of relationship status, 121 reported being single, 91 reported being in a relationship, and 12 reported being married. The modal annual income of the participants was less than $10,000 per year, while the modal annual income of their parents was $50,000 - $99,000 per year. Seven of the participants reported smoking 1 – 10 cigarettes per day and two reported smoking 10 or more per day. Participants received (extra) course credit in return for their participation.

Materials and Procedure

All materials and procedures were approved by the Institutional Review Board at the University of North Dakota. All participants completed the study using an online data management program (i.e., Sona Systems), which was accessible to the participants through their psychology class. This software ensured that each individual could participate in the study only one time.

The participants completed a total of four measures. Before doing so, however, they were first presented with information pertaining to the study and their rights as a participant. Continued participation after the presentation of this information was considered the granting of informed consent.

The first of the four measures was a demographic questionnaire that asked participants about the information presented in the participants section. These particular items were included on the demographic form because they represented measures of the risk factors for pathological gambling (i.e., sex, ethnicity, age, marital status, socio-economic status, & drug use; see Petry, 2005).

A second measure was the GFA-R (Weatherly et al., 2011). The GFA-R consists of 16 items and respondents answer each item on a scale from 0 (Never) to 6 (Always). The measure contains positive reinforcement and escape subscales and scores for these are calculated by summing the responses to the eight items associated with each subscale. The GFA-R has shown to be high in internal consistency (Weatherly et al., 2012) and to be temporally reliable (*r* = 0.80 at 4 weeks & *r* = 0.81 at 12 weeks; Weatherly et al., 2012).

A third measure was the PGSI (Ferris & Wynne, 2001; Ferris et al., 1999). The PGSI consists of 12 items, only nine of which are used when calculating the respondent's score on the measure. Respondents answer each item on a four-point scale from 0 (Never) to 3 (Almost always). The scores from the nine items are summed, with total scores of 0 suggesting no gambling problems, 1 – 2 suggesting low levels of gambling problems with few negative consequences, 3 – 7 suggesting moderate levels of gambling problems with some negative consequences, and 8 or more suggesting problem gambling that involves negative consequences. Ferris and Wynne (2001) found that internal consistency of the PGSI was good ($\alpha = 0.84$), as has subsequent research (e.g., Holtgraves, 2009). The PGSI has also been shown to be temporally reliable ($r = 0.78$; Ferris & Wynne, 2001).

A final measure was the SOGS (Lesieur & Blume, 1987). The SOGS consists of 20 items that pertain to the respondent's gambling history. Researchers have argued that SOGS scores of 3 or 4 suggest possible problem gambling (e.g., Weiss & Loubier, 2010) and that scores of 5 or more suggest probable presence of pathological gambling (Lesieur & Blume, 1987). Lesieur and Blume (1987) reported that the SOGS was high in internal consistency ($\alpha = 0.97$), with subsequent research showing that its internal consistency is fair ($\alpha = 0.69$; Stinchfield, 2002) to good ($\alpha = 0.81$; Stinchfield, 2003). The SOGS has also been shown to be temporally reliable ($r = 0.89$ at 4 weeks & $r = 0.67$ at 12 weeks; Weatherly et al., 2012).

Participants completed one measure before they were presented with another. The order of the four measures varied randomly across all participants.

Data Preparation and Analysis

In preparation for conducting the linear regression analysis, the demographic information was coded into numerical values to approximate linearity. Sex was coded 1 (females) or 2 (males). Ethnicity was coded 1 (Caucasian) or 2 (Other). Marital status was coded 1 (single), 2 (in a relationship), or 3 (married). Parental annual income were coded from 1 – 5 for the five income categories provided on the demographic form. Parental annual income was used as a measure of socio-economic status. Cigarette use was coded 1 (nonsmoker), 2 (1 – 10 cigarettes per day), or 3 (> 10 cigarettes per day). Cigarette use was used as a measure of substance use. Age was a continuous variable that was not skewed and therefore it was not recoded.

Scores on the GFA-R escape subscale were positively skewed and they were therefore recoded as follows: scores of 0 were coded as 0, scores between 1 – 5 were coded as 1, and scores of 6 or more coded as 2. These categories were based on previous research (Miller et al., 2010; Weatherly, 2013; Weatherly & Miller, 2013). GFA-R positive reinforcement subscale scores were not skewed and therefore were not recoded.

PGSI scores were also positively skewed and were recoded according the categories suggested by Ferris and Wynne (2001). Scores of 0 were coded as 0, between 1 – 2 were coded as 1, between 3 – 7 were coded as 2, and of 8 or more were coded as 3. SOGS scores were also positively skewed. Thus, SOGS scores were recoded with scores between 0 – 2 being coded as 0, between 3 – 4 being coded as 1, and 5 or more being coded as 2.

These data were then subjected to the following hierarchical linear regression model. The recoded GFA-R escape subscale scores were used as the dependent measure. In the first step of the analysis, GFA-R positive reinforcement subscale scores were used as the only predictor. This predictor was used because, although GFA-R escape subscale scores have been shown to be highly associated with problem gambling (e.g., Miller et al., 2010), research has consistently demonstrated that participants endorse gambling for positive reinforcement significantly more than they do as an escape (e.g., Weatherly, 2013; Weatherly et al., in press a, b). Thus, if a respondent scores high on the GFA-R escape subscale, that could be because s/he gambles for a variety of reasons, including for positive reinforcement. If so, one would expect that the GFA-R positive reinforcement subscale scores would be a significant predictor of GFA-R escape subscale scores.

In the second step of the analysis, the recoded PGSI scores were entered into the regression model. The PGSI is designed to identify the negative consequences associated with gambling and has been shown to be associated with GFA-R subscale scores (Weatherly, 2013). If the negative consequences produced by gambling are something from which individuals turn to further gambling in order to escape, then one would predict that PGSI scores would provide a significant increase in the variance accounted for by the regression model.

In the third step, the recoded SOGS scores next entered into the regression model. The SOGS measures one's gambling history. Thus, if one's history has potentially conditioned the individual to gamble as an escape, then one would predict that SOGS scores would add significantly to the variance accounted for by the regression model above and beyond that accounted for by the GFA-R positive reinforcement subscale and the PGSI scores.

In the fourth and final step, the risk factors for pathological were entered into the regression model. Specifically, the recoded sex, ethnicity, marital status, socio-economic status (i.e., parents annual income), and substance use (i.e., cigarette smoking) variables, along with the participants' age were entered as predictors. Although risk factors do not represent causal processes, theoretical arguments have been made as to how these factors might relate to the behavioral processes promoting gambling (e.g., Weatherly & Dixon, 2007). Thus, it was predicted that one or more of these variables would also account for a significant increase in the variance accounted for in GFA-R escape scores by the regression model beyond the previously entered variables.

RESULTS AND DISCUSSION

When only GFA-R positive reinforcement scores were used as the predictors for GFA-R escape subscale scores, the resulting regression model was significant, $F(1, 216) = 77.42$, $p < .001$, $R^2 = .264$, and the GFA-R positive reinforcement scores were a significant predictor of GFA-R escape scores, $\beta = .514$, $p < .001$. Thus, approximately 25% of the variance in participants' endorsing gambling as an escape could be accounted for by their gambling for other reasons (i.e., positive reinforcement). Results from this analysis, and all that follow, were considered statistically significant at $p \leq .05$.

When the PGSI scores were added into the model, the regression model was again significant, $F(2, 215) = 71.18$, $p < .001$, $R^2 = .398$. Both the GFA-R positive reinforcement subscale, $\beta = .316$, $p < .001$, and PGSI scores, $\beta = .417$, $p < .001$, were significant predictors of GFA-R escape subscale scores. Importantly, the increase in R^2 of .134 was statistically significant, F Change $(1, 215) = 48.06$, $p < .001$. Thus, experiencing negative consequences related to gambling accounted for a significant amount of the variance in GFA-R escape scores.

When the SOGS scores were added into the model, the regression model was again significant, $F(3, 214) = 53.49$, $p < .001$, $R^2 = .429$. GFA-R positive reinforcement subscale, $\beta = .302$, $p < .001$, PGSI, $\beta = .273$, $p < .001$, and SOGS scores, $\beta = .230$, $p = .001$ were all significant predictors of GFA-R escape scores. The increase in R^2 of .030 was statistically significant, F Change $(1, 214) = 11.30$, $p = .001$. Thus, gambling history accounted for a significant amount of the variance in GFA-R escape scores beyond that accounted for by the other predictor variables.

In the final step of the hierarchical regression, the risk factors for pathological gambling were entered into the model. The resulting regression model was significant, $F(9, 208) = 18.50$, $p < .001$, $R^2 = .445$, and the GFA-R positive reinforcement subscale, $\beta = .296$, $p < .001$, PGSI, $\beta = .262$, $p = .001$, and SOGS scores, $\beta = .237$, $p = .001$ were again significant predictors of GFA-R escape scores. However, none of the risk-factor variables were significant predictors of GFA-R escape scores. Likewise, the increase in R^2 of .016 was not statistically significant, F Change $(6, 208) = 1.00$, $p = .426$. Thus, participants' endorsing of gambling as an escape was not predicted by the presence or absence of the risk factors for pathological gambling.

STUDY 2

The results of the Study 1 indicate that gambling for other reasons (i.e., positive reinforcement), negative consequences associated with gambling (i.e., PGSI scores), and a history with gambling (i.e., SOGS scores) all account for a significant amount of the variance in participants' endorsement of gambling as an escape. Together, these factors accounted for a very large amount of the variance in GFA-R escape scores (i.e., 42.9%). Contrary to the hypothesis, however, none of the risk factors for pathological gambling, at least as measured in Study 1, were significant predictors of endorsing gambling as an escape.

Although these results are potentially intriguing, they need to be replicated before one can be confident in their reliability. Also, although the GFA-R positive reinforcement subscale, PGSI, and SOGS scores accounted for a large amount of the variance in the GFA-R escape subscale scores, they still accounted for less the half of the possible variance. Phrased differently, there are still other factors contributing to participants' endorsing of gambling as an escape.

The goal of Study 2 was twofold. The first was to replicate the finding that the GFA-R positive reinforcement subscale, PGSI, and SOGS scores would be significant predictors of participants' scores on the GFA-R escape subscale. The second was to potentially discover other variables that would predict endorsing gambling as an escape.

For this latter pursuit, Study 2 utilized two addition survey measures designed to assess the respondent's expectancies about the causes of outcomes and whether they expected positive or negative affective outcomes from gambling. The first was designed to measure the respondent's "locus of control" (Rotter, 1966), which is the respondent's endorsement of whether experienced outcomes are controlled by internal or external factors. This measure was employed because it was hypothesized that people who endorse gambling as an escape might be more prone to display an external locus of control relative to people who do not endorse gambling as an escape. The second (the Gambling Expectancy Questionnaire; GEQ; Shead, Callan, & Hodgins, 2008) was designed to measure whether the respondent expected to experience positive emotions or relief from negative emotions as a result of gambling. Given that previous research has shown that endorsing gambling as an escape is related to emotion-regulation deficits (Weatherly & Miller, 2013), it was hypothesized that gambling scores on both GEQ subscales would be significant predictors of endorsing gambling as an escape on the GFA-R.

METHOD

Participants

The participants were 188 students (143 female; 45 male) enrolled in a psychology course at the University of North ta. Eighteen participants self-reported as an ethnic minority whereas the remaining 170 participants self-reported as Caucasian. The mean age of the participants was 20.2 years (SD = 3.7 years) and they self-reported a mean grade point average of 3.4 out of 4.0 (SD = 0.4). In terms of relationship status, 113 reported being single, 62 reported being in a relationship, 10 reported being married, and two reported being widowed. The modal annual income of the participants was again less than $10,000 per year, while the modal annual income of their parents was $50,000 - $100,000 per year. Seven of the participants reported smoking 1 – 10 cigarettes per day and one reported smoking 10 or more per day. Participants were again compensated with (extra) course credit in return for their participation.

Materials and Procedure

The materials and procedures of Study 2 were identical to those in Study 1 with the following exceptions. First, in addition to completing the demographic form, GFA-R, PGSI, and SOGS, participants also completed the Internal-External Locus of Control Scale (LOC; Rotter, 1966). The LOC consists of 23 items that each present one statement reflecting internal locus of control and one statement reflecting external locus of control. The participant is asked to choose the statement with which they most agree. Only external locus of control statements are scored, so a higher score represents higher endorsement of an external locus of control. The scale's test-retest reliability ranges from .49 to .83 and internal consistency ranges from .65 to .76 (Rotter, 1966). The scale has also been found to have adequate construct and discriminant validity (Rotter, 1966).

Second, participants also completed the GEQ (Shead et al., 2008). The GEQ is an 18-item self-report measure, with 12 items designed to measure the respondent's expectancies for decreased negative emotion (relief) as a result of gambling and six items designed to measure expectancies for increased positive emotion (reward) as a result of gambling. Respondents rate their agreement of the items on a Likert scale that ranges from Strongly Disagree to Strongly Agree. Psychometric work on the GEQ has shown that it has acceptable factor loadings (Shead et al., 2008). All other procedure details were identical to Study 1.

Data Preparation and Analysis

Data preparation and analysis were identical to that in Study 1 with the following exceptions. First, because the variables related to the six risk factors for pathological gambling were not significant predictors of GFA-R escape scores in Study 1, they were not used in the regression analysis in Study 2. Second, the LOC and GEQ were scored according to Rotter (1966) and Shead et al. (2008), respectively. The scores on these measures were not skewed and therefore no recoding was necessary before using them as predictor variables in the hierarchical linear regression analysis.

The GFA-R escape, PGSI, and SOGS scores were again positively skewed, so they were recoded as described in Study 1. Again, GFA-R positive reinforcement subscale scores were not skewed and were not recoded. As in Study 1, the results were analyzed using a hierarchical linear regression with GFA-R escape scores serving as the dependent measure. GFA-R positive reinforcement subscale scores were used in the first step of the analysis, and PGSI and SOGS scores were entered into the regression model in the second and third steps, respectively. In Study 2, LOC and GEQ subscale scores were entered together into the regression model in the fourth step.

RESULTS AND DISCUSSION

As in Study 1, when only GFA-R positive reinforcement scores were used as the predictors for GFA-R escape subscale scores, the resulting regression model was significant, $F(1, 179) = 57.45$, $p < .001$, $R^2 = .243$, and the GFA-R positive reinforcement scores were a significant predictor of GFA-R escape scores, $\beta = .493$, $p < .001$. Thus, as in Study 1, approximately 25% of the variance in participants' GFA-R escape scores could be accounted for by their gambling for other reasons (i.e., positive reinforcement).

When the PGSI scores were added into the model, the regression model was again significant, $F(2, 178) = 50.29$, $p < .001$, $R^2 = .361$. Both the GFA-R positive reinforcement subscale, β = .339, $p < .001$, and PGSI scores, β = .376, $p < .001$, were significant predictors of GFA-R escape subscale scores. Also, the increase in R^2 of .118 was statistically significant, F Change (1, 178) = 32.89, $p < .001$. Thus, as in Study 1, experiencing negative consequences associated with gambling accounted for a significant amount of the variance in the GFA-R escape scores.

When the SOGS scores were added into the model, the regression model was again significant, $F(3, 177) = 38.61$, $p < .001$, $R^2 = .396$. GFA-R positive reinforcement subscale, β = .335, $p < .001$, PGSI, β = .241, $p = .002$, and SOGS scores, β = .231, $p = .002$ were all significant predictors of GFA-R escape scores. The increase in R^2 of .035 was statistically significant, F Change (1, 177) = 10.10, $p = .002$. Thus, as in Study 1, gambling history accounted for a significant amount of the variance in GFA-R escape scores beyond that accounted for by the other predictor variables.

In the final step of the hierarchical regression, the LOC and GEQ subscale scores were entered into the model. The resulting model was significant, $F(6, 174) = 21.94$, $p < .001$, $R^2 = .431$, and the GFA-R positive reinforcement subscale, β = .295, $p < .001$, PGSI, β = .172, $p = .029$, and SOGS scores, β = .209, $p = .008$ were again significant predictors of GFA-R escape scores. However, LOC and GEQ subscale scores were not significant predictors of endorsing gambling as an escape, although the GEQ reward subscale scores did approach statistical significance, β = .139, $p = .053$. Despite none of these new individual predictors reaching statistical significance, their cumulative addition to the regression model did lead to an increase in R^2 of .035, which was statistically significant, F Change (3, 174) = 3.59, $p = .015$.

The results of Study 2 suggest that the results of Study 1 are reliable. GFA-R positive reinforcement subscale, PGSI, and SOGS scores again all accounted for a significant amount of variance in participants' GFA-R escape subscale scores. Individually, LOC and GEQ subscale scores did not account for a significant amount of the variance in GFA-R escape scores. However, together their addition to the regression model did result in an increase in the amount of variance accounted for by the model.

GENERAL DISCUSSION

Both empirical (e.g., Miller et al., 2010) and theoretical research (e.g., Blaszczynski & Nower, 2002) have linked gambling as an escape to gambling problems. The GFA-R is a self-report functional assessment instrument specifically designed to determine whether respondents' gambling behavior might be maintained by escape. The goal of the present investigation was to determine what factors might predict participants' endorsing of gambling as an escape. The results indicated that there are several reliable predictors of such an endorsement.

The first reliable predictor of endorsing gambling as an escape was endorsing gambling for positive reinforcement. This finding may not be overly surprising given that research going back to the original GFA (i.e., Miller et al., 2009) noted that people who scored high on the GFA escape subscale also tended to have a high overall GFA scores (i.e., they also endorsed gambling for positive reinforcement). Likewise, research with the GFA-R has reliably found that respondents endorse gambling for positive reinforcement to a significantly greater extent than they do gambling as an escape. The contribution of the present results is the finding that approximately 25% of the variance in respondents' GFA-R escape scores can be accounted for by their score on the GFA-R positive reinforcement subscale. This result indicates that respondents who endorse gambling as an escape also gamble to get other things (i.e., positive reinforcement).

PGSI scores were also reliable predictors of endorsing gambling as an escape. Past research has shown a correlation between GFA-R escape subscales and PGSI scores (Weatherly, 2013). The contribution of the present finding comes in the understanding of what the PGSI is designed to measure. Not only was this instrument designed for use with the general population, it was also designed to capture the negative consequences that might occur because of increases in gambling or gambling problems. Finding that PGSI scores significantly predict GFA-R escape scores suggests that people might turn to gambling as a potential escape from the negative consequences of their prior gambling. This possibility would certainly be counterproductive given that it would further perpetuate the negative consequences of gambling. It should also be noted that the contribution of PGSI in predicting GFA-R escape scores was significant above and beyond the predictive value of GFA-R positive reinforcement scores.

The present results also indicated that SOGS scores were significant predictors of GFA-R escape scores. Again, this result may not be surprising given past research (e.g., Miller et al., 2009; Weatherly et al., in press a, b). The novel contribution of the present finding is that this relationship was significant above and beyond the ability of GFA-R positive reinforcement and PGSI scores to predict endorsing gambling as an escape. This outcome is likely linked to what the SOGS is designed to measure; the respondent's gambling history. The present results suggest that the greater the respondents' history with gambling, the more likely they are to endorse gambling as an escape.

Study 1 tested whether the risk factors for pathological gambling – sex, ethnicity, marital status, socio-economic status (measured by parents' annual income), and substance use (measured by level of cigarette smoking) – would predict endorsing gambling as an escape. None of these variables were significant predictors and together their addition to the regression model did not produce a significant increase in the variance accounted for. These results might suggest that, although these factors are associated with pathological gambling, they do not predispose individuals to be more sensitive to negative reinforcement contingencies. It is also possible that some risk factors for gambling are in fact predictive of endorsing gambling as an escape, but that those factors (e.g., socio-economic status, substance use) were not adequately measured in the present study and/or some variables (e.g., ethnicity, substance use) were overly constrained and would have been significant predictors had the participant samples been more varied. Lastly, it may be the case that the variance in GFA-R escape scores that these variables would have accounted for had already been captured by the SOGS, which is designed to screen for potential pathology.

Study 2 did not test the risk factors for gambling, but rather participants' self-reported locus of control and their expected emotion outcome from gambling as predictors of endorsing gambling as an escape. Individually, none of these variables were significant predictors. However, together their addition to the regression model did result in a significant increase in the model's R^2. These predictor variables were tested because previous research had suggested a connection between emotion regulation and endorsing gambling as an escape (Weatherly & Miller, 2013). The present results therefore support the idea that emotional aspects of an individual's experience does play a role in whether they turn to gambling as an escape, but these aspects are not perfectly captured by either the LOC or GEQ.

Together, the GFA-R positive reinforcement subscale, PGSI, and SOGS scores accounted for a very large proportion of the variance in GFA-R escape subscale scores – around 40%. To put that into perspective, some researchers have argued that effect sizes that account for more than 14% of the variance should be considered large (e.g., Cohen, 1988). With that said, a large proportion of the variance remains unaccounted for and future studies should be devised to try to identify what variables might also be independently predictive of endorsing gambling as an escape. For instance, problem and pathological gambling have been correlated with discounting both delayed and probabilistic gains (see Petry & Madden, 2010). It might be the case that differences in how people make such decisions is also predictive of whether or not the will turn to gambling as an escape.

Before leaning too heavily on the present findings, a number of potential procedural limitations should be noted. The most major limitation of the present study was that it employed a convenience sample of university students, most of whom were female and/or young. There is no guarantee that similar results would be observed if one replicated the present investigation using a broader range of participants. Likewise, the present investigation did not focus specifically on problem or pathological gamblers. Thus, the results should certainly not be applied to the clinical population. Phrased differently, there is no guarantee that the same results would be found if the sample consisted completely of individuals who qualified as pathological gamblers. Focusing on this population would be another worthy avenue for future research. Although initial studies like the present one certainly lay the foundation for future research, research that focuses solely on university samples should always be interpreted with caution.

It is also the case that the present study did not attempt to directly assess the emotional or personality problems that previous researchers have proposed to be linked to gambling as an escape (e.g., Blaszczynski & Nower, 2002). Future research should attempt such assessments. The results of that research may demonstrate a significant increase in the variance in GFA-R escape subscales scores above and beyond the factors found in the present study. On the other hand, it may be the case that they do not, perhaps because the variance provided by these measures is already accounted for by the GFA-R positive reinforcement subscale, PGSI, and/or SOGS scores.

One might also argue that the GFA-R itself has its limitations in that scores on the escape subscale are skewed whereas scores on the positive reinforcement subscale are not. Although one could make such an argument, we would argue that this fact supports the contention that the two subscales are likely measuring qualitatively different things. That is, like the PGSI and SOGS that are designed to measure negative consequences of gambling and one's gambling history, respectively, the GFA-R escape subscale is skewed. This outcome likely occurs because people without some gambling problems rarely endorse gambling as an escape. Given that over 90% of gamblers do so without displaying gambling problems might explain why GFA-R positive reinforcement subscale scores are not skewed.

These (potential) limitations aside, the present investigation suggests that a good proportion of the variance in why people endorse gambling as an escape is because they A) gamble for a variety of reasons, B) have experienced negative consequences due to their gambling, and C) have a history with gambling. Results from Study 2 also suggest that emotional aspects of the person's experience may also account for why someone would endorse gambling as an escape. If the factors that potentially lead to gambling as an escape can be identified, preventative steps can be devised so that this contingency does not control a person's behavior. Inasmuch as gambling as an escape is problematic in and of itself, such a pursuit might represent a major improvement in the lives of the millions of individuals who engage in problematic gambling behavior.

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