Parental and peer influences on emerging adult problem gambling: Does exposure to problem gambling reduce stigmatizing perceptions and increase vulnerability?

Jessica Gay,[1] Peter Richard Gill[2] & Denise Corboy[1]

[1] School of Health Sciences and Psychology, Federation University, Ballarat, Victoria, Australia
[2] College of Health and Biomedicine, Victoria University, Melbourne, Victoria, Australia

Abstract

Research has identified 18 to 30 years olds as the biggest spenders on gambling activities, with significantly higher prevalence of gambling problems than other age groups. Identifying the factors that influence the development of gambling problems in young people is important for guiding prevention strategies. This study aimed to analyse how emerging adult problem gambling is influenced by the people around them. In particular, we explored whether perceived parental and peer problem gambling predicted emerging adult problem gambling, and whether reduced gambling self-stigma mediated these relationships. A community sample of 188 Australian gamblers aged 18 to 29 ($M = 21.41$, $SD = 2.99$) completed three versions of the Problem Gambling Severity Index (PGSI) and the Gambling Perception Scale. Results indicated that perceived parental and peer gambling were positively related to emerging adult problem gambling. While reduced gambling helping stigma was related to higher problem gambling, stigma did not mediate the links between significant others' gambling and emerging adult problem gambling. We conclude that social influences are important in the development of problem gambling for young people, and that older male emerging adults who have a gambling mother are at most risk of problem gambling.

Keywords: problem gambling, emerging adults, stigma, peers, parents

Résumé

La recherche a établi que le groupe des 18 à 30 ans dépense plus que les autres tranches d'âge dans des activités de jeu et que la prévalence des problèmes de jeu y est beaucoup plus élevée. Il est important de déterminer les facteurs qui ont une influence sur l'apparition du jeu problématique chez les jeunes afin d'orienter les

stratégies de prévention. La présente étude visait à analyser comment les jeunes adultes ayant un problème de jeu sont influencés par leur entourage. En particulier, nous avons tenté de déterminer si la présence de problèmes de jeu perceptibles chez les parents et les pairs permettait d'expliquer l'apparition de problèmes de même nature chez les jeunes adultes et si une diminution de l'autostigmatisation à l'égard du jeu avait un effet sur cette influence. Un échantillon issu d'une communauté donnée et composé de 188 joueurs australiens âgés de 18 à 29 ans (moyenne = 21,41; écart-type = 2,99) a rempli trois versions du formulaire de l'Indice de gravité du jeu problématique (ICJE) et de l'Échelle de perception du jeu problématique. Les résultats indiquent que la perception de problèmes de jeu chez les parents et les pairs est positivement reliée à la présence de tels problèmes chez les jeunes adultes. Alors qu'une réduction de la stigmatisation du jeu problématique est reliée à une augmentation des problèmes de jeu, la stigmatisation n'exerce quant à elle aucune influence sur les liens entre les comportements associés au jeu des proches et les problèmes de jeu des jeunes adultes. L'influence de l'entourage joue donc un rôle important dans l'apparition du jeu problématique chez les jeunes, et les jeunes hommes adultes d'un âge plus avancé dont la mère est une joueuse présentent le risque le plus élevé de connaître des problèmes de jeu.

Introduction

Problem gambling poses a significant economic, social, and psychological burden to society, with prevalence rates as high as three percent in parts on North America and Europe (Gowing et al., 2015). Australians are reported to be the biggest gamblers worldwide, with the highest gambling expenditure and loss per person (Williams, Volberg, & Stevens, 2012). A recent study indicated that 0.6% of Australian adults were considered problem gamblers (individuals who reported a high rate of gambling-related harm, loss of control, or negative consequences for themselves and others in their social network), while an additional 3.7% of adults were considered to be at moderate risk of becoming problem gamblers (Gainsbury et al., 2014).

The prevalence of problem gambling varies according to age. Delfabbro and Thrupp (2003) found that young adults between 18 and 30 years have significantly higher prevalence of gambling problems than older adults. This age group also spends the most money on gambling, and has a higher rate of gambling disorders (American Psychiatric Association, 2013; Australian Government Productivity Commission, 2005), which is thought to be attributable to the increased tendency for young adults to risk-take, along with their limited understanding of the possible consequences (Derevensky, Gupta, & Winters, 2003). In addition, young adults in industrial societies also experience a delayed transition from adolescence to adulthood, because of prolonged educational pursuits and delayed marriage and childbirth (Arnett, 2000). Developmental milestones associated with this newly conceptualized period of

emerging adulthood include gaining financial independence and exploring identity, which involves facing novel challenges autonomously, with decreased reliance on previously established support structures such as school and family (Arnett, 2000). With newly gained financial and behavioural autonomy, emerging adults can explore new interests, which might include gambling. Indeed, many problem gamblers have been found to initiate gambling behaviour during this stage of life (Shaffer & Hall, 2001).

Gambling Onset

According to the American Psychiatric Association (2013), the age of onset of gambling can occur during adolescence through to older adulthood. While some research provides mean gambling onset ages of around 34 in women and 20 to 23 in men, multiple studies indicate an onset age as young as 10 years old (Delfabbro & Thrupp, 2003; Echeburúa, González-Ortega, de Corral, & Polo-López, 2011; Tavares, Zilberman, Beites, & Gentil, 2001). Across the research it is evident that the age of both gambling and problem gambling onset is lower in males than females, yet female problem gambling develops in a shorter time period (American Psychiatric Association, 2013; Echeburúa et al., 2011). Multiple studies have also indicated that an earlier onset of gambling behaviours leads to increased gambling severity or risk of problem gambling, along with more social, medical and psychiatric problems (Burge, Pietrzak, & Petry, 2006; Burge, Pietrzak, Molina, & Petry, 2004; Rahman et al., 2012; Volberg, 1994). Clearly, emerging adulthood status is important in the initiation and development of problem gambling and research is needed to determine the particular risk factors and developmental pathways relating to problem gambling in this cohort.

Social Learning and Modelling

Research suggests that social learning assists in the development of an individual's subjective norms, which can result in the development and normalizing of gambling behaviours (Blaszczynski & Nower, 2002; Moore & Ohtsuka, 1997), with one study showing that over 67% of 14 to 25 year olds surveyed had gambled with family (Moore & Ohtsuka, 1997). Delfabbro and Thrupp (2003) found that adolescents with family and peers who either gambled or approved of the behaviour, presented with significantly higher levels of gambling behaviours. This finding further enforces the notion that social gambling norms, developed through social learning, are strong predictors of adolescent gambling, and such early onset can be predictive of gambling severity (Burge et al., 2004).

In retrospective accounts of gambling behavior, 25% to 40% of adult problem gamblers have reported that their parents were also problem gamblers (Hardoon & Derevensky, 2001). In a sample of individuals diagnosed with a problem gambling disorder, Grant and Kim (2002) found that over 26% of participants reported that their father gambled problematically, and between 20% and 25% reported that their mother gambled problematically. Vachon, Vitaro, Wanner, and Tremblay (2004)

identified regression pathways between adolescent gambling frequency and both paternal and maternal gambling frequency and severity. Vachon et al. (2004) proposed that the associations found between parental and adolescent gambling behaviours result from parental modelling of gambling behaviours and the presentation of gambling in a positive way.

Gupta and Derevensky (1998) reported that "parents are willing role models to their children's gambling" (p. 323), suggesting that parents are often aware of and accepting of their children's gambling behaviours (Hardoon & Derevensky, 2001). Campbell, Derevensky, Meerkamper, and Cutajar (2011) assessed parental attitudes towards their children's gambling and found that child gambling was perceived as less problematic than other risky behaviours. Delfabbro and Thrupp (2003) suggest that parental gambling influence can also be unintentional, with children observing parental excitement when they win or even when they are waiting for the lottery results on television. Gambling may also be encouraged by the inclusion in times of family gambling of such activities as sports bets, horse races and card games, which are generally positive times of excitement and socializing (Delfabbro & Thrupp, 2003; Hardoon & Derevensky, 2001). Such positive contact with gambling during these times may influence children's beliefs about gambling and winning (Moore & Ohtsuka, 1997), specifically in regard to developing positive attitudes towards gambling and an understanding that it is a socially acceptable activity. Furthermore, involvement in, or even just observation of gambling allows children to learn how to gamble and the processes involved, increasing future accessibility. In addition to the evidence of a parental influence on gambling, research has shown a strong link between gambling behaviours of young people and the behaviour of their peers, particularly in regard to gambling onset and problem gambling (Donati, Chiesi, & Primi, 2013; Hardoon & Derevensky, 2001; Moore & Ohtsuka, 1997).

Donati, Chiesi, and Primi (2013) reported peer gambling to be more strongly associated with adolescent at-risk problem gambling than parental gambling. They found that adolescents with peers who gambled were 1.64 times more likely to fit the classification of an at-risk problem gambler than those without gambling peers (Donati et al., 2013). Hardoon and Derevensky (2001) noted that 44% of adolescents reported that the gambling behaviours of their peers led to the initiation of their gambling. Research has postulated that adolescents are more likely than adults to be influenced by peers and to take risks on the basis that they desire peer approval which is gained through displays of bravery and risk-taking (Delfabbro & Thrupp, 2003; Gardner & Steinberg, 2005). In addition, emerging adults typically become immersed in peer relationships and move away from the regulation provided in childhood and adolescence by their parents (Arnett, 2000).

The evidence suggests that parents and peers contribute to the development of social norms and the subsequent development of gambling behaviours, and it is clear that the perceived normality of a behaviour has a significant effect upon one's engagement in the behaviour. Through greater involvement in gambling behaviours emerging adults are at greater risk of becoming problem gamblers. Furthermore,

how normal a behaviour is considered to be is a determinant of stigma towards that behaviour (Arboleda-Flórez, 2002; Horch & Hodgins, 2008; Quinn & Chaudoir, 2009).

The Role of Stigma

Stigma is socially constructed and allows for an individual or group to be distinguished from the majority based on a perceived identity or a personal attribute. Attributes are generally "shameful" or "negative", and are typically related to appearance, mental or physical illness, religious background, or pathological behaviours like substance abuse and problem gambling (Arboleda-Flórez, 2002; Horch & Hodgins, 2008; Quinn & Chaudoir, 2009). Hing, Holdsworth, Tiyce, and Breen (2014) suggested that stigma is a tool by which society can differentiate between "normal" and "abnormal" individuals, the consequence of which can be social devaluation and discrimination (Arboleda-Flórez, 2002; Horch & Hodgins, 2008; Quinn & Chaudoir, 2009). Stigma can be conceptualized in two main forms – perceived public stigma and self-stigma. Public stigma is defined as negative societal perceptions about an individual, group or behaviour, which can result in prejudice and stereotyping (Corrigan, Markovitz, Watson, Rowan, & Kubiak, 2003). Self-stigma is the internalization of these negative public views and attaching the corresponding negative stereotypes to oneself.

In regard to gambling, it is important to make a distinction between perceived public stigma towards gambling in general, and that which is directed towards problem gambling.In the Australian context there is little stigma associated with gambling behaviour in general. There are currently high levels of public gambling acceptance and engagement (Australian Government, 2014). It could be argued that this social acceptance and positive presentation of everyday gambling behaviours, may reduce associated stigma through increased interpersonal contact with the gamblers or gambling in general (Hardoon & Derevensky, 2001; Horch & Hodgins, 2008). Problem gambling, however, does carry with it a perceived public stigma, perhaps because of the stigmatizing perceptions of behaviour classed as pathological or "abnormal" (Arboleda-Flórez, 2002; Horch & Hodgins, 2008; Quinn & Chaudoir, 2009). Horch and Hodgins (2013) tested gambling response stereotypes and found that problem gamblers were generally viewed as desperate, irresponsible risk takers. There is a plethora of evidence regarding the negative effects of stigma associated with problem gambling upon an individual, which include anxiety, depression, shame, and reduced help seeking behaviours (Hing et al., 2014)

We suggest that parental and peer problem gambling may influence emerging adult problem gambling behaviour by normalizing gambling and hence reducing internalized public stigma or self-stigma relating to gambling and by extension, problem gambling. In this sense low problem gambling self-stigma may function to promote and worsen problem gambling behaviours. Supporting this, Yi and Kanetkar (2010) found that moderate and high risk gamblers had more positive attitudes to gambling when compared to low risk gamblers. To date, few studies have examined the role of stigmatizing perceptions of problem gambling (Hing et al., 2014). Existing studies

predominantly problematize the stigma associated with problem gambling, specifically in relation to help-seeking behaviours. It is possible, however, that high self-stigma may be associated with fewer problem gambling behaviours, and as such, could be viewed in a positive light. The current study aimed to investigate self-stigma as a potential mediator of the parental and peer effect on emerging adult problem gambling, further informing our knowledge of the developmental pathways relating to problem gambling.

This study used a cross-sectional design and a community sample of Australian emerging adult gamblers to explore these social influences on stigmatizing perceptions and problem gambling behaviour. Based on these aims and relevant past research, the study hypotheses were as follows.

H1: Emerging adult problem gambling would be positively correlated with self-reported perceptions of maternal problem gambling, paternal problem gambling and peer problem gambling.

H2: Problem gambling self-stigma would be negatively correlated with emerging adult problem gambling, as well as self-reported perceptions of maternal problem gambling, paternal problem gambling, and peer problem gambling.

H3: Mediation models were explored, where high perceptions of maternal problem gambling, paternal problem gambling, and peer problem gambling were expected to predict low levels of stigma, which in turn would result in high levels of emerging adult problem gambling.

H4: The three social influences as well as problem gambling self-stigma would account for a significant proportion of variance in emerging adult problem gambling.

Method

Participants

A community sample of 188 Australian emerging adult gamblers, aged 18 to 29 ($M =21.41$, $SD = 2.99$); 130 females (69.1%), 55 males (29.3%) and 3 undisclosed subjects (1.6%), were recruited online using social media. To be included in the study participants had to be between the ages of 18 and 29 and to have gambled at least once in past 6 months prior to completing the survey. Over 75% of the sample were aged between 18 and 23. Sixty-seven percent of the sample reported a preference for gambling with their peers, while 10% preferred to gamble with their mother, 6% with their father, and 17% preferred to gamble alone.

Measures

Participants were presented with a demographics questionnaire consisting of age, gender, and gambling preferences.

Problem gambling.   The Canadian Problem Gambling Index's 9-item Problem Gambling Severity Index (PGSI) (Wynne, 2003) was used to measure and categorize an individual's problem gambling behaviour using a Likert type scale of 0 (Never) to 3 (Almost always). Item scores were summed to produce a total gambling score outcome variable. Total scores of 8 or more are considered to reflect problem gambling with negative consequences and a possible loss of control. Validity testing of the PGSI has indicated greater internal consistency (α = .84) than the alternative measures of the South Oaks Gambling Scale (SOGS) or the DSM-IV, while test-retest results have indicated the PGSI (.78) was more reliable than the SOGS (.75) yet less than the DSM-IV (.91) (Wynne, 2003). The PGSI has also been shown to have good content validity, concurrent validity with the SOGS and DSM-IV measures, and had the highest predictive validity through correlations with clinical assessment results (Wynne, 2003). In the current study Cronbach alpha coefficient was α = .93.

Participants whose mother gambled were presented the Maternal Problem Gambling Severity Index (MPGSI), to assess the perceived levels of their mother's problem gambling. The instructions of the PGSI were altered to ask participants their perceptions of their mother's gambling. The same process was followed for their fathers (FPGSI) and a gambling peer (PPGSI). Internal reliability tests of the MPGSI produced a Cronbach alpha coefficient of .95. The FPGSI had good internal consistency within the study sample, α = .95. The Peer Problem Gambling Severity Index (PPGSI) produced a high Cronbach alpha of .93. Non-gambling mothers and fathers were scored as zero.

Gambling stigma / perceptions.   Participants were asked to think of a gambler that they know before completing the 21 item Gambling Perception scale, which was designed to measure the participant's level of stigma towards problem gamblers (see Appendix A). Each item asks for a response relating to problematic outcomes for a gambler. For example, "I would think that it is the gambler's own fault that he/she is in the present condition." This scale is a modified version of the Attributional Model of Public Discrimination Towards Persons with Mental Illness, which has demonstrated good internal reliability (Corrigan et al., 2003). This questionnaire was scored on a scale from 1 to 9. Averaged scores (items representing each construct were summed and divided by the number of items producing a scoring range of 1 to 9) were calculated for the subscales (Table 1) of personal responsibility (gambler is responsible for his/her problems, M = 6, SD = 1.7), pity (for the gambler, M = 4.9, SD = 1.9), anger (towards the gambler, M = 4.5, SD = 2.2), fear (of the gambler, M = 2.9, SD = 1.7), helping (likelihood of helping the gambler, M = 5.7, SD = 1.7), and Coercion/Segregation (gambler should be isolated from society, M = 3, SD = 1.6). The scale includes some reverse scored items and high scores on each of the subscales represent greater stigmatizing attitudes towards problem gambling. Reliability tests of the Gambling Perception scale in the current study produced high internal reliability scores for each of the subscales (above .7 for all subscales except for the Personal Responsibility subscale, which was approaching the cut-off value, .69) (Field, 2013). Principal component analysis using oblique rotation revealed a six factor model for the revised scale (accounting for 71.7% of variance), replicating the factor structure from

Table 1

Descriptive Statistics for Problem Gambling and Stigma Variables

	Mean	SD	Skew	Kurtosis
PGSI	1.64	3.8	2.8	7.3
MPGSI	0.73	2.8	5.1	29.8
FPGSI	1.16	3.4	3.7	15.5
PeerPGSI	2.7	4.5	2.1	5.3
PersResp Stigma	6.0	1.6	-.37	-.39
Pity Stigma	4.8	1.9	-.01	-.32
Anger Stigma	4.5	2.2	.08	-.81
Fear Stigma	2.9	1.7	.83	-.16
Helping Stigma	5.8	1.7	-.36	-.12
CoeSegStigma	3.0	1.5	.77	.6

Note. PGSI = Problem Gambling Severity Index; MPGSI = Maternal Problem Gambling Severity Index; FPGSI = Paternal Problem Gambling Severity Index; PPGSI = Peer Problem Gambling Severity Index; PersResp = Perceived Personal Responsibility; CoeSeg = Coercion/Segregation.

Corrigan et al. (2003) using the original version. Indicators of sampling adequacy were verified by Kaiser-Meyer-Olkin (KMO) .77 and Bartlett's Test of Sphericity ($p < .001$). While certain questions loaded more weakly onto a second factor the items were retained for the current analysis (see Appendix B).

Procedure

Approval for this study was granted by the Federation University ethics committee. Data were collected in 2014. Participants were recruited from online sources such as Facebook, where they were directed to Survey Monkey to complete an online survey.

Analysis

Simple mediation analysis was conducted using PROCESS for SPSS (Hayes, 2013). As correlational findings revealed that only peer gambling was related to stigma, a peer gambling mediation model was tested. The model for simple mediation was model 4 in PROCESS. This conceptual models are shown in Figure 1. As shown, for the simple mediation, there was a proposed direct path from peer problem gambling to emerging adult problem gambling, and also an indirect path through self-stigma. The number of bootstrap samples for bias corrected bootstrap confidence intervals was 10,000, and a bootstrapped 95 confidence interval (CI) was used to infer significance. Significance is supported if the confidence interval does not include zero
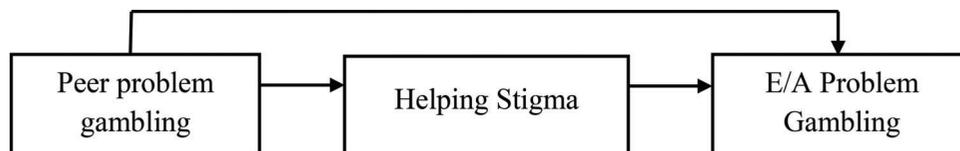

Figure 1. Conceptual path model of the simple mediation model tested in the study.

(Hayes, 2013). The prediction of emerging adult problem gambling was tested using hierarchical regression. Because of concerns over normality 10,000 bootstrapped samples were taken, and a bootstrapped 95 confidence interval (CI) was used to infer significance.

Data were collected and exported from Survey Monkey to IBM SPSS for analysis. Analysis of the skewness values and distribution shapes produced indicated that the variables Age, Gender, PGSI, MPGSI, FPGSI, and PPGSI were positively skewed while the Stigma scales were normally distributed (Table 1). The distribution normality was further explored through the use of the Kolmogorov-Smirnov statistic, which again indicated the assumption of normality was violated for the above variables. Based on problem gambling prevalence rates, community samples are expected to be positively skewed, and as such, the original untransformed data was used throughout the statistical analyses and all analyses utilized bootstrapping procedures.

Results

Gambling severity scale responses indicated that 17 of the 188 participants and 29 peers met the classification of problem gambler (a score of 8 or more), while only 7 mothers and 15 fathers were perceived to be problem gamblers (See Table 2). Descriptive statistics for each of the variables are in Table 1.

In regard to the first hypothesis, as shown in Table 3, Pearson's Bootstrapped correlations indicated that emerging adult problem gambling was positively related to perceived paternal, peer and maternal gambling behaviour, suggesting that perceptions of peer and parental problem gambling are related to emerging adult problem gambling.

In regard to Hypothesis Two, as shown in Table 3, perceived peer gambling was negatively related to problem gambling helping stigma, suggesting that greater exposure to peer gambling is associated with less help related stigmatizing views on problem gambling. That is, high perceived peer gambling was related to a greater likelihood that participants would help a problem gambler. Neither perceived

Table 2

Percentage of Individuals in Each Category of Problem Gambling Severity

	Percentage			
Gambling Severity	E/Adults	Mothers	Fathers	Peers
Non-Problem Gambler	66	91	80.9	58
Low Risk Problem Gambler	17	1.6	6.4	8
Moderate Risk Problem Gambler	8	3.7	4.8	18.6
Problem Gambler	8.9	3.7	7.8	15.4

Table 3

Bootstrapped Pearson's Correlations for Age, Gender, Stigma Subscales, and Problem Gambling

	MPGSI	FPGSI	PPGSI	Age	Gender	PersResp	Pity	Anger	Fear	Helping	CoeSeg
PGSI	.29**	.33**	.29**	.36**	.32**	-.13	-.11	-.05	0	-.18*	-.04
MPGSI		.39**	.07	.05	0	-.06	.02	-.06	.02	-.01	0
FPGSI			.09	.01	.1	0	-.08	.02	.01	.05	.02
PeerPGSI				.25**	.22**	0	0	.04	-.12	-.27**	-.06
Age					.34**	0	-.05	-.04	-.13	-.24**	-.16*
Gender						.11	.01	-.15	-.08	-.1	.05
PersResp							.19*	.1	-.01	.07	.02
Pity								-.1	-.04	.26**	.16*
Anger									.41**	.08	.14
Fear										.26**	.55**
Helping											.32**

Note. PGSI = Problem Gambling Severity Index; MPGSI = Maternal Problem Gambling Severity Index; FPGSI = Paternal Problem Gambling Severity Index; PPGSI = Peer Problem Gambling Severity Index. PersResp = Perceived Personal Responsibility; CoeSeg = Coercion/Segregation. Gender: Female = 1, Male = 2
*$p < .05.$**$p < .01$

maternal problem gambling nor perceived paternal problem gambling were related to problem gambling stigma.

As shown in Table 3, correlations also revealed that helping stigma was negatively related to participant problem gambling, suggesting that lower help-related stigmatizing perceptions were related to higher emerging adult problem gambling. Also of note in Table 3, being male and older were associated with greater problem gambling as well as perceived peer problem gambling.

Simple Mediation

First, we tested the hypothesized mediation model where helping stigma mediated the relationship between perceived peer problem gambling and emerging adult problem gambling. Parental gambling models were not tested as they were not related to stigma (Table 3). The direct effect confidence interval did not contain zero; however, the indirect effect confidence interval did contain zero. The findings are not supportive of mediation by helping stigma on the relationship between perceived peer problem gambling and emerging adult problem gambling. The direct effect of perceived peer problem gambling on emerging adult problem gambling was not explained by helping stigma.

Regression

To determine the best predictors of problem gambling and test hypothesis four we performed a multiple hierarchical regression analysis (Table 4). As age and gender were significantly related to problem gambling, they were included in the hierarchical

Table 4
Statistics for r = 10,000 Bootstrapped Regressions for Predictors of Emerging Adult Problem Gambling

	Problem Gambling				
	B	Bias	SE	Sig.	B[95% CI]
Step 1					
Age	.356	-.003	.12	.008	(.115, .601)
Gender	1.82	-.015	.56	.003	(.766, 2.97)
Step 2					
Age	.266	-.014	.12	.043	(.023, .493)
Gender	1.61	-.083	.53	.007	(.517, 2.62)
MPGSI	.254	-.019	.128	.039	(-.006, .487)
FPGSI	.227	.025	.144	.094	(.032, .597)
PPGSI	.118	-.006	.089	.215	(-.065, .284)
Helping	-.116	-.001	.214	.605	(-.52, .311)
PersResp	-.29	-.004	.200	.158	(-.711, .07)
Pity	-.108	.016	.151	.504	(-.386, .197)

Note. B = unstandardized average bootstrap estimate; SE = standard error; Sig = Significance (2-tailed); B[95% CI] = Bootstrapped 95% Confidence interval.

regression model at Step 1, the three social influences of perceived maternal, paternal and peer problem gambling along with helping stigma, personal responsibility stigma, and pity stigma were entered at Step 2.

At Step 1 age and gender explained a significant 17% of the variance in problem gambling, R^2 = .17, adjusted R^2 = .16, $F(2,172)$ = 17.7, $p < .001$.

At Step 2 the three parental/peer facets and the three stigma facets were added and contributed an additional 16% of variance ΔR^2 = .16, $\Delta F(6,166)$ = 6.62, $p < .001$. In combination the variables explained 33.1% of the variance in problem gambling, R^2 = .331, adjusted R^2 = .298, $F(8,166)$ = 10.25, $p < .001$. In the final model, being male, older and having higher perceived maternal problem gambling scores were the only significant unique predictors of participants' problem gambling.

Discussion

The aims of the current study were to explore potential social influences in the form of peer and parental problem gambling on emerging adult problem gambling and to determine if these effects occur because of a reduction in gambling-related self-stigma. The results revealed that the participants were more likely to engage in gambling with peers rather than with parents. Participants' peers were also more likely to be perceived as having a gambling problem, when compared to mothers or fathers. Perceived peer problem gambling and parental problem gambling were shown to be positively related to problem gambling in emerging adults (H1). As hypothesized, problem gambling-related self-stigma (specifically helping stigma) was

inversely related to emerging adult problem gambling (H2). Stigmatizing perceptions of problem gambling did not, however, mediate the relationships as expected (H3). When variables were regressed together onto emerging adult problem gambling only gender, age, and perceived maternal problem gambling were significant unique predictors.

In relation to the direct path between perceived parental and peer problem gambling and participant problem gambling, correlations revealed that higher levels of problem gambling were associated with higher levels of perceived peer, maternal, and paternal problem gambling (H1). These findings suggest that a mother and a father's gambling are important in the development of emerging adult problem gambling. Consistent with previous research, these findings also suggest that peer gambling is related to the initiation or maintenance of gambling behaviours in emerging adults and the increased likelihood of developing a gambling problem (Delfabbro & Thrupp, 2003; Donati et al., 2013; Hardoon & Derevensky, 2001). Emerging adults with problem gambling behaviours may also choose to associate with peers who also gamble. Thus, while causation cannot be inferred, it is nonetheless likely that the peer problem gambling is an important influence in emerging adult problem gambling behaviour (Blaszczynski & Nower, 2002). This peer influence may function as Blaszczynski and Nower (2002) suggest through operant and classical conditioning, and may also function through the social development of attitudes towards gambling.

We proposed a mediation model whereby exposure to gambling through family and friends would normalize the behaviour, reduce self-stigma, and increase emerging adult problem gambling. This indirect pathway between one's social influences and gambling through reduced stigma has never been investigated, making the current findings exploratory. As only perceived peer problem gambling was found to be related to helping stigma (H2), the parental models were not tested. The mediation analysis using peer problem gambling was not significant thus rejecting Hypothesis Three. While helping stigma was inversely related to both perceived peer problem gambling and participant problem gambling, this pathway did not explain the relationship between perceived peer problem gambling and emerging adult problem gambling. Our results suggest that while family and peer influences are significant in emerging adult problem gambling, these links are not explained by socialized normalizing of problem gambling behaviours. Research is needed to determine the means by which those we know influence our own gambling behaviours.

Our results also suggest that emerging adults' peers influence their normative attitudes to problem gambling. In particular, it appears that having friends that gamble problematically may increase empathic responses to problem gamblers and increase the likelihood of helping a problem gambler in need. As such, it may be that within friendship groups gambling problems are likely to elicit supportive responses. In contrast, perceived parental problem gambling had no influence on stigmatizing perceptions of problem gambling. It is likely that for emerging adults peer behaviour and interaction with peers would be currently driving their own values more so than

parent interactions. The effects of parental problem gambling at this period of life may be more subtle, and unconscious, as emerging adults transition from adolescent dependence on their parents to more independent status as a young adult (Arnett, 2000).

Interestingly, past research has suggested that peer influence may be more salient for young men than for young women (Cassidy, 2013; Morton, 2003). As there were only 55 men in this study, we were limited in assessing gender differences, however gender was a strong predictor of problem gambling with men scoring higher. Certainly further research is needed to determine if social influences on emerging adult problem gambling are gender specific.

Finally, our regression results revealed that the combined social influences along with three of the stigma subscales (personal responsibility, pity and helping) accounted for 33% of the variance in emerging adult problem gambling (H4). This is a large portion of variance, especially given that there are so many factors known to influence problem gambling in young people (Hardoon & Derevensky, 2001). This finding suggests that significant others play an important role in the development of problem gambling. Interestingly only age, gender and perceived maternal problem gambling were unique predictors in the final model. This suggests that being older, male, and having a maternal gambling influence are the most important factors for increased emerging adult problem gambling. While the influence of gender has been widely reported, the results for age and maternal influence are more intriguing.

It appeared that those in the higher age bracket were also higher problem gamblers. This may be related to higher income and also a greater length of exposure to gambling culture and activities. The importance of maternal gambling is surprising given perceived maternal problem gambling levels in the current study were low ($M = .73$). It appears that when social influences are evaluated together the maternal influence on gambling is strongest, suggesting in turn that, whereas less common in family contexts, the existence of maternal gambling problems is a significant factor for children's future gambling behaviours.

These results are similar to Hayatbakhsh et al. (2006) who conducted a longitudinal study of the predictors of problem gambling development and found that maternal factors were most important. Among the most salient predictors found in their Australian study were being male, low maternal education levels, maternal tobacco and alcohol use in childhood or adolescence, problems in mother-child communication, and having a mother in a de facto relationship during the developing years. It may be that the maternal influence on problem gambling development is under-reported in current literature because of lower female problem gambling levels in general. Our findings also suggest that this maternal influence is not mediated by the development of gambling norms and lower problem gambling self-stigma. As such, future research is needed both to confirm and explain the role of maternal problem gambling in the development of problem gambling behaviours in young people.

Limitations

This study possessed a number of strengths including the use of a sample of emerging adults varying in age, gender and problem gambling severity. The use of the PGSI provided this research project with a highly valid measure of gambling severity. However, modification of this scale to produce measures of perceived maternal, paternal and peer gambling severity, may have also altered the validity and reduced the accuracy of the measures of perceived parental and peer gambling severity. Similarly, the Gambling Perception Scale was adapted from Corrigan et al.'s (2003) Attributional Model of Public Discrimination Towards Persons with Mental Illness scale. It is also difficult to determine the degree to which the scale measured self-stigma towards gambling in general and problem gambling. This distinction has been found to be important as in Australia public gambling stigma is low, whereas public problem gambling stigma is high (Horch & Hodgins, 2008). Participants were asked to think of a problem gambler they knew, and as such, the gamblers imagined or drawn upon would be varied along the problem gambling continuum. Moreover, it has also been argued that explicit measures of attitudes toward sensitive issues are susceptible to social desirability bias (Yi & Kanetkar, 2010). However, as previously explained, the use of modified scales was necessary as pre-existing measures were not readily available. Finally, as a cross-sectional correlational study, with limited socio-demographic information on participants, cause-effect and generalization cannot be concluded.

Conclusion

The results of the study confirmed that perceived peer and parental problem gambling predicts problem gambling in emerging adults. There was no support for the mediating role of stigma despite a weak inverse relationship between helping self-stigma and emerging adult problem gambling. Future research, using robust sample sizes is warranted, given the importance of identifying the predictors of problem gambling behaviours among young adults in a country with high overall acceptance of gambling.

References

American Psychiatric Association. (2013). Substance-related and addictive disorders. In *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author

Arboleda-Flórez, J. (2002). What causes stigma? *World Psychiatry*, *1*, 25–26. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1489829

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*, 469–480. doi:10.1037/0003-066X.55.5.469

Australian Government (2014). *The facts: Problem gambling.* (n.p.). Retrieved from: http://www.problemgambling.gov.au/facts

Australian Government Productivity Commission (2005). *Economic implications of an ageing Australia: Productivity Commission research report.* Canberra, AU: Author. Retrieved from: http://www.pc.gov.au/inquiries/completed/ageing/report/ageing.pdf

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

Burge, A. N., Pietrzak, R. H., Molina, C. A., & Petry, N. M. (2004). Age of gambling initiation and severity of gambling and health problems among older adult problem gamblers. *Psychiatric Services, 55,* 1437–1439. doi:10.1176/appi.ps 55.12.1437

Burge, A. N., Pietrzak, R. H., & Petry, N. M. (2006). Pre/early adolescent onset of gambling and psychosocial problems in treatment-seeking pathological gamblers. *Journal of Gambling Studies, 22*, 263–274. doi:10.1007/s10899-006-9015-7

Campbell, C., Derevensky, J., Meerkamper, E., & Cutajar, J. (2011). Parents' perceptions of adolescent gambling: A Canadian national study. *Journal of Gambling Issues, 25*, 36–53. doi:10.4309/jgi.2011.25.4

Cassidy, R. (2013). "A place for men to come and do their thing": Constructing masculinities in betting shops in London. *The British Journal of Sociology, 65*, 170–191. doi:10.1111/1468-4446.12044

Corrigan, P., Markowitz, F. E., Watson, A., Rowan, D., & Kubiak, M. A. (2003). An attribution model of public discrimination towards persons with mental illness. *Journal of Health and Social Behavior, 44*, 162–179. doi:10.2307/1519806

Delfabbro, P., & Thrupp, L. (2003). The social determinants of youth gambling in South Australian adolescents. *Journal of Adolescence, 26*, 313–330. doi:10.1016/S0140-1971(03)00013-7

Derevensky, J. L., Gupta, R., & Winters, K. (2003). Prevalence rates of youth gambling problems: Are the current rates inflated? *Journal of Gambling Studies, 19,* 405-425. doi:10.1023/A:1026379910094

Donati, M. A., Chiesi, F., & Primi, C. (2013). A model to explain at-risk/problem gambling among male and female adolescents: Gender similarities and differences. *Journal of Adolescence, 36,* 129–137. doi:10.1016/j.adolescence. 2012.10.001

Echeburúa, E., González-Ortega, I., de Corral, P., & Polo-López, R. (2011). Clinical gender differences among adult pathological gamblers seeking treatment. *Journal of Gambling Studies*, *27*, 215–227. doi:10.1007/s10899-010-9205-1

Field, A. (2013). *Discovering statistics using IBM SPSS Statistics* (4th ed.). London, UK: Sage Publications.

Gainsbury, S. M., Russell, A., Hing, N., Wood, R., Lubman, D. I., & Blaszczynski, A. (2014). The prevalence and determinants of problem gambling in Australia: Assessing the impacts of interactive gambling and new technologies. *Psychology of Addictive Behaviors*. *28*, 769–779. doi:10.1037/a0036207

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology*, *41,* 625–635. doi:10.1037/0012-1649.41.4.625. Retrieved from: https://secure.uwf.edu/smathews/documents/peerroleinrisktakinggardnerand steinberg.pdf

Gowing, L. R., Ali, R. L., Allsop, S., Marsden, J., Turf, E. E., West, R., & Witton, J. (2015). Global statistics on addictive behaviours: 2014 status report. *Addiction*, *110*, 904–919. doi:10.1111/add.12899

Grant, J. E., & Kim, S. W. (2002). Gender differences in pathological gamblers seeking medication treatment. *Comprehensive Psychiatry*, *43*, 56–62. doi:10.1053/comp.2002.29857

Gupta, R., & Derevensky, J. L. (1998). Adolescent gambling behavior: A prevalence study and examination of the correlates associated with problem gambling. *Journal of Gambling Studies*, *14,* 319–344. doi:10.1023/A:1023068925328

Hardoon, K. K., & Derevensky, J. L. (2001). Social influences involved in children's gambling behavior. *Journal of Gambling Studies*, *17,* 191–215. doi:10.1023/A:1012216305671

Hayatbakhsh, M. R., Najman, J. M., Aird, R., Bor, W., O'Callaghan, M., Williams, G., … Heron, M. (2006). *Early life course determinants of young adults' gambling behavior: An Australian longitudinal study*. Brisbane, AU: University of Queensland. Retrieved from: https://publications.qld.gov.au/storage/f/2014-06-20T01%3A29%3A19.283Z/early-life-course-determinants-of-young-adults-gambling-behaviour.pdf

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.

Hing, N., Holdsworth, L., Tiyce, M., & Breen, H. (2014). Stigma and problem gambling: Current knowledge and future research directions. *International Gambling Studies*, *14*, 64–81. doi:10.1080/14459795.2013.841722

Horch, J. D., & Hodgins, D. C. (2008). Public stigma of disordered gambling: Social distance, dangerousness, and familiarity. *Journal of Social and Clinical Psychology*, *27*, 505–528. doi:10.1521/jscp.2008.27.5.505

Horch, J. D., & Hodgins, D. C. (2013). Stereotypes of problem gambling. *Journal of Gambling Issues*, *28*, 1–19. doi:10.4309/jgi.2013.28.10

Moore, S. M., & Ohtsuka, K. (1997). Gambling activities of young Australians: Developing a model of behaviour. *Journal of Gambling Studies, 13,* 207–236. doi:10.1023/A:1024979232287

Morton, S. (2003). *At odds: Gambling and Canadians; 1919-1969*. Toronto, ON: University of Toronto Press.

Quinn, D. M., & Chaudoir, S. R. (2009). Living with a concealable stigmatized identity: The impact of anticipated stigma, centrality, salience, and cultural stigma on psychological distress and health. *Journal of Personality and Social Psychology*, *97*, 634–651. doi:10.1037/a0015815

Rahman, A. S., Pilver, C. E., Desai, R. A., Steinberg, M. A., Rugle, L., Krishnan-Sarin, S., & Potenza, M. N. (2012). The relationship between age of gambling onset and adolescent problematic gambling severity. *Journal of Psychiatric Research*, *46*, 675-683. doi:10.1016/j.jpsychires.2012.02.007

Shaffer, H. J., & Hall, M. N. (2001). Updating and refining prevalence estimates of disordered gambling behaviour in the United States and Canada. *Canadian Journal of Public Health*, *92*, 168–172. Retrieved from: file:///C:/Users/Boyd/Downloads/102-102-1-PB%20(3).pdf

Tavares, H., Zilberman, M. L., Beites, F. J., & Gentil, V. (2001). Gender differences in gambling progression. *Journal of Gambling Studies*, *17,* 151-159. doi:10.1023/A:1016620513381

Vachon, J., Vitaro, F., Wanner, B., & Tremblay, R. E. (2004). Adolescent gambling: Relationships with parent gambling and parenting practices. *Psychology of Addictive Behaviors*, *18*, 398–401. doi:10.1037/0893-164X.18.4.398

Volberg, R. A. (1994). The prevalence and demographics of pathological gamblers: Implications for public health. *American Journal of Public Health*, *84*, 237–241. doi:10.2105/ajph.84.2.237

Williams, R. J., Volberg, R. A., & Stevens, R. M. G. (2012). *The population prevalence of problem gambling: Methodological influences, standardized rates, jurisdictional differences, and worldwide trends*. (n.p.). Retrieved from: https://www.uleth.ca/dspace/bitstream/handle/10133/3068/2012-PREVALENCE-OPGRC%20(2).pdf?sequence=3

Wynne, H. (2003). *Introducing the Canadian problem gambling index*. Edmonton, AB: Wynne Resources. Retrieved from: http://classes.uleth.ca/201201/hlsc3700a/The%20Canadian%20Problem%20Gambling%20Index.pdf

Yi, S., & Kanetkar, V. (2010). Implicit measures of attitudes toward gambling: An exploratory study. *Journal of Gambling Issues*, *24*, 140-164. doi:10.4309/2010.24.9. Retrieved from: http://jgi.camh.net/doi/pdf/10.4309/jgi.2010.24.9

****

For correspondence: Peter Richard Gill, PhD, College of Arts, Victoria University, P.O. Box 14428, Melbourne, AU 8001. E-mail: peter.gill@vu.edu.au

Appendix A

Gambling Perception Scale

Please think of someone you know or imagine a person, who has found themselves in trouble (e.g. financial, relational, criminal) because of gambling; and complete the following questionnaire: (* indicates reverse scored item).

Q1. I would think that it were the gambler's own fault that he/she is in the present condition.

1——2——3——4——5——6——7——8——9

No, not at all   Yes, absolutely

Q2. How controllable, do you think, is the cause of the gambler's present condition?

1——2——3——4——5——6——7——8——9

Not at all under personal control   Completely under personal control

Q3. How responsible, do you think, is the gambler for their present condition?

1——2——3——4——5——6——7——8——9

Not at all responsible   Very much responsible

Q4. I would feel pity for the gambler.*

1———2———3———4———5———6———7———8———9

None at all   Very much

Q5. How much sympathy would you feel for the gambler?*

1———2———3———4———5———6———7———8———9

None at all   Very much

Q6. How much concern would you feel for the gambler?*

1———2———3———4———5———6———7———8———9

None at all   Very much

Q7. I would feel aggravated by the gambler.

1———2———3———4———5———6———7———8———9

Not at all   Very much

Q8. How angry would you feel at the gambler?

1———2———3———4———5———6———7———8———9

Not at all   Very much

Q9. How irritated would you feel by the gambler?

1———2———3———4———5———6———7———8———9

Not at all   Very much

Q10. How dangerous would you feel the gambler is?

1———2———3———4———5———6———7———8———9

Not at all   Very much

Q11. I would feel threatened by the gambler?

1——2——3——4——5——6——7——8——9

No, not at all   Yes, very much

Q12. How scared of the gambler would you feel?

1——2——3——4——5——6——7——8——9

Not at all   Very much

Q13. How frightened of the gambler would you feel?

1——2——3——4——5——6——7——8——9

Not at all   Very much

Q14. If I were an employer, I would interview the gambler for a job.*

1——2——3——4——5——6——7——8——9

Not likely   Very likely

Q15. I would share a car pool with the gambler each day.*

1——2——3——4——5——6——7——8——9

Not likely   Very likely

Q16. How certain would you feel that you would help the gambler?*

1——2——3——4——5——6——7——8——9

Not at all certain   Absolutely certain

Q17. If I were a landlord, I probably would rent an apartment to the gambler.*

1——2——3——4——5——6——7——8——9

Not likely   Very likely

Q18. I think the gambler poses a risk to his/her neighbours unless he/she received treatment.

1——2——3——4——5——6——7——8——9

Not at all   Very much

Q19. I think it would be best for the community if they were put away in a treatment facility.

1——2——3——4——5——6——7——8——9

Not at all   Very much

Q20. How much do you think a treatment facility, where the gambler can be kept away from his/her neighbours, is best?

1——2——3——4——5——6——7——8——9

Not at all   Very much

Q21. If I were in charge of the gambler's treatment, I would force him/her to live in a group home.

1——2——3——4——5——6——7——8——9

Not at all   Very much

Appendix B

Loadings on six principal components for the Gambling Perception Scale

	Component					
	Fear	Pity	Anger	Helping	PersResp	CoeSeg
1. I would think that it were the gambler's own fault…					.724	
2. How controllable, do you think, is the cause…					.756	
3. How responsible, do you think, is the gambler…					.828	
4. I would feel pity for the gambler		.878				
5. How much sympathy would you feel for the gambler?		.846				
6. How much concern would you feel for the gambler?		.659				
7. I would feel aggravated by the gambler			.918			
8. How angry would you feel at the gambler?			.902			
9. How irritated would you feel by the gambler?			.908			
10. How dangerous would you feel the gambler is?	.481		.332			
11. I would feel threatened by the gambler	.942					
12. How scared of the gambler would you feel?	.966					
13. How frightened of the gambler would you feel?	.954					
14. If I were an employer, I would interview the gambler for a job.				-.783		
15. I would share a car pool with the gambler…		.352		-.509		
16. How certain do you feel that you would help the gambler?				-.585		
17. If I were a landlord I probably would rent an apartment to the gambler				-.863		
18. I think the gambler poses a risk to his/her neighbours unless he/she received treatment						.623
19. I think it would be best for the community if they were put in a treatment facility						.758
20. How much do you think a treatment facility…is best?						.910
21. … I would force him/her to live in a group home						.748

Note. Extraction method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Coefficients below .3 suppressed. PersResp = Perceived Personal Responsibility; CoeSeg = Coercion/Segregation.