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Problem gambling and intimate partner violence: A systematic review and meta-analysis

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Abstract

This study provides a systematic review of the empirical evidence related to the association between problem gambling and intimate partner violence (IPV). We identified 14 available studies in the systematic search (six for IPV victimisation and ten for IPV perpetration).

Although there were some equivocal findings, we found that most of the available research suggests that there is a significant relationship between problem gambling and being a victim of IPV. There was more consistent evidence that there is a significant relationship between problem gambling and perpetration of IPV. Meta-analyses revealed that over one-third of problem gamblers report being victims of physical IPV (38.1%) or perpetrators of physical IPV (36.5%) and that the prevalence of problem gambling in IPV perpetrators is 11.3%. Although the exact nature of the relationships between problem gambling and IPV is yet to be determined, the findings suggest that less than full employment and clinical anger problems are implicated in the relationship between problem gambling and IPV victimisation and that younger age, less than full employment, clinical anger problems, impulsivity, and alcohol and substance use are implicated in the relationship between problem gambling and IPV perpetration. The findings highlight the need for treatment services to undertake routine screening and assessment of problem gambling, IPV, alcohol and substance use problems, and mental health issues, and provide interventions designed to manage this cluster of comorbid conditions. Further research is also required to investigate the relationship between problem gambling and violence that extends into the family beyond intimate partners.

Keywords: gambling, intimate partner violence, domestic violence, family violence, systematic review, meta-analysis

CRITICAL FINDINGS AND IMPLICATIONS TO PRACTICE AND POLICY

Critical findings

- A systematic search revealed 14 studies providing empirical evidence of the relationship between problem gambling and intimate partner violence (IPV), six providing evidence for the relationship between problem gambling and IPV victimisation and ten providing evidence for the relationship between problem gambling and IPV perpetration
- Although there are some equivocal findings, most included studies found that a) there are disproportionately high rates of IPV victimisation in problem gamblers or b) there is a significant association between problem gambling and IPV victimisation
- There was a consistent relationship between problem gambling and the perpetration of IPV, with all included studies indicating that a) IPV perpetration is over-represented in problem gamblers, b) problem gambling is over-represented in IPV perpetrators, or c) there is a significant relationship between problem gambling and IPV perpetration
- The relationship between problem gambling and being a victim of family violence may be exacerbated by less than full employment and clinical anger problems
- The relationship between problem gambling and the perpetration of family violence perpetration may be exacerbated by younger age, less than full employment, clinical anger problems, impulsivity, and alcohol and substance use problems
- A series of meta-analyses revealed that over one-third of problem gamblers report being victims of physical IPV (38%) or perpetrators of physical IPV (37%); and that problem gambling is over-represented in perpetrators of intimate partner violence (11%)

Implications to practice and policy

- Understanding the relationship between gambling problems and various types of IPV can inform specific approaches to prevention and intervention efforts and responsible gambling and violence prevention policies
- Effective prevention approaches tailored to each type of violence may be required
- The results highlight the need for routine screening for IPV in problem gambling programs and screening for problem gambling in IPV programs accompanied by effective referral and management protocols for co-occurring conditions
- The finding that the presence of family violence victimisation may predict negative treatment outcomes highlights the importance of tailoring treatment for clients with both presenting issues
- Further research is required to investigate the nature of the relationship between problem gambling and IPV and the relationship between problem gambling and violence that extends into the family beyond intimate partners

Problem gambling and intimate partner violence: A systematic review and meta-analysis

The fifth edition of the Diagnostic and Statistical Manual (DSM-5) has reclassified pathological gambling from an impulse control disorder to an addiction and related disorder, along with substance use disorders, and renamed it gambling disorder (American Psychiatric Association, 2013). In many jurisdictions, however, the term problem gambling refers to all forms of gambling that lead to adverse consequences for the gambler, others, or the community (Neal, Delfabbro, & O'Neil, 2005). The standardised past year prevalence of problem gambling ranges from 0.5% to 7.6% across countries, with an average rate of 2.3% (Williams, Volberg, & Stevens, 2012). Characteristics associated with problem gambling include male gender, young age, impulsivity, cognitive distortions, illegal acts, peer gambling, antisocial behaviour, nicotine dependence, alcohol and substance use disorders, mood and anxiety disorders, and personality disorders (Dowling, 2013; Dowling et al., in press; Johansson, Grant, Kim, Odlaug, & Götestam, 2009; Lorains, Cowlshaw, & Thomas, 2011; Lorains, Stout, Bradshaw, Dowling, & Enticott, 2014; Scholes-Balog, Hemphill, Dowling, & Tombourou, 2014).

In addition to a range of personal consequences, problem gambling can result in a high degree of familial harm. The intimate relationships and family environments of problem gamblers are often characterised by relationship dissatisfaction, conflict, reduced stability and trust, poor communication, financial deprivation, and confusion of family roles and responsibilities (Dowling, Smith, & Thomas, 2009; Hodgins, Shead, & Makarchuk, 2007; Kalischuk, Nowatzki, Cardwell, Klein, & Solowoniuk, 2006). Moreover, intimate partners and children of problem gamblers experience reduced emotional and physical health and high rates of maladaptive behaviors (Hodgins et al., 2007; Vitaro, Wanner, Brendgen, & Tremblay, 2008). Parents, grandparents, friends, employers, and colleagues can also be affected, although probably to a lesser extent (Dowling, Rodda, Lubman, & Jackson, 2014).

There is also now growing international evidence that problem gambling is associated with intimate partner violence (IPV). The World Health Organisation (2002) defines IPV as any behaviour within an intimate relationship that causes physical, psychological or sexual harm to those in that relationship, which can include acts of physical violence, sexual violence, emotional (psychological) abuse, and controlling behaviours. Prevalence estimates of IPV vary widely due to differences in definitions, study populations, and methodologies (World Health Organisation, 2002). There are also considerable geographic differences in estimates, with global estimates only available for physical and/or sexual IPV. A global estimate of lifetime physical and/or sexual IPV victimisation among ever-partnered women is 30% (Devries et al., 2013) and most estimates of past year physical and/or sexual IPV victimisation among ever-partnered women across multiple countries range between 15% and 34% (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006). Similarly, most estimates of lifetime physical and/or sexual IPV perpetration among ever-partnered men across multiple countries range from 30% to 57% (Fulu, Jewkes, Roselli, & Garcia-Moreno, 2013) and a global past year prevalence estimate of physical IPV perpetration is 22% (Desmarais, Reeves, Nicholls, Telford, & Fiebert, 2012).

Although acontextual acts-based measurement can suggest that there is gender symmetry in IPV, studies that measure perpetrator motivations for violence, forms and levels of abuse, repetition of violence, severity of abuse, and the impacts on victims support gender asymmetry with a preponderance of male perpetrators and female victims (Braaf & Meyering, 2013; Taft, Hegarty, & Flood, 2001). The World Health Organisation (2002, p. 15) conclude that “although women can be violent in relationships with men, and violence is also sometimes found in same-sex partnerships, the overwhelming burden of partner violence is borne by women at the hands of men”.

Numerous cross-sectional studies have identified a range of social, family and individual factors associated with IPV victimisation and perpetration (Abramsky et al., 2011; Capaldi, Knoble, Shortt, & Kim, 2012; Fulu et al., 2013; Stith, Smith, Penn, Ward, & Tritt, 2004; World Health Organisation, 2002). Factors common to both IPV victimisation and perpetration include exposure to child abuse, witnessing family violence, attitudes accepting violence, past history of violence, relationship dissatisfaction and conflict, traditional sex role ideology, alcohol misuse, depression, low education, and economic stress. Additional correlates of IPV perpetration include young age, anger/hostility, aggressiveness, illicit drug use, personality disorders, impulsivity, career/life stress, involvement in gangs and aggressive peers, and fights with weapons.

Aims

Problem gambling and IPV are both significant public health issues. Understanding the relationship between them therefore has important public health implications in terms of prevention and intervention efforts, as well as responsible gambling and violence prevention policies. To date, however, there are no narrative or systematic reviews in the literature exploring the strength and nature of this relationship. It is important to systematically review the empirical literature so conclusions about the relationship between problem gambling and IPV are made on all available evidence. We therefore aimed in the present study to: 1) systematically review all available literature providing empirical evidence of the co-occurrence between problem gambling and IPV victimisation and perpetration, 2) conduct meta-analyses to identify the mean prevalence of IPV victimisation and perpetration in problem gambling samples and problem gambling in IPV victimisation and perpetration samples, and 3) identify the factors that may influence the relationship between problem gambling and IPV victimisation and perpetration.

Method

We employed a methodology in this systematic review that is compliant with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) (Moher, Liberati, Tetzlaff, & Altman, 2009) and the guidelines for the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) (Stroup et al., 2000).

Search strategy

We originally intended to systematically review the literature investigating the relationship between problem gambling and family violence (defined as “a wide range of physical, emotional, sexual, social, spiritual, cultural, psychological and economic abuses that occur within families, intimate relationships, extended families, kinship networks and communities”: Victorian Department of Human Services, 2012). We therefore conducted a systematic search for studies that provide empirical evidence of the co-occurrence between problem gambling and family violence. We searched electronic databases, including Medline, PsycInfo, EMBASE and CINAHL. We also manually examined a number of specific journals that were not indexed in the electronic databases. These included *Gambling Research* (2003 onwards), *International Gambling Studies* (2001-2003) and *Journal of Gambling Issues* (2000-2006). Finally, we also manually searched the reference lists of all included and possibly included studies. We did not specify a specific start date for the search. We used search terms that incorporated a combination of keywords and wildcards relating to problem gambling and family violence (Appendix A).

Inclusion and exclusion criteria

We considered studies eligible for the current review if: (i) they provided empirical evidence of the co-occurrence between problem gambling and family violence; (ii) their study

sample comprised adults, adolescents, or children recruited from any source; (iii) the study participants reported on the problem gambling and/or family violence of themselves or family members (defined as people in a close relationship with the problem gambler, such as partners, ex-partners, parents, children, siblings, or significant others who are not necessarily part of the physical household but are part of the family and/or fulfilling the function of family); (iv) they employed any lifetime or current measure of gambling/problem gambling and/or family violence (including non-standardised measures); (v) the full-text report was available in English; and (vi) they were reported in a complete manuscript outlining original work published in a peer-reviewed journal up to September 2012.

We considered studies not eligible if they: (i) assessed the co-occurrence between problem gambling and violence that was directed towards or perpetrated by people other than family members; (ii) did not provide direct evidence of the co-occurrence between problem gambling and family violence (e.g., impact on treatment outcomes); (iii) did not elucidate the unique contribution of problem gambling or family violence; (iv) did not measure participants' own or family member's problem gambling and/or family violence (e.g., measured community family violence); (v) were published in a language other than English; and (vi) were review articles, case studies, or anecdotal reports; unpublished grey literature; presentation/poster abstracts.

Search results

A PRISMA flow diagram of the search results is displayed in Appendix B. We created an Endnote library from the search strategy. We initially identified 3617 citations from the search, which was reduced to 1970 after duplicate, non-empirical, and non-English records were removed. We duplicated the Endnote library into four sets for review by three authors (TL, JP, SC), each of whom examined 50% of these citations. Two separate authors

independently reviewed the titles and abstracts of each of these records for inclusion by using a coding scheme (see Appendix A). Several authors (ND, AS, AJ) reviewed the full-texts of the 44 articles that were deemed potentially eligible and resolved any uncertainties through discussion. Overall, we identified 17 studies met the inclusion criteria.

The findings of the 17 identified studies were generally limited to IPV victimisation ($k = 6$) or perpetration ($k = 10$). However, few studies examined findings related to child maltreatment victimisation ($k = 2$: Afifi, Brownridge, MacMillan, & Sareen 2010; Cunningham-Williams, Abdallah, Callahan, & Cottler, 2007) or perpetration ($k = 4$: Afifi et al., 2010; Bland, Newman, Orn, & Stebelsky, 1993; Lesieur & Rothschild, 1989; Lorenz & Shuttlesworth, 1983) or provided any information about the relationship between problem gambling and violence that extends into the family beyond intimate partners and children ($k = 2$: Kausch, Rugle, & Rowland, 2006; Raylu & Oei, 2009). Given the small number of studies that explored violence beyond IPV, we limited our reporting in this systematic review to the 14 studies exploring the relationship between problem gambling and IPV victimisation and/or perpetration.

Data extraction

The first author extracted prevalence estimates and provided narrative descriptions of the included studies. In some instances, it was necessary to combine findings reported for separate types of violence (e.g., minor and severe violence, dating and marital violence) to produce prevalence rates in the meta-analyses. To ensure the data extraction was accurate, two independent reviewers (AS and AJ) conducted double data extraction. The inter-rater agreement across the multiple reviewers was 100%.

Meta-analyses

We synthesised the findings from primary studies in a series of meta-analyses using the Comprehensive Meta-Analysis (CMA) program (Version 2.0; Borenstein, Hedges, Higgins, & Rothstein, 2009) to provide an estimate of the prevalence of IPV victimisation and perpetration in problem gambling samples and problem gambling in IPV victimisation and perpetration samples, all using a ‘random effects’ model. When differences across studies are attributed mainly to sampling error, a random-effects analysis provides an estimate of the weighted mean effect and a 95% Confidence Interval (that indicates the precision of this estimate). The I^2 statistic is also produced and indicates the *amount* of variation across studies due to true differences (heterogeneity) rather than chance (sampling error), and is expressed as a proportion (%) of the total observed variance. This statistic ranges from 0% to 100%, whereby values of 25%, 50% and 75% are tentatively suggested to represent low, moderate and high levels of heterogeneity, respectively (Higgins, Thompson, Deeks, & Altman, 2003).

Results

Study and sample characteristics

We have presented the characteristics of the 14 included studies providing empirical evidence of the relationship between problem gambling and IPV victimisation (Table 1) and perpetration (Table 2). The sizes of the samples ranged from 31 to 7214 ($M = 1443$, $SD = 2155$, median = 391). The proportion of females in the samples ranged from 0% to 100% ($M = 57.9\%$, $SD = 36.3$, median = 54%). Samples were mostly recruited from the US ($k = 8$), with a smaller number of samples recruited from Canada ($k = 2$), New Zealand ($k = 2$), Australia ($k = 1$), and Spain ($k = 1$). Most studies ($k = 11$) were published between 2006 and 2012 and all employed cross-sectional designs. Many of the available studies were limited to physical violence ($k = 6$) or failed to identify or differentiate between types of violence ($k = 5$) and half of the studies ($k = 7$) failed to employ validated instruments to measure problem gambling and

IPV. Most studies employed samples of problem gamblers ($k = 4$), with smaller proportions using IPV samples ($k = 3$) and community samples ($k = 3$). Four studies employed other types of samples (e.g., cohort, substance use, emergency department).

Table 1
Summary of included studies examining the relationship between problem gambling and IPV victimisation

Study	Country	Violence type	Sample type	Sample size	Gender (% female)	Measure of PG	Measures of IPV	Associated factors investigated
Afifi et al. (2010)	US	Physical	Nationally representative	3334	Not specified	DSM-IV criteria (lifetime)	Conflict Tactics Scale Physical Assault subscale items (lifetime)	Lifetime mental disorders (Composite International Diagnostic Interview)
Echeburua et al. (2011)	Spain	Not specified	Problem gambling treatment services	103	49.5%	DSM-IV criteria	Not specified (current)	Socio-demographic factors (age, educational level, marital status, employment status, socio-economic level) Alcohol abuse (Alcohol Use Disorders Identification Test) State anxiety (State-Trait Anxiety Inventory) Depression (Beck Depression Inventory) Life adjustment (Inadaptation Scale) Impulsiveness (Barratt Impulsiveness Scale) Sensation seeking (Zuckerman Sensation Seeking Scale) Trait anxiety (State-Trait Anxiety Inventory) Self-esteem (Rosenberg Self-Esteem Scale)
Korman et al. (2008)	Canada	Physical, Psychological, and Sexual	Convenience sample of problem gamblers recruited via newspaper advertisements	248	17.3%	Problem Gambling Severity Index (current)	Conflict Tactics Scale-2 (current)	Socio-demographic factors (gender) Substance use (single items) Substance use disorder (DSM-IV criteria) Anger problems (State-Trait Anger Expression Inventory II)
Raylu & Oei (2009)	Australia	Not specified	Problem gambling treatment services	440	49.0%		Interview (current)	
Schluter et al. (2007)	New Zealand	Physical	Parents of Pacific infant cohort born at hospital in South Auckland (6 week postpartum)	818	100%	Self-developed items (current)	Conflict Tactics Scale Physical Assault subscale (current)	

Schluter et al. (2008)	New Zealand	Physical	Parents of Pacific infant cohort born at hospital in South Auckland (24 month postpartum)	1377	49.5%	South Oaks Gambling Screen-R (paternal); Self-developed items (maternal) (current)	Conflict Tactics Scale Physical Assault subscale (current)	Paternal problem drinking (Alcohol Use Disorders Identification Test) Maternal problem drinking (Screening for Problem Drinking: Quantity/Frequency Questionnaire)
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Table 2

Summary of included studies examining the relationship between problem gambling and IPV perpetration

Study	Country	Violence type	Sample type	Sample size	Gender (% female)	Measure of PG	Measures of IPV	Associated factors investigated
Afifi et al. (2010)	US	Physical	Nationally representative	3334	Not specified	DSM-IV criteria (lifetime)	Conflict Tactics Scale Physical Assault subscale items (lifetime)	Socio-demographic factors (gender) Lifetime mental disorders (Composite International Diagnostic Interview)
Bland et al. (1993)	Canada	Physical	Community representative	7214	60.9%	Diagnostic Interview Schedule (lifetime)	Self-developed items	
Brasfield et al. (2012)	US	Physical, Psychological, and Sexual	Court-mandated batterer intervention programs	341	0%	South Oaks Gambling Screen (lifetime)	Conflict Tactics Scale-2	Hazardous drinking (defined as scoring 8 or higher on the Alcohol Use Identification Test) Drug use problems (Drug Use Identification Test) Impulsivity (Impulsivity subscale of the Eysenck Impulsiveness Questionnaire) Relationship satisfaction (Short Marital Adjustment Test)
Brasfield et al. (2011)	US	Physical, Psychological, and Sexual	Court-mandated batterer intervention programs	92	100%	South Oaks Gambling Screen (lifetime)	Conflict Tactics Scale-2	Hazardous drinking (defined as meeting 1 or more of the following 3 criteria: scoring 8 or higher on the Alcohol Use Identification Test, drinking 4 or more drinks on one occasion on a monthly or more frequent basis, or being intoxicated on a monthly or more frequent basis)
Goldstein et al. (2009)	US	Physical	Adolescents presenting to emergency department	1128	54.1%	Items adapted from the Ontario Student Drug Use Survey (current)	Modified Conflict in Adolescent Dating Relationships Inventory (Physical Abuse/Aggression subscale)	

Korman et al. (2008)	Canada	Physical, Psychological, and Sexual	Convenience sample of problem gamblers recruited via newspaper advertisements	248	17.3%	Problem Gambling Severity Index (current)	Conflict Tactics Scale-2 (current)	Socio-demographic factors (gender) Substance use (single items) Substance use disorder (DSM-IV criteria) Anger problems (State-Trait Anger Expression Inventory II)
Lorenz & Shuttlesworth (1983)	US	Physical or psychological	Gam-Anon members	144	98.0%		Self-developed items	
Liao (2008)	US	Physical	Chinese community members recruited from social service agencies with gambling treatment programs	31	74.2%	South Oaks Gambling Screen	Conflict Tactics Scale Physical Assault subscale (current)	
Muelleman et al. (2002)	US	Physical or psychological	Emergency department	237	100%	South Oaks Gambling Screen	Interview self-developed items (lifetime)	Socio-demographic factors (age, employment, race/ethnicity, education) Problem drinking (CAGE)
Rothman et al. (2006)	US	Not specified	Court-mandated batterer intervention programs	4701	0%	Item adapted from state Behavioral Risk Factor Surveillance Surveys (lifetime)		

Co-occurrence of problem gambling and IPV

We provided a narrative description of all available literature providing empirical evidence of the co-occurrence between problem gambling and IPV according to sample type, with studies employing problem gambling samples (including pathological gamblers and the family members of problem or pathological gamblers) provided first, followed by studies employing IPV samples, community samples, and other types of samples (such as emergency room, substance abuse, or cohort samples).

Problem gambling and IPV victimisation

In the systematic search, we identified six studies exploring the relationship between problem gambling and IPV victimisation. Three of these studies employed problem gambling samples (Echeburua, Gonzalez-Ortega, de Corral, & Polo-Lopez, 2011; Korman et al., 2008; Raylu & Oei, 2009), one employed a community sample (Afifi et al., 2010), and two employed other types of samples (cohort samples) (Schluter, Abbott, & Bellringer, 2008; Schluter, Bellringer, & Abbott, 2007).

Problem gambling samples. The three problem gambling studies provided prevalence estimates of IPV victimisation in problem gambling samples (Echeburua et al., 2011; Korman et al., 2008; Raylu & Oei, 2009). Using the Conflict Tactics Scale (CTS)-2 in a convenience sample of 248 predominantly male problem gamblers (scoring six or more on the Problem Gambling Severity Index [PGSI]) in Canada, Korman et al. (2008) found that 60% reported past year IPV victimisation (physical assault, injury, and/or sexual coercion). Specifically, 49% reported physical assault, 17% reported injury, 38% reported sexual coercion, and 75% reported psychological aggression. The other two studies investigated the prevalence of IPV among a range of other factors in treatment-seeking problem gamblers. Raylu and Oei (2009) found that 7% of 440 outpatient problem gamblers in Australia endorsed current “spouse

assault” during in-depth clinical interviews. Similarly, Echeburua et al. (2011), in an exploration of gender differences among 103 outpatient pathological gamblers in Spain, found that 69% of female pathological gamblers reported being “victims of IPV now or in the recent past”, a rate that is ten times higher than that for women in the general population. Although the authors of this study indicate that IPV victimisation included dating and marital violence, no information was provided on how IPV victimisation was measured and no prevalence estimates were provided for male pathological gamblers.

Community samples. Only one study provided data relating to the relationship between problem gambling and IPV victimisation using a community sample (Afifi et al., 2010). Using the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) to measure gambling problems and the physical assault items of the CTS to measure lifetime dating and marital violence, this study employed data drawn from the US National Comorbidity Survey replication from 3334 participants. After adjusting for socio-demographic factors, pathological gambling (5 to 10 DSM-IV criteria) was associated with increased odds of minor dating violence (OR = 4.7), minor marital violence (OR = 10.8), and severe marital violence (OR = 39.3), while problem gambling (1 to 4 DSM-IV criteria) was associated with increased odds of minor dating violence (OR = 2.7) and severe dating violence (OR = 3.4).

Other samples. Two studies examined the association between maternal gambling and IPV physical victimisation in different waves of the same cohort study of Pacific infants born at a South Auckland hospital over a nine month period (the Pacific Islands Families study) (Schluter et al., 2007, 2008). In both studies, past year maternal physical IPV victimisation was measured using the CTS and past year maternal problem gambling was measured using a trichotomous variable: those who did not gamble; those who did gamble but were not criticised; and those who gambled and were criticised. The first study employed data from a 6-week postpartum interview of 821 mothers in an intimate relationship. There were no significant

differences in physical IPV between non-gambling mothers (23%), mothers who gambled but were not criticised (24%) (OR = 0.7), and mothers who gambled and were criticised (30%) (OR = 0.9), after adjusting for a range of socio-demographic and comorbidity variables.

The second Pacific Islands Families study (Schluter et al., 2008) employed data from the 24-month post-partum interview to explore the relationship between problem gambling and IPV physical victimisation between both partners within an intimate relationship. In a sample of 700 mothers and fathers, paternal problem gambling over the previous six months was measured using the South Oaks Gambling Screen-Revised (SOGS-R). Across mothers and fathers, the rate of any physical IPV victimisation for problem gamblers was 22% compared to 29% for non-problem gamblers and 36% for non-gamblers. There were, however, no associations between paternal and/or maternal problem gambling and any physical IPV victimisation. Interestingly, in these Pacific Islands Families studies (Schluter et al., 2007, 2008), the rates of any IPV physical victimisation for families with parental problem gambling were still high, but not relative to the control group without parental problem gambling. The authors suggested that these null findings may be a product of the non-standardised maternal problem gambling measure and the small sample of identified problem gamblers.

Problem gambling and IPV perpetration

In the systematic search, we identified 10 studies that explored the relationship between problem gambling and the perpetration of IPV. Two of these studies employed problem gambling samples (Korman et al., 2008; Lorenz & Shuttlesworth, 1983), three employed IPV samples (Brasfield et al., 2012; Brasfield, Shorey, Febres, Strong, & Stuart, 2011; Rothman, Johnson, & Hemenway, 2006), three employed community samples (Afifi et al., 2010; Bland et al., 1993; Liao, 2008), and two employed other types of samples (i.e., emergency room

samples) (Goldstein, Walton, Cunningham, Resko, & Duan, 2009; Muelleman, DenOtter, Wadman, Tran, & Anderson, 2002).

Problem gambling samples. One study employed a convenience sample of problem gamblers (Korman et al., 2008), while another employed a sample of intimate partners of problem gamblers (Lorenz & Shuttlesworth, 1983). Korman et al. (2008) found that 56% of 248 problem gamblers in Canada reported IPV perpetration (physical assault, injury, and/or sexual coercion) on the CTS-2. Specifically, 41% reported physical assault, 27% reported injury, 32% reported sexual coercion, and 74% reported psychological aggression. Lorenz and Shuttlesworth (1983) found that 43% of 144 Gam-Anon members (support organisation for the family and friends of gamblers) in the US reported in interviews that they had been “emotionally, verbally, or physically abused by their gambling partner or spouse”.

IPV samples. Three studies explored the relationship between problem gambling and IPV perpetration in individuals court-mandated to attend batterer intervention programs (BIPs) in the US (Brasfield et al., 2011, 2012; Rothman et al., 2006). In the first study, Rothman et al. (2006) analysed the interview data from the entire population of 4701 males entering 48-hour BIPs in Massachusetts over a three year period. Although the findings revealed that 1.4% of the sample reported lifetime problem gambling on a single item adapted from that used in Iowa State Behavioral Risk Factor Surveillance Surveys, the authors make no comment about how high these rates are relative to the general population.

Brasfield and colleagues conducted two studies with individuals who were court-mandated to BIPs in Rhode Island using the lifetime SOGS to assess problem gambling and the CTS-2 to assess IPV perpetration (psychological aggression, physical assault, and sexual coercion) (Brasfield et al., 2011, 2012). In the first study, Brasfield et al. (2011) found that 5% of 92 female IPV offenders were classified as pathological gamblers (SOGS scores of 5+) with an additional 19% having some degree of problem gambling (SOGS scores of 1 to 4). In the

second study, Brasfield et al. (2012) found that 9% of 341 men referred to BIPs were classified as pathological gamblers (SOGS scores of 5+) and that an additional 8% were classified as problem gamblers (SOGS scores of 3+). In both studies, the rate of lifetime gambling problems was over-represented relative to the general population.

Community samples. Three studies provided data relating to the relationship between problem gambling and IPV perpetration using community samples (Afifi et al., 2010; Bland et al., 1993; Liao, 2008). An early study of 7214 randomly selected household residents conducted to investigate the prevalence of pathological gambling in Alberta found that 23% of individuals diagnosed as pathological gamblers using the Diagnostic Interview Schedule reported “hitting or throwing things more than once at spouse or partner” (Bland et al., 1993). This finding is difficult to interpret, however, as this rate was not compared to the rest of the sample. Liao (2008) reported on the IPV victimisation experiences of 31 Chinese “community members” in intimate relationships recruited from US social service agencies providing treatment for problem gamblers and their families. Participants whose partners were problem gamblers and participants whose partners were not problem gamblers were purposively recruited into the study. Despite the small sample size, problem gambling of intimate partners (measured by a cut-off of 10 on participant-completed SOGS) was a significant predictor of past year IPV victimisation (measured using the CTS Physical Violence subscale), with participants whose partners were problem gamblers being 28 times more likely to experience IPV victimisation.

More recently, Afifi et al. (2010) used the 3334 participants in the US National Comorbidity Survey replication to explore the relationship between gambling problems (measured by DSM-IV criteria) and lifetime dating and marital violence (assessed using several CTS physical assault items). After adjusting for socio-demographic variables, pathological gambling (5 to 10 DSM-IV criteria) was associated with increased odds of perpetrating minor dating violence (OR = 5.7), severe dating violence (OR = 11.9), and severe marital violence

(OR = 20.4), while problem gambling (1 to 4 DSM-IV criteria) was associated with increased odds of perpetrating minor dating violence (OR = 2.2) and severe dating violence (OR = 4.2).

Other samples. Finally, two studies investigated the relationship between problem gambling and IPV perpetration using samples recruited from emergency departments (Goldstein et al., 2009; Muelleman et al., 2002). Goldstein et al. (2009) reported on the past year gambling participation and frequency of moderate and severe dating physical aggression (using a modified version of the Conflict in Adolescent Dating Relationships Inventory) of 1128 adolescents aged from 14 to 18 years presenting to a US inner-city emergency department. Participants who reported perpetrating severe dating violence (35%) (OR = 1.90), but not participants who reported perpetrating moderate dating violence (16%) (OR = 0.68), were significantly more likely to gamble than those with no violence (22%).

Muelleman et al. (2002) investigated whether problem gambling in the intimate partner of 237 emergency department female patients in North America was a risk factor for IPV perpetration by the partner. In this study, intimate violence was defined as either physical injury inflicted purposely by the partner, or excessive stress or fear related to threats or violent behaviour of the intimate partner. Problem gambling in the partner was measured using participant-completed SOGS. Partners who perpetrated IPV (23%) were more likely to be classified as problem gamblers than partners who did not perpetrate IPV (3%). Compared to women who reported that their partner was neither a problem gambler nor a problem drinker, the relative odds of experiencing IPV were significantly higher for women whose partners were problem gamblers but not problem drinkers (OR = 10.5). This is a higher odds ratio than for women whose partners were problem drinkers but not problem gamblers (OR = 6.1). Approximately two-thirds (64%) of participants who had experienced IPV and had a problem gambling partner believed there was an association between the two problem behaviours.

Meta-analyses

We synthesised the findings from primary studies in a series of meta-analyses to provide an estimate of the prevalence of IPV victimisation and perpetration in problem gambling samples and problem gambling in IPV victimisation and perpetration samples. There were only sufficient studies to conduct a meta-analysis for physical IPV victimisation ($k = 4$) and perpetration ($k = 4$) in problem gamblers (across problem gambling, community, and cohort samples), as well as problem gambling in IPV perpetrators ($k = 4$) (across IPV perpetration and emergency department samples) (Table 3). We identified a weighted mean effect of 38.1% for physical IPV victimisation in problem gambling samples, 36.5% for physical IPV perpetration in problem gambling samples, and 11.3% for problem gambling in IPV perpetration samples. These estimates were associated with moderate to very high between-study heterogeneity. There were insufficient studies to provide estimates for other forms of IPV victimisation or perpetration (e.g., sexual or psychological violence) in problem gambling samples or problem gambling in IPV victimisation samples. There were also insufficient studies to provide separate estimates for individuals recruited from problem gambling services, offender populations, the community, and other sources.

Table 3
Prevalence estimates of physical IPV violence and problem gambling across included studies

Study	Measure	Sample type	Physical IPV victimisation in problem gambling samples	Physical IPV perpetration in problem gambling samples	Problem gambling in IPV perpetration samples
Afifi et al. (2010)	CTS ^a Physical Assault subscale items	Community	40.3%	31.5%	
Bland et al. (1993)	Self-developed items	Community		23.3%	
Brasfield et al. (2011)	SOGS ^b	IPV perpetration			23.9%
Brasfield et al. (2012)	SOGS ^b	IPV perpetration			17.0%
Korman et al. (2008)	CTS ^{a-2} Physical Assault subscale	Problem gambling	48.8%	40.7%	
Muelleman et al. (2002)	SOGS ^b	Other (emergency department)			23.0%
Rothman et al. (2006)	Item adapted from BRFSS ^c survey	IPV perpetration			1.4%
Schluter et al. (2007)	CTS ^a Physical Assault subscale	Other (cohort)	30.0%		
Schluter et al. (2008)	CTS ^a Physical Assault subscale	Other (cohort)	21.7%		
Summary effect (95% CI)			38.1%	36.5%	11.3%
			(28.6-48.5)	(25.8-43.4)	(2.2-41.6)
<i>I</i> ² (%)			72.95	64.69	98.93

^aCTS: Conflict Tactics Scale; ^bSOGS: South Oaks Gambling Screen; ^cBRFSS: Behavioral Risk Factor Surveillance Surveys

Factors associated with the relationship between problem gambling and IPV

In the systematic search, we identified studies that investigated factors that may influence the relationship between problem gambling and IPV victimisation and perpetration. These included socio-demographic factors, alcohol and drug use problems, psychiatric comorbidity, personality traits, and relationship adjustment. We excluded studies in which the unique contribution of factors within these domains could not be ascertained due to the inclusion of factors from other domains from this review.

Problem gambling and IPV victimisation

Socio-demographic factors. Two studies of problem gamblers (Echeburua et al., 2011; Korman et al., 2008) empirically explored the role of socio-demographic factors in the relationship between problem gambling and IPV victimisation. Korman et al. (2008) found no gender differences in past year IPV victimisation (physical assault, injury, sexual coercion, psychological aggression) in a convenience sample of problem gamblers. Although Echeburua et al. (2011) reported that age, educational level, and employment status (but not marital status and socio-economic level) were significantly associated with IPV victimisation in bivariate correlations for female pathological gamblers, they did not provide any information on the direction of these relationships. They did, however, indicate that being retired and in “prolonged low” employment (no definition provided) were independently associated with IPV victimisation when these significant predictors were entered into a logistic regression model.

Alcohol and drug use problems. Three studies have found that alcohol and substance use problems do not influence the relationship between problem gambling and IPV victimisation (Echeburua et al., 2011; Korman et al., 2008; Schluter et al., 2008). Korman et al. (2008) reported no significant relationships between past year IPV victimisation (physical

assault, injury, sexual coercion, and psychological aggression) and multiple indices of past month substance use or current or lifetime substance use disorder in their convenience sample of problem gamblers. Similarly, Echeburua et al. (2011) found no relationship between IPV victimisation and alcohol abuse in a bivariate correlation in their sample of female pathological gamblers. Moreover, the findings from the second Pacific Islands Families study (Schluter et al., 2008) revealed that there were no associations between paternal and/or maternal problem gambling and any or severe physical IPV victimisation before or after accounting for the effect of paternal and/or maternal problem drinking.

Psychiatric comorbidity. Three studies explored the role of psychiatric comorbidity in the relationship between problem gambling and IPV victimisation (Afifi et al., 2010; Echeburua et al., 2011; Korman et al., 2008), with mixed findings. In a series of bivariate correlations in their sample of female pathological gamblers, Echeburua et al. (2011) found that IPV victimisation was not significantly associated with state anxiety, depression, or the extent to which gambling problems affect life adjustment. In contrast, Korman et al. (2008) found that more problem gamblers in their convenience sample than expected with clinically significant anger problems reported being victims of IPV (physical assault, and/or sexual coercion). Finally, one community study explored the degree to which psychiatric disorders influence the relationship between problem gambling and IPV victimisation by including them as covariates in its analyses (Afifi et al., 2010). The findings revealed that the relationships between problem and pathological gambling and IPV (dating and marital) were attenuated after adjusting for lifetime mental disorders. This study, however, was unable to identify the unique contribution of specific psychiatric comorbidities.

Personality traits. Only one study explored the role of personality traits in the relationship between problem gambling and IPV victimisation (Echeburua et al., 2011). This

study found no significant correlations between IPV victimisation and impulsiveness, sensation seeking, trait anxiety, or self-esteem in female pathological gamblers.

Problem gambling and IPV perpetration

Socio-demographic factors. Two studies empirically investigated the role of gender in the relationship between problem gambling and IPV perpetration (Afifi et al., 2010; Korman et al., 2008). Korman et al. (2008) found that while there were no gender differences in physical assault, injury, or sexual coercion IPV, women (49%) were more likely than men (22%) to report injury perpetration. Specifically, 42% of women and 21% of men reported minor injury perpetration and 28% of women and 7% of men reported severe injury perpetration. In contrast, Afifi et al. (2010) found that gender failed to moderate the relationships between problem gambling severity and the perpetration of minor or severe physical dating violence and minor and severe physical marital violence in their large community study.

Only one study empirically explored the role of other socio-demographic factors in the relationship between problem gambling and IPV perpetration (Muelleman et al., 2002). In this study, intimate partners of female emergency department patients who had perpetrated IPV were younger and less likely to be fully employed than intimate partners who did not perpetrate IPV. There were, however, no differences in the race/ethnicity or education level of the intimate partners who did and did not perpetrate IPV.

Alcohol and drug use problems. Four studies investigated the influence of alcohol and substance use problems in the relationship between problem gambling and IPV perpetration (Brasfield et al., 2011, 2012; Korman et al., 2008; Muelleman et al., 2002). With one exception (Korman et al., 2008), their findings indicate that alcohol and substance use problems exacerbate the relationship between problem gambling and IPV perpetration. Korman et al. (2008) reported no significant relationships between past-year IPV perpetration (physical

assault, injury, sexual coercion, and psychological aggression) and multiple indices of reported substance use in the past 30 days or either current or lifetime substance use disorder in their convenience sample of problem gamblers.

In contrast, Muelleman and colleagues' (2002) study of IPV victimisation in female emergency department patients found the relative odds of experiencing IPV were much higher for women whose intimate partners were both problem gamblers and problem drinkers (OR = 50.0) compared to women whose partners only had gambling problems (OR = 10.1). Of the ten female emergency partners with both problem gambling and problem drinking, 60% reported an association between their partners' problem gambling and the IPV and 90% reported an association between their partners' problem drinking and the IPV.

Brasfield et al.'s studies of female (Brasfield et al., 2011) and male (Brasfield et al., 2012) IPV offenders suggest a complicated relationship between problem gambling, problem drinking, drug use, and IPV perpetration. The findings from Brasfield's (2011) study of female IPV offenders revealed that 60% of female pathological gamblers (scores of 5+ on the SOGS) and 53% of female problem gamblers (scores of 1 to 4 on the SOGS) met criteria for hazardous drinking. In a more detailed examination of these relationships in male IPV offenders, Brasfield et al. (2012) found that alcohol use problems were positively associated with both problematic gambling behaviour and perpetration of IPV (psychological, physical, and sexual aggression) in male offenders. Pathological gamblers scored significantly higher on alcohol use problems than non-pathological gamblers and hazardous drinkers scored significantly higher on the SOGS than non-hazardous drinkers. Further, over half (53%) of pathological gamblers met criteria for hazardous drinking. Lifetime SOGS scores independently predicted sexual aggression, but not psychological and physical abuse, after controlling for impulsivity, relationship satisfaction and alcohol use problems. Moreover, SOGS scores remained independently associated with sexual aggression, even after adding drug use problems to the statistical analysis.

Psychiatric comorbidity. Only one study has explored the role of a specific psychiatric comorbidity in the relationship between problem gambling and the perpetration of IPV. Korman et al. (2008) found that more problem gamblers in their convenience sample than expected with clinically significant anger problems reported being perpetrators of IPV (physical assault, and/or sexual coercion). Afifi et al. (2010) found that the relationships between problem and pathological gambling and IPV perpetration (dating and marital) were attenuated when adjusted for lifetime mental disorders but was unable to elucidate the unique contribution of specific types of comorbidities.

Personality traits. Only one study explored the role of personality traits in the relationship between problem gambling and IPV perpetration (Brasfield et al., 2012). This study found that impulsivity was positively associated with both problem gambling behaviour and IPV perpetration (psychological, physical, and sexual aggression) in male batterers.

Relationship adjustment. Brasfield et al. (2012) also found that although relationship satisfaction was not associated with problem gambling behaviour, it was negatively associated with all forms of IPV perpetration (psychological, physical, and sexual aggression).

Discussion

Problem gambling and IPV victimisation

In this review, we identified study findings that suggest disproportionately high rates of IPV victimisation in problem gambling samples (Echeburua et al., 2011; Korman et al., 2008) and a significant association between problem gambling and IPV victimisation in community samples (Afifi et al., 2010). We also, however, identified some equivocal findings, with some studies finding relatively lower rates of IPV victimisation in problem gamblers (Raylu & Oei, 2009) or failing to find a significant association between problem gambling and IPV victimisation in cohort studies (Schluter et al., 2007, 2008). These null findings, however, have

been attributed to inherent limitations of the methodology, rather than the absence of a true association (Schluter et al., 2008). Through meta-analysis, we revealed that the prevalence of physical IPV victimisation reported by problem gamblers (across problem gambling, community, and cohort samples) was 38%. Future research is required to provide prevalence estimates of different types of IPV victimisation in problem gambling samples and problem gambling in IPV victimisation samples. Moreover, it will be desirable for future reviews to provide separate estimates for samples of problem gamblers recruited from treatment-seeking, community, and other sources as research in this emerging field accumulates.

The precise nature of the relationship between problem gambling and IPV victimisation remains unknown. Although it is likely that the relationship is extremely complex (Raylu & Oei, 2009), several possible explanations have been posited. A commonly held view is that IPV victimisation may be causally related to the development of gambling problems, whereby some people gamble as a mechanism to cope with IPV victimisation (Afifi et al., 2010; Cunningham-Williams et al., 2007; Echeburua et al., 2011; Kausch et al., 2006; Korman et al., 2008). This view suggests that women, in particular, are likely to employ gambling as a way to physically or emotionally escape victimisation experiences of IPV (Cunningham-Williams et al., 2007; Echeburua et al., 2011). Given evidence that gambling is sometimes employed to regulate mood or cope with stress by a subgroup of individuals (Francis, Dowling, Jackson, Christensen, & Wardle, 2014), a history of abuse causing distress may precede and contribute to a vulnerability for, and subsequent development of, problem gambling for a proportion of problem gamblers (Kausch et al., 2006).

Alternatively, it is possible that IPV victimisation is a direct or indirect result of gambling problems. It is possible that gambling-related stressors, such as the loss of family financial resources, abdication of family role responsibilities, mistrust, and poor communication may result in chronic family stress, domestic conflict, and the perpetration of

violence by intimate partners (Echeburua et al., 2011; Korman et al., 2008). This perspective is consistent with stress and coping frameworks that posit that emotional distress and relationship difficulties in the intimate partner and family can be attributed to the gambling-related stressors exceeding available family coping resources (Krishnan & Orford, 2002; Orford, Templeton, Velleman, & Copello, 2005). Our recent preliminary findings from a sample of family members of problem gamblers that problem gambling precedes the victimisation of problem gamblers by family members supports this perspective (Suomi et al., 2013).

Regardless of the temporal relationship, it is likely that the relationship between problem gambling and the experience of IPV involves a cyclical process, where one behaviour serves to exacerbate the other. It is, of course, also possible that some common underlying “third factor”, such as a history of victimisation, anger problems, emotion dysregulation, impulsivity, and psychiatric comorbidity, lead to a greater risk for problem gambling and IPV victimisation (Korman et al., 2008).

These hypothesised relationships imply that a range of variables may be involved in the association between problem gambling and IPV victimisation. In the current review, we identified study findings that suggest that the relationship between problem gambling and IPV victimisation may be exacerbated by less than full employment status (Echeburua et al., 2011) and clinical anger problems (Korman et al., 2008), but not gender (Korman et al., 2008), marital status (Echeburua et al., 2011), socio-economic level (Echeburua et al., 2011), alcohol and drug use problems (Echeburua et al., 2011; Korman et al., 2008; Schluter et al., 2008), state anxiety, depression, life adjustment, impulsiveness, sensation-seeking, trait anxiety, or self-esteem (Echeburua et al., 2011). These factors may cause variation in gambling problems, may be varied by the victimisation of IPV, or may mediate the direct relationship between problem gambling and IPV victimisation (Afifi et al., 2010; Korman et al., 2008). Given the limited

available research findings, however, further evidence is needed to elucidate the exact nature of the relationship between problem gambling and IPV victimisation.

Problem gambling and IPV perpetration

In this review, we found that problem gambling is consistently associated with the perpetration of IPV. We identified evidence of high rates of IPV perpetration in problem gamblers (Bland et al., 1993; Korman et al., 2008; Lorenz & Shuttlesworth, 1983), high rates of problem gambling in samples of batterers (Brasfield et al., 2011, 2012; Muelleman et al., 2002), and significant associations between problem gambling and IPV perpetration in community and other samples (Afifi et al., 2010; Bland et al., 1993; Goldstein et al., 2009; Liao, 2008; Muelleman et al., 2002). Only one study found a relatively low rate of problem gambling in a batterer sample (Rothman et al., 2006). We conducted a series of meta-analysis in the current review that revealed that the prevalence of physical IPV perpetration reported by problem gamblers was 37% and the prevalence of problem gambling in IPV perpetrators was 11%. As research accumulates, these estimates will need to be separately reported according to recruitment source and report estimates for different types of IPV perpetration.

As for IPV victimisation, the exact nature of the association between problem gambling and the perpetration of IPV is not clearly understood. One hypothesis put forward to explain the relationship is that problem gambling directly or indirectly leads to IPV perpetration (Afifi et al., 2010; Brasfield et al., 2011; Korman et al., 2008; Muelleman et al., 2002). It has been suggested that gambling losses and other problems may result in the manifestation of stress, anger, and financial crisis within the home and lead to the perpetration of violence by the problem gambler against intimate partners (Afifi et al., 2010; Korman et al., 2008; Muelleman et al., 2002). Brasfield et al. (2011, 2012) posit that problem gambling may contribute to relationship distress and risk of alcohol abuse, which in turn may increase violent behaviours.

Our recent preliminary findings from a sample of family members of problem gamblers that problem gambling precedes the perpetration of violence by problem gamblers towards family members supports this perspective (Suomi et al., 2013).

A less commonly held view, however, is that problem gambling may be consequent to the perpetration of IPV (Brasfield et al., 2012; Korman et al., 2008). Brasfield et al. (2012) implicate alcohol in this relationship, suggesting that there may be any number of potential relationships between IPV perpetration, alcohol use, and gambling behaviour. For instance, IPV perpetration may lead to alcohol use and gambling behaviour or alternatively, gambling behaviour may be a result of a combination of IPV perpetration and alcohol use. In contrast, Korman et al. (2008) suggest that this relationship may be mediated, in part, by a need to regulate anger associated with the perpetration of IPV. Finally, as for IPV victimisation, some common underlying factors, such as a history of victimisation, anger problems, emotion dysregulation, impulsivity and/or psychiatric comorbidity, may be involved (Brasfield et al., 2012; Korman et al., 2008; Muelleman et al., 2002).

Although these hypothesised relationships imply that a range of variables may be involved in the association between problem gambling and IPV perpetration, research, to date, has investigated only some of these variables. In this review, we identified evidence that suggests that the relationship between problem gambling and IPV perpetration is associated with younger age (Muelleman et al., 2002), less than full employment (Muelleman et al., 2002), clinical anger problems (Korman et al., 2008) and impulsivity (Brasfield et al., 2012), but not race, education and relationship satisfaction (Brasfield et al., 2012; Muelleman et al., 2002). However, we identified inconsistent findings relating to gender (Afifi et al., 2010; Korman et al., 2008) and alcohol and substance use problems (Brasfield et al., 2011, 2012; Goldstein et al., 2009; Korman et al., 2008; Muelleman et al., 2002), indicating that further research is

necessary to enhance our understanding of the relationship between gambling problems and the perpetration of IPV.

Limitations of current research and suggestions for future research

In this review, we identified study findings that are suggestive of a relationship between the presence of problem gambling and IPV victimisation and perpetration. However, in the systematic search, we identified only a small number of studies that provided data relating to violence perpetrated by or towards family members beyond intimate partners. Specifically, we identified only two studies exploring the relationship between problem gambling and child maltreatment victimisation (Afifi et al., 2010; Cunningham-Williams et al., 2007) and four studies exploring the relationship between problem gambling child maltreatment perpetration (Afifi et al., 2010; Bland et al., 1993; Lesieur & Rothschild, 1989; Lorenz & Shuttlesworth, 1983). The findings of these studies suggest that problem gamblers experienced high rates of childhood abuse by family members and perpetrate high rates of violence towards their children (Bland et al., 1993; Cunningham-Williams et al., 2007; Lesieur & Rothschild, 1989; Lorenz & Shuttlesworth, 1983), and that there are significant associations between problem gambling and child maltreatment victimisation and perpetration in community samples (Afifi et al., 2010; Bland et al., 1993). Indeed, we conducted a meta-analysis from these studies (Afifi et al., 2010; Bland et al., 1993; Lesieur & Rothschild, 1989) that revealed that the prevalence of perpetrating physical child maltreatment by problem gamblers (across problem gambling and community studies) was 56.0% (95% CI 26.2–82.1, $I^2 = 93.34\%$).

We identified even fewer studies exploring family violence that extends beyond intimate partners and children in the systematic search (Kausch et al., 2006; Raylu & Oei, 2009). Although Raylu and Oei (2009) found that 20% of treatment-seeking problem gamblers endorsed a “recent experience of family violence or intimidation”, there was no information on

the type of violence or which family members perpetrated the violence. In contrast, Kausch et al. (2006) attempted to identify the family members and others involved in the lifetime abuse histories of 111 treatment-seeking pathological gamblers. A lifetime history of abuse was reported by 64% of pathological gamblers (57% emotional abuse, 41% physical abuse, 24% sexual abuse). Abuse most commonly occurred in childhood (92%) and was perpetrated by parents. Although the definitions, specificities, and methodologies of these studies vary dramatically, they suggest that family members of problem gamblers other than intimate partners perpetrate and experience violence. However, it is difficult to reach conclusions about the extent or nature of this violence on the limited available evidence. Further research is therefore required to provide information about the relationship between problem gambling and violence that extends into the family beyond intimate partners.

We identified several other limitations in the available evidence base exploring the relationship between problem gambling and IPV. First, consistent with the IPV literature more generally, many of the available studies are limited to physical violence, fail to identify or differentiate between types of violence, and measure purely acontextual acts of IPV. As previously discussed, this type of measurement can lead to failure to consider perpetrator motivations for violence, forms and levels of abuse, repetition of violence, severity of abuse, and the impacts on victims (Braaf & Meyering, 2013; Taft et al., 2001). Further research is therefore required to explore other elements of IPV, including financial, sexual, emotional, and neglectful harm, using both 'acts based' and contextual measurement.

Second, most studies are conducted in treatment-seeking problem gambling samples, which may not be representative of problem gamblers in the community. The use of these samples also means that the relationship between the problem behaviours cannot be explored across the full spectrum of problem gambling severity. While population-based surveys, however, provide results that are representative of problem gamblers in the community, they

generally only yield very small numbers of problem gamblers, which can result in underpowered models. Interestingly, there were no investigations of problem gambling in IPV victimisation samples included in this review. Since then, we have conducted research that suggests that the prevalence of problem gambling in an Australian family violence victimisation sample is 2.2% (Dowling et al., 2014), which is 2 to 4 times higher than in the Australian population (Jackson, Wynne, Dowling, Tomnay, & Thomas, 2010). Moreover, most studies fail to employ an appropriate control group or refer to the rates of problem gambling and IPV in the general population. Future research is therefore required to triangulate findings from both population-representative and treatment-seeking samples with appropriate comparison groups. Moreover, the recruitment of most samples from the US may have also compromised the representativeness of the findings. Research investigating the relationship between problem gambling and IPV from other jurisdictions, as well as cross-jurisdictional and -cultural comparisons, is required.

Third, because many of the included studies do not employ validated instruments to measure problem gambling and/or IPV, the validity and reliability of the employed measures may have affected the ability to correctly classify study populations. Moreover, although there are some concerns about the levels of disclosure and concordance between partners when gathering IPV data (Heise & Garcia Moreno, 2002; Schluter, Paterson, & Feehan, 2007), none of the included studies examined collateral reports of problem gambling or IPV from partners or other family members. The use of standardised measures and the use of valid measures with collateral reports from significant others will be important in methodologically improving future studies in this important area of research.

Finally, to date, there are no studies exploring the possible reciprocity or bidirectionality in IPV (McQueen, 2011; Suomi et al., 2013) in the context of problem gambling or the temporal relationship between problem gambling and IPV. There is also only limited available

data that explain the mechanisms underpinning the relationship or the factors that magnify or attenuate the strength of the relationship. Further research is therefore required to investigate the contribution of possible mediators and moderators of the relationship between problem gambling and IPV. All available studies employ cross-sectional designs, which do not allow for inferences regarding causal associations among variables. There is also a reliance on retrospective study designs that may introduce recall and reporting bias. Longitudinal analyses are needed to determine the directionality and potential causal mechanisms of these relationships. Particularly, event-level analyses of gambling and violence experiences would provide specific information concerning the proximal relationships between these variables. The in-depth, contextualised, and natural insights provided by qualitative research may also complement the available quantitative data to provide an enhanced understanding of the nature of the relationship between problem gambling and IPV.

Clinical implications

Understanding the relationship between problem gambling and IPV has important public health implications. The finding that there is a relationship between gambling problems and various types of violence can inform specific approaches to prevention and intervention efforts and responsible gambling and violence prevention policies (Afifi et al., 2010; Echeburua et al., 2011; Korman et al., 2008). The findings of this review suggest that prevention efforts to reduce even minor gambling problems may be necessary (Afifi et al., 2010). Effective prevention approaches tailored to each type of violence may be required (Afifi et al., 2010). To date, however, very little attention has been given to such prevention efforts.

The findings of this review highlight the need for routine screening of IPV in problem gambling services, and conversely, the routine screening of gambling problems in IPV services (Echeburua et al., 2011; Korman et al., 2008). While the number of brief screening instruments

for problem gambling has increased in the last several years, the complexity of IPV presentations is poorly captured by current screening instruments that tend to comprise too many items to be usefully employed in screening or focus on victimisation experiences (Rabin, Jennings, Campbell, & Bair-Merritt, 2009). The lack of standardised measures is even more pronounced for the measurement of violence perpetrated by and towards family members other than intimate partners. Further development and validation of brief screens for violence extending beyond intimate partners and for perpetration experiences should be a focus for this area of research.

Effective referral and management protocols are required for treatment-seeking problem gamblers screening positive for IPV and for individuals attending IPV services screening positive for gambling problems (Echeburua et al., 2011; Kausch et al., 2006; Korman et al., 2008; Raylu & Oei, 2009). Treatment of either problem gambling or IPV could be complicated or even compromised by the presence of the other untreated condition. The finding that the presence of family violence victimisation may predict negative treatment outcomes (Raylu & Oei, 2007) highlights the importance of tailoring treatment for clients with both presenting issues. More intense treatment may be required for comorbid patients because they are likely to have more functional impairment and a poorer prognosis than are those with either condition alone (Kausch et al., 2006). Research defining the nature and intensity of interventions most effective for individuals displaying this complex comorbidity is required (Korman et al., 2008). The findings of this review also suggest that it is important to consider other psychiatric comorbidities, such as alcohol and substance use disorders and psychiatric comorbidity, in the development of these interventions (Afifi et al., 2010; Korman et al., 2008).

Conclusion

This is the first systematic review of the co-occurrence of problem gambling and IPV. In the systematic search, we identified only 14 studies that were eligible for inclusion. Although the findings of most available studies suggest that there is a significant relationship between problem gambling and IPV victimisation, there is a more consistent relationship between problem gambling and the perpetration of IPV. While the exact nature of the relationship between problem gambling and IPV is still to be determined, it is likely that several factors are involved. In this review, less than full employment and clinical anger problems are implicated in the relationship between problem gambling and IPV victimisation, while younger age, less than full employment, clinical anger problems, impulsivity, and alcohol and substance use are implicated in the relationship between problem gambling and IPV perpetration. Taken together, these findings can inform prevention and intervention approaches for these problem behaviours. Further research explicating the temporal and causal nature of the relationship between problem gambling and family violence, particularly that which extends beyond intimate partners and children, is required.

References

- Abramsky, T., Watts, C. H., Garcia-Moreno, C., Devries, K., Kiss, L., Ellsberg, M., ... Heise, L. (2011). What factors are associated with recent intimate partner violence? Findings from the WHO multi-country study on women's health and domestic violence. *BMC Public Health, 11*, 109-125.
- Afifi, T. O., Brownridge, D. A., MacMillan, H., & Sareen, J. (2010). The relationship of gambling to intimate partner violence and child maltreatment in a nationally representative sample. *Journal of Psychiatric Research, 44*(5), 331-337.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Bland, R. C., Newman, S. C., Orn, H., Stebelsky, G. (1993). Epidemiology of pathological gambling in Edmonton. *The Canadian Journal of Psychiatry / La Revue canadienne de psychiatrie, 38*(2), 108-112.
- Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. New York: Wiley.
- Braaf, R., & Meyering, I. B. (2013). *The gender debate in domestic violence: The role of data*. Sydney: Australian Domestic & Family Violence Clearinghouse.
- Brasfield, H., Febres, J., Shorey, R., Strong, D., Ninnemann, A., Elmquist, J., ... Stuart, G. L. (2012). Male batterers' alcohol use and gambling behavior. *Journal of Gambling Studies, 28*(1), 77-88.
- Brasfield, H., Shorey, R., Febres, J., Strong, D., & Stuart, G. L. (2011). Hazardous gambling among women court-mandated to batterer intervention programs. *American Journal on Addictions, 20*(2), 176-177.
- Capaldi, D. M., Knoble, N. B., Shortt, J. W., & Kim, H. K. (2012). A systematic review of risk factors for intimate partner violence. *Partner Abuse, 3*(2), 1-27.

- Cunningham-Williams, R. M., Abdallah, A. B., Callahan, C., & Cottler, L. (2007). Problem gambling and violence among community-recruited female substance abusers. *Psychology of Addictive Behaviors, 21*(2), 239-243.
- Desmarais, S. L., Reeves, K. A., Nicholls, T. L., Telford, R. P., & Fiebert, M. S. (2012). Prevalence of physical violence in intimate relationships, Part 2: Rates of male and female perpetration. *Partner Abuse, 3*(2), 170-198.
- Devries, K. M., Mak, J. Y. T., García-Moreno, C., Petzold, M., Child, J. C., Falder, G., ... Watts, C. H. (2013). The global prevalence of intimate partner violence against women. *Science, 340*, 1527-1528.
- Dowling, N. A. (2013). The cognitive-behavioural treatment of female problem gambling. In D. Richard, A. Blaszczynski, & L. Nower (Eds.). *The Wiley-Blackwell handbook of disordered gambling* (pp. 225-250). West Sussex: John Wiley and Sons, Ltd.
- Dowling, N. A., Cowlshaw, S., Jackson, A. C., Merkouris, S. S., Francis, K. L., & Christensen, D. R. (in press). Systematic review and meta-analysis of the prevalence of comorbid personality disorders in treatment-seeking problem gamblers. *Journal of Personality Disorders*.
- Dowling, N. A., Jackson, A. C., Suomi, A., Lavis, T., Koziol-McLain, J., Thomas, S. A., Patford, J., Harvey, P., Abbott, M., Bellringer, M. E., & Battersby, M. (2014). Problem gambling and family violence: Prevalence and patterns in help-seeking populations. *Addictive Behaviors, 39*, 1713-1717.
- Dowling, N. A., Rodda, S. N., Lubman, D. I., & Jackson, A. C. (2014). The impacts of problem gambling on concerned significant others accessing web-based counselling. *Addictive Behaviors, 39*(8), 1253-1257.
- Dowling, N., Smith, D., & Thomas, T. (2009). The family functioning of female pathological gamblers. *International Journal of Mental Health and Addiction, 7*(1), 29-44.

- Echeburua, E., Gonzalez-Ortega, I., de Corral, P., & Polo-Lopez, R. (2011). Clinical gender differences among adult pathological gamblers seeking treatment. *Journal of Gambling Studies*, 27(2), 215-227.
- Francis, K. L., Dowling, N. A., Jackson, A. C., Christensen, D. C., & Wardle, H. (2014). Gambling motives: Validation of the Reasons for Gambling Questionnaire in an Australian population survey. *Journal of Gambling Studies*. Available: Online First.
- Fulu, E., Jewkes, R., Roselli, T., & Garcia-Moreno, C. (2013). Prevalence and factors associated with male perpetration of intimate partner violence: Findings from the UN Multi-country Cross-sectional Study on Men and Violence in Asia and the Pacific. *Lancet Global Health*, 1, e187-207.
- Garcia-Moreno, C., Jansen, H. A. F. M., Ellsberg, M., Heise, L., & Watts, C. H. (2006). Prevalence of intimate partner violence: Findings from the WHO multi-country study on women's health and domestic violence. *Lancet*, 368(9543), 1260-1269.
- Goldstein, A. L., Walton, M. A., Cunningham, R. M., Resko, S. M., & Duan, L. (2009). Correlates of gambling among youth in an inner-city emergency department. *Psychology of Addictive Behaviors*, 23(1), 113-121.
- Heise L., & Garcia Moreno C. (2002). Violence by intimate partners. In E. G. Krug, L. L. Dahlberg, J. A. Mercy, A. B. Zwi, & R. Lorenzo (Eds.), *World report on violence and health* (pp. 87-121). Geneva: World Health Organization.
- Higgins, J. P. T., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analysis. *British Medical Journal*, 327, 557-560.
- Hodgins, D., Shead, N., & Makarchuk, K. (2007). Relationship satisfaction and psychological distress among concerned significant others of pathological gamblers. *Journal of Nervous and Mental Disease* 195(1), 65-71.

- Jackson, A. C., Wynne, H., Dowling, N. A., Tomnay, J. E., & Thomas, S. A. (2010). Using the CPGI to determine problem gambling prevalence in Australia: Measurement issues. *International Journal of Mental Health and Addiction, 8*(4), 570-582.
- Johansson, A., Grant, J. E., Kim, S. W., Odlaug, B. L., & Götestam, K. G. (2009). Risk factors for problematic gambling: A critical literature review. *Journal of Gambling Studies, 25*(1), 67-92.
- Kalischuk, R. G., Nowatzki, N., Cardwell, K., Klein, K., & Solowoniuk, J. (2006). Problem gambling and its impact on families: A literature review. *International Gambling Studies, 6*(1), 31-60.
- Kausch, O., Rugle, L., & Rowland, D. Y. (2006). Lifetime histories of trauma among pathological gamblers. *The American Journal on Addictions, 15*(1), 35-43.
- Korman, L. M., Collins, J., Dutton, D., Dhayanathan, B., Littman-Sharp, N., & Skinner, W. (2008). Problem gambling and intimate partner violence. *Journal of Gambling Studies, 24*(1), 13-23.
- Krishnan, M., & Orford, J. (2002). Gambling and the family from the stress-coping-support perspective. *International Gambling Studies, 2*, 61-83.
- Leiseur, H. R., & Rothschild, J. (1989). Children of Gamblers Anonymous members. *Journal of Gambling Behavior, 5*(4), 269-281.
- Liao, M. S. (2008). Intimate partner violence within the Chinese community in San Francisco: problem gambling as a risk factor. *Journal of Family Violence, 23*(8), 671-678.
- Lorains, F. K., Cowlishaw, S., & Thomas, S. A. (2011). Prevalence of comorbid disorders in problem and pathological gambling: systematic review and meta-analysis of population surveys. *Addiction, 106*(3), 490-498.

- Lorains, F., Stout, J. C., Bradshaw, J. L., Dowling, N. A., & Enticott, P. (2014). Self-reported impulsivity and inhibitory control in problem gamblers. *Journal of Clinical and Experimental Neuropsychology*, *36*(2), 144-157.
- Lorenz, V. C., & Shuttlesworth, D. E. (1983). The impact of pathological gambling on the spouse of the gambler. *Journal of Community Psychology*, *11*, 67-76.
- McQueen, D. (2011). Domestic violence is most commonly reciprocal. *The Psychiatrist Online*, *35*, 33.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Open Medicine*, *3* (3), 123-130.
- Muelleman, R. L., DenOtter, T., Wadman, M. C., Tran, T. P., & Anderson, J. (2002). Problem gambling in the partner of the emergency department patient as a risk factor for intimate partner violence. *Journal of Emergency Medicine*, *23*(3), 307-312.
- Neal, P., Delfabbro, P., & O'Neil, M (2005). *Problem gambling and harm: A national definition*. Adelaide, Australia: South Australia Centre for Economic Studies.
- Orford, J, Templeton, L, Velleman, R, & Copello, A. (2005). Family members of relatives with alcohol, drug and gambling problems: a set of standardized questionnaires for assessing stress, coping and strain. *Addiction*, *100*(11), 1611–1624.
- Rabin, R. F., Jennings, J. M., Campbell, J. C., & Bair-Merritt, M. H. (2009). Intimate partner violence screening tools. *American Journal of Preventative Medicine*, *36*(5), 439-445.
- Raylu, N & Oei, T. P. S. (2007). Factors that predict treatment outcomes in community treatment agency for problem gamblers, *International Journal of Mental Health and Addiction*, *5*(2), 165-176.
- Raylu, N., & Oei, T. P. S. (2009). Factors associated with the severity of gambling problems in a community gambling treatment agency. *International Journal of Mental Health and Addiction*, *7*, 124-137.

- Rothman, E. F., Johnson, R. M., & Hemenway, D. (2006). Gun possession among Massachusetts batterer intervention program enrollees. *Evaluation Review*, 30(3), 283-295.
- Schluter, P. J., Abbott, M. W., & Bellringer, M. E. (2008). Problem gambling related to intimate partner violence: Findings from the Pacific Islands families study. *International Gambling Studies*, 8(1), 49-61.
- Schluter, P., Bellringer, M., & Abbott, M. (2007). Maternal gambling associated with families' food, shelter, and safety needs: Findings from the Pacific Islands Families Study. *Journal of Gambling Issues*, 19, 87-90.
- Schluter, P. J., Paterson, J., & Feehan, M. (2007). Prevalence and concordance of interpersonal violence reports from intimate partners: Findings from the Pacific Islands Families Study. *Journal of Epidemiology and Community Health*, 61, 625-630.
- Scholes-Balog, K. E., Hemphill, S. A., Dowling, N. A., & Toumbourou, J. W. (2014). A prospective study of risk and protective factors for problem gambling among young adults. *Journal of Adolescence*, 37, 215-224.
- Stith, S.M., Smith, D.B., Penn, C., Ward, D., & Tritt, D. (2004). Intimate partner physical abuse perpetration and victimization risk factors: A meta-analytic review. *Journal of Aggression and Violent Behavior*, 10, 65-98.
- Stroup, D. F., Berlin, J. A., Morton, S. C., Olkin, I., Williamson, G. D., Rennie, D., et al. (2000). Meta-analysis of observational studies in epidemiology: A proposal for reporting. *Journal of the American Medical Association*, 283(15), 2008-2012.
- Suomi, A., Jackson, A. C., Dowling, N. A., Lavis, T., Patford, J., Thomas, S. A., Harvey, P., Abbott, M., Bellringer, M. E., Koziol-McLain, J., & Cockman, S. (2013). Problem gambling and family violence: Family member reports of prevalence, family impacts and family coping. *Asian Journal of Gambling Issues and Public Health*, 3, 13.

- Taft, A., Hegarty, K., & Flood, M. (2001). Are men and women equally violent to intimate partners? *Australian and New Zealand Journal of Public Health*, 25(6), 498-500.
- Victorian Department of Human Services. (2012). *Assessing children and young people experiencing family violence: A practice guide for family violence practitioners*. Victoria: Victorian Department of Human Services.
- Vitaro, F., Wanner, B., Brendgen, M., & Tremblay, R. E. (2008). Offspring of parents with gambling problems: Adjustment problems and explanatory mechanisms. *Journal of Gambling Studies* 24(4), 535-553.
- 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*. Report prepared for the Ontario Problem Gambling Research Centre and the Ontario Ministry of Health and Long Term Care.
- World Health Organisation (2002). *World report on violence and health: Summary*. Geneva: World Health Organisation.

Appendix A

Detailed search strategy

Search Terms

(the example was used for EMBASE; the Poolean symbols varied slightly according to the database)

Search input

1. Betting
2. Wager*
3. Gamb*
4. Gaming*
5. 1 OR 2 OR 3 OR 4
6. violen*
7. victim*
8. perpetr*
9. stalk*
10. threat*
11. abus*
12. neglect*
13. fight*
14. haras*
15. conflict*
16. assault*
17. aggress*
18. batter*
19. trauma*
20. offens*
21. 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20
22. 5 AND 21

The search output:

(Betting OR Wager* OR Gamb* OR Gaming*) AND (violen* OR victim* OR perpetr* OR stalk* OR threat* OR abus* OR neglect* OR fight* OR haras* OR conflict* OR assault* OR aggress* OR batter* OR trauma* OR offens*)

Codes

- E - Excluded. Article does not explore the relationship between problem gambling and family violence.
- I - Definitely included. This will generate a *full text version* of the article.
- U - Unsure. There is not enough information and the *full-text* article is needed to be sure. For example, many abstracts suggest that violence and abuse are explored but we need the description of the measures to be sure that the violence involves family members (e.g., general violence or childhood abuse). Another example is that articles may explore the characteristics of problem gambling samples and violence characteristics may be one of these characteristics but not specifically listed in the abstract.
- RE - Related evidence. This code is to be used when there is no evidence of specific relationship between problem gambling and family violence but when there is something related that we might be able to use in the review.

Appendix B

Figure 1. PRISMA flow diagram: Flow of information through the different phases of the systematic review

