



Research article

Child maltreatment and problem gambling: A systematic review



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ABSTRACT

This study systematically reviews research on child maltreatment and risk of gambling problems in adulthood. It also reviews adult problem gamblers' risk of abusing or neglecting their own children. Multiple database searches were conducted using pre-defined search terms related to gambling and child abuse and neglect. We identified 601 unique references and excluded studies if they did not report original research, or did not specifically measure child maltreatment or gambling. Twelve studies that included multivariable analysis of childhood maltreatment exposure and problem gambling were identified. Six of seven studies examining childhood sexual abuse and four of five examining physical abuse showed a significant positive association between abuse and later gambling problems (odds ratios for sexual abuse 2.01–3.65; physical abuse 2.3–2.8). Both studies examining psychological maltreatment and two of three examining neglect identified positive associations with problem gambling. In most studies, risks were reduced or eliminated when controlling for other mental health disorders. The three studies measuring risk of child abuse and neglect among current problem gamblers suggest an increased risk for child physical abuse and medical conditions indicative of neglect although there is a considerable amount of variation among studies. Child abuse is associated with increased risk of gambling problems – gambling treatment providers should ask about maltreatment history as part of their clinical assessment. Problem gamblers may be more likely to physically abuse or neglect their children, but data here are more limited. Child welfare professionals should consider asking questions about parental gambling when assessing family risk.

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1. Introduction

Both child maltreatment and problem gambling are common problems worldwide. In 2013, 9.1 per 1000 children were victims of substantiated abuse or neglect in the United States (i.e. cases that were investigated by child welfare agencies and a determination was made that abuse had occurred) (U.S. Department of Health and Human Services, 2015). Worldwide self-report data provide much higher estimates; a recent meta-analysis found rates of 12.7% for sexual abuse, 22.6% for physical abuse, 36.3% for emotional abuse, and 16.3% for physical neglect (Stoltenborgh, Bakermans-Kranenburg, Alink, & van IJzendoorn, 2015). Problem gambling is also common, affecting between 0.2% and 3.0% of the adult population of the United States (National Research Council, 1999; Petry, Stinson, & Grant, 2005).

Adverse childhood experiences, including maltreatment, increase the likelihood of developing a number of chronic physical and mental health problems. Compared with their non-abused peers, maltreated children have higher rates of bullying (Shields & Cicchetti, 2001), adult criminality (Widom, 1989), posttraumatic stress disorder (Pelcovitz et al., 1994), school failure, and anxiety and depression (Lansford et al., 2002). They are more likely to smoke, consume alcohol regularly, and use illicit drugs (Anda et al., 1999; Dube, Anda, Felitti, Edwards, & Croft, 2002; Dube et al., 2003). Adults who were maltreated as children have higher rates of physical health problems including myocardial infarction, asthma, cancer, obesity, and arthritis (Diaz, Simantov, & Rickert, 2002; Felitti et al., 1998; Flaherty et al., 2009; Gilbert et al., 2015) as well as greater risk of suicide (Dube et al., 2001).

Within the overall body of research on child maltreatment and health, a growing body of work suggests that child maltreatment may increase the likelihood of adult problem gambling (Fleming, Mullen, Sibthorpe, & Bammer, 1999; Hayatbakhsh, Clavarino, Williams, Bor, & Najman, 2013; Saugeres, Thomas, & Moore, 2014). As defined by the Diagnostic and Statistical Manual of Mental Disorders, version 5 (DSM-5) (American Psychiatric Association, 2013), gambling disorder involves persistent and recurrent problematic gambling behavior leading to clinically significant impairment or distress, as indicated by the individual exhibiting at least four of nine problematic behaviors in the previous 12 months. These nine behaviors include: a need to gamble with increasing amounts of money in order to maintain excitement, restlessness or irritability with attempts to control, unsuccessful attempts at control, preoccupation with gambling, use of gambling as an escape from problems or dysphoric mood, chasing losses, lying about one's extent of gambling involvement, putting career or relationships in jeopardy, and reliance on others to provide financial help for gambling losses (American Psychiatric Association, 2013). Likewise, problem gambling may be associated with negative consequences for families and children. Studies have described depression, social isolation, conduct disorder, and physical and emotional deprivation among children of problem gamblers (Abbott, Cramer, & Sherret, 1995; Lesieur & Rothschild, 1989; Vitaro, Wanner, Brendgen, & Tremblay, 2008).

In families in which a member has a gambling problem, the affected individual or the spouse may express their anger and frustration by abusing the children (Lesieur & Rothschild, 1989; Lorenz, 1987). Research studies examining associations between child maltreatment and problem gambling have used qualitative methods (e.g. Darbyshire, Oster, & Carrig, 2001) small sample sizes (Kalischuk, 2010; Vitaro et al., 2008) or utilized treatment samples (Lesieur & Rothschild, 1989; Petry & Steinberg, 2005; Specker, Carlson, Edmonson, Johnson, & Marcotte, 1996), often without control or comparison groups (Ciarrocchi & Richardson, 1989; Petry & Steinberg, 2005) limiting one's ability to quantify the extent of gambling related child maltreatment and the degree of causality.

Even though knowledge of relationships between maltreatment and gambling are limited, several theories of gambling pathology point to a role for childhood adversity in the development of gambling problems. The Pathways Model developed by Blaszczynski and Nower (2002) posits that there are several routes to developing gambling problems. They have categorized these pathways using the terms "behaviorally conditioned", "emotionally vulnerable" and "antisocial impulsivist". Each of these pathways are subtypes of problem gambling development influenced by individual and contextual factors. Behaviorally conditioned gamblers develop gambling problems as a result of classical and operant conditioning but lack major premorbid psychopathology. Their problems arise largely from habituation and reinforcement related to gambling itself. So-called "emotionally vulnerable" gamblers have a history of anxiety and depression, difficulties with problem solving and coping skills, and frequently have adverse early life experiences. In addition to habituation to gambling, emotionally vulnerable gamblers use the behavior as a means of managing painful emotional states. The most severe subtype or pathway of gambling is the "antisocial impulsivist". Similar to the other pathways, this group of gamblers also experiences habituation and problems with gambling for emotion regulation. This group of individuals is also more likely to have problems with impulsivity and antisocial personality disorder. One of the few etiologic theories specific to gambling disorder, the Pathways classification model has been tested in a general population sample, and supported the idea of multiple subtypes of problem gamblers (Nower, Martins, Lin, & Blanco, 2013).

Under the Pathways Model, childhood experiences, including maltreatment, are a factor in the development of both "behaviorally conditioned" and "emotionally vulnerable" subtypes of problem gambling. Rather than conceiving of child maltreatment as a specific cause, the Pathways Model implicates a variety of early childhood experiences in two main areas: conferring emotional vulnerability that leads to so-called escape gambling, and encouraging the development of impulsivity in childhood that extends to adult life. In his General Theory of Addictions, Jacobs (1986) identified a set of risk factors associated with addiction in general and gambling in particular. Psychological risk factors include childhood experiences of rejection that are consistent with childhood maltreatment. Similar to the Pathways Model, in Jacob's theory, gambling serves as an escape from painful emotional states.

Consistent with both the Pathways Model and Jacobs' General Theory of Addiction, a growing body of literature suggests that early childhood adversity such as childhood maltreatment may alter brain development as it relates to behavioral and emotional self-regulatory mechanisms (McCroy, De Brito, & Viding, 2012). Essentially, neurobiological findings reinforce the theory that child maltreatment may increase vulnerability to gambling problems by undercutting the development of emotional regulation and acting as one factor that may increase impulsivity in adulthood.

Just as child maltreatment may lead to an increased risk of adult problem gambling, the gambling problems of parents or caregivers may lead to greater risk of child maltreatment. Ecological Theory suggests that there are multiple and interacting factors related to the child, parents, community, and society that may contribute to child maltreatment risk (Belsky, 1993; Bronfenbrenner, 1979). There are likely multiple mechanisms that contribute to risk of maltreatment perpetration among problem gamblers (Brown et al., 2015). Individuals who have gambling problems often exhibit comorbid problems with anger and aggression. For instance, a study of adolescents conducted in high schools found that problem gamblers were more than six times more likely to engage in fights and more than three times more likely to carry a weapon than their low risk gamblers (Yip et al., 2011). It is likely that these patterns of behavior persist into adulthood. In a sample of community recruited problem gamblers, Korman et al. (2008) found that 55.6% of individuals reported perpetrating physical assault, injury and/or sexual coercion. Consistent with the Pathways Model, problem gambling is likely associated with a range of impulse control related problems including substance abuse, problems with emotion regulation, and impulse control. This cluster of behaviors likely diminishes the capacity of parents and caregivers with gambling problems to provide a safe and consistent environment for children. In addition to these broad risk factors, adults who have gambling problems may prioritize compulsive gambling participation over parenting and thus put their children at risk.

Given that prior studies have demonstrated some association between child maltreatment and adult problem gambling, and also with adult problem gambling and abusive behavior toward one's own children, we conducted a systematic review to assess the strength of the evidence for both of these associations in the current literature. Our specific objectives were to: (1) determine whether exposure to child maltreatment increases the risk of problem gambling in adulthood; and (2) determine whether adult problem gamblers are at increased risk of abusing or neglecting their children. This review is important to both the fields of child maltreatment and gambling. Identification of a clear association between parental gambling and child maltreatment would indicate the need for child welfare and medical providers to ask parents of abused and neglected children about gambling behavior. Additionally, strong linkages would support the need for professionals who treat adults with gambling problems to inquire and address child maltreatment experiences. Finally, a positive association between problem gambling and child maltreatment would indicate that those who treat problem gamblers should inquire about the safety of children in the home, and consider reporting to child protective services, if indicated.

2. Methods

We conducted a systematic review to include a clearly stated set of objectives with pre-defined inclusion and exclusion criteria, an explicit, reproducible search strategy, systematic coding and analysis of included studies, including assessment of validity and bias, qualitative synthesis, and meta-analysis where possible (Cochrane Collaboration, 2011; Institute of Medicine, 2011). Comprehensive database searches were conducted by health sciences librarians (EL, KD) using PubMed (1809–present), Embase (Elsevier, 1974–present), Scopus (1823–present), PsycINFO (Ebsco, 1887–present), SocIndex (Ebsco, 1895–present), and CINAHL (Ebsco, 1981–present). Strategies were developed for each database using pre-defined search terms, incorporating concepts specific to gambling and child maltreatment (see Table 1). No date or language limits were applied. Final database searches were run on 10/2/14, resulting in 901 references. Of these, 570 unique references were reviewed following removal of duplicate citations. Searches were re-run on 4/16/15 resulting in 41 additional references and 31 after removing duplicates. These 601 studies were screened by a single author (WGL) to determine whether they were appropriate for further review and potential inclusion. Fifty-nine were excluded because the articles did not involve research (e.g. editorials, news articles, book reviews, resource lists, criminal justice guidelines, legislation, biography/autobiography, or textbook). Six studies were excluded because they involved anthropological or historical research, 362 studies because there was no reference to child maltreatment, and 117 studies because there was no reference to gambling. Sixteen articles were excluded because they focused only on mental health treatment and 23 studies because they included only crime statistics. One article was excluded for each of the following reasons: article focused on literary criticism, article offered research methods without results, and article surveyed opinions. Finally, three articles included both child maltreatment and gambling, but these factors were not compared to each other. After this review, 72 articles remained (Fig. 1). Citations from the 72 articles were reviewed to identify any research that may have been missed in the original search; two additional studies were found. We conducted database and Google Scholar searches to identify publications that may have arisen from dissertation research; two additional studies were found for a total of 76 articles.

The remaining 76 articles were reviewed for relevance to the research questions and for article quality by three study authors (WGL, PS, LL). In addition to the previously identified exclusion criteria, we also eliminated articles that grouped multiple forms of trauma together and did not specify whether the trauma was from child maltreatment or another reason or did not specifically measure gambling (e.g. studies that measured any risk taking behavior). For our final sample, we also excluded case reports and case series.

Table 1
Search terms for associations between gambling and child maltreatment.

Database	Child terms	Abuse terms	Gambling terms
PubMed	Child Infant Adolescent Juvenile Youth	Abuse Neglect Negligent Mistreat Maltreat Trauma Battered Domestic violence Family violence Dysfunctional family Family dysfunction Family conflict Child abuse (MeSH) Child abuse, sexual (MeSH) Child welfare (MeSH) Adult survivors of child abuse (MeSH) Battered child syndrome (MeSH)	Gambling Gamble
Embase	Child Infant Adolescent Juvenile Youth	Abuse Neglect Negligent Mistreat Maltreat Trauma Battered Domestic violence Family violence Family dysfunction Child welfare (Emtree)	Gamble*
CINAHL, PsycINFO, SocIndex	Child Infant Adolescent Juvenile Youth	Abuse Neglect Negligent Mistreat Maltreat Trauma Battered Domestic violence Family violence Dysfunctional family Family dysfunction Family conflict Child welfare	Gamble Gambling
Scopus	Child Infant Adolescent Juvenile Youth	Abuse Neglect Negligent Mistreat Maltreat Trauma Battered Domestic violence Family violence Dysfunctional family Family dysfunction	Gamble Gambling

Medical Subject Headings (MeSH) are the indexing terms used in the PubMed database. Emtree terms are indexing terms in the Embase database.

Because there were no randomized controlled trials (RCTs) among the articles, we did not use existing rating scales for quality of RCTs. Instead, we used a more general rating, by study methodology, as recommended by the United States Preventive Services Taskforce (USPSTF: [Harris et al., 2001](#)). We gave the highest rating to cohort studies with comparison groups and case control studies followed by ecological studies, and cohort studies without comparison groups.

It should be noted that terminology and definitions of problem gambling have changed over time, and terms such as pathologic gambling, compulsive gambling, and gambling disorder have all been used, but not always with the same meaning ([Reilly & Smith, 2013](#)). Therefore, we incorporated all of these terms into our evaluation and presented the results using the same words as the authors of the studies. For the sake of simplicity, we use the term problem gambling in the text to reflect pathologic gambling, compulsive gambling or gambling disorder.

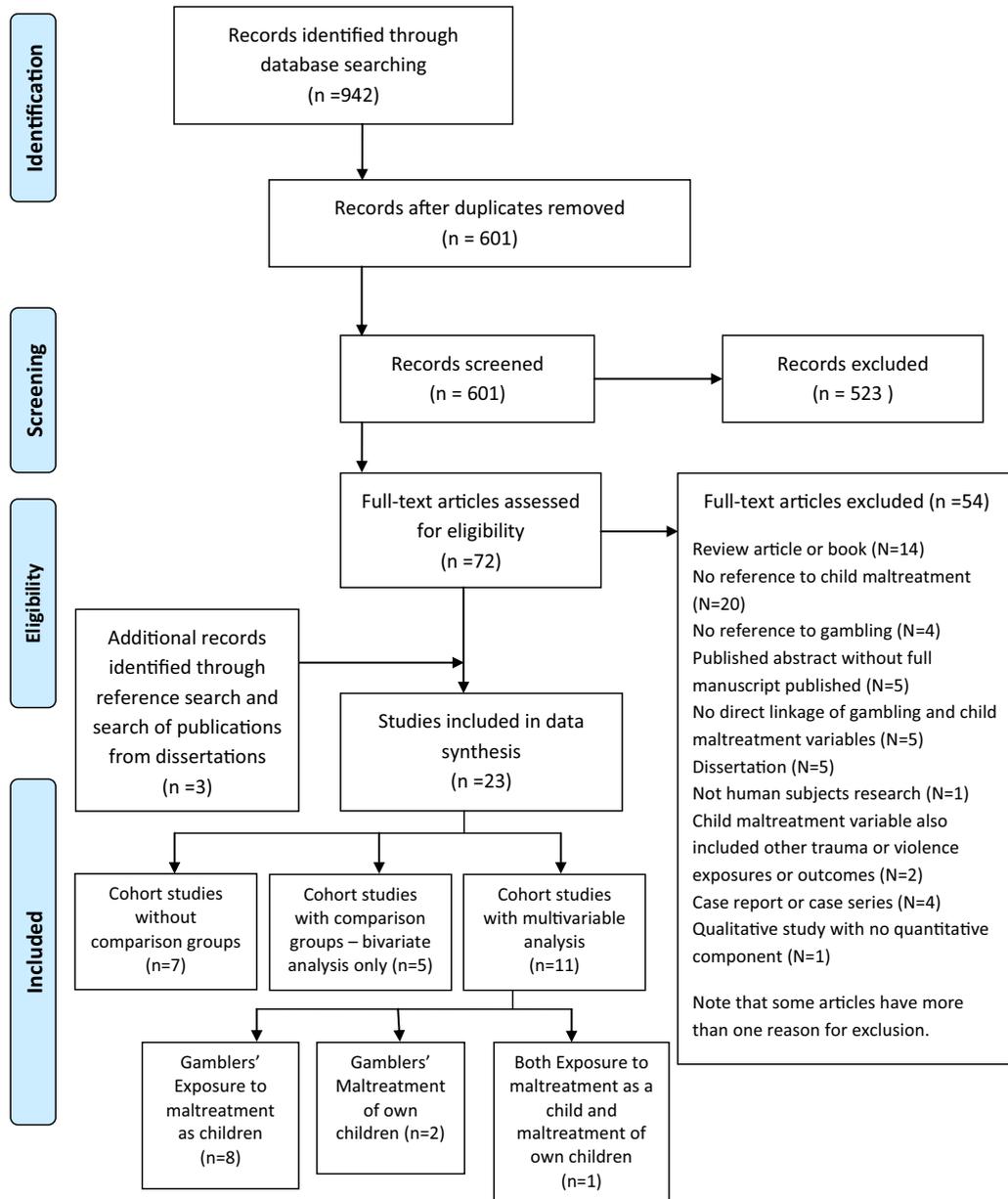


Figure 1. Process for determining articles for inclusion.

3. Results

3.1. Cohort studies without comparison groups

We identified seven cohort studies that did not include a comparison group of non-gamblers (Bland, Newman, Orn, & Stebelsky, 1993; Ciarrocchi & Richardson, 1989; Ibáñez, Blanco, Moreryra, & Sáiz-Ruiz, 2003; Johnson, Nora, & Bustos, 1992; Lesieur & Rothschild, 1989; Petry & Steinberg, 2005; Vogelgesang, 2010). Five of the seven examined gambler's own history of maltreatment (Ciarrocchi & Richardson, 1989; Ibáñez et al., 2003; Johnson et al., 1992; Petry & Steinberg, 2005; Vogelgesang, 2010). Participants from all five of these studies were enrolled from problem gambling treatment programs (Ciarrocchi & Richardson, 1989; Ibáñez et al., 2003; Johnson et al., 1992; Petry & Steinberg, 2005; Vogelgesang, 2010). Rates of childhood physical abuse in these samples ranged from 13 to 27%. One study included rates of neglect (16.5%) and sexual abuse (20.5%) as children (Vogelgesang, 2010). Two studies (Bland et al., 1993; Lesieur & Rothschild, 1989) examined gamblers as maltreatment perpetrators. In the Lesieur study, abusive violence was reported among 34% of gambler's children. In the

Table 2
Pathological gambling and child maltreatment: cohort studies with comparison groups, but no controlling for confounders/multivariable analysis.

Article	Study type	Sample	Gambling measure	Maltx type(s)	Measurement	Core findings
Dickson et al. (2008)	Cross-sectional Population-based	2179 students ages 11–19 enrolled in Province of Ontario, Canada schools	DSM-IV-MR-J scale for pathological gambling split into four categories: non-gambler (no gambling during past year) Social gambler (DSM score 0–1) At-risk gambler (DSM score 2–3) Probable pathological gambler (DSM score ≥ 4)	Physical/sexual abuse	Included in a list of major stressful life events	Reported rates of physical/sexual abuse lowest among non-gamblers and social gamblers, higher among at-risk gamblers and highest among probable pathological gamblers but differences were not statistically significant.
Felsher et al. (2010)	Cross-sectional	1324 adolescents and young adults attending post-secondary education program in Quebec, Canada	DSM-IV criteria for pathological gambling in past year split into four categories: non-gambler (no gambling during past year) Social gambler (DSM score 0–2) At-risk gambler (DSM score 3–4) Pathological gambler (DSM score ≥ 5)	Emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect	Childhood Trauma Questionnaire (CTQ)	At-risk and pathological gamblers significantly more likely than non-gamblers or social gamblers to report severe history of maltreatment of any type.
Isaranurug et al. (2001)	Cross-sectional Convenience sample	413 grade six students in Bangkok Metropolitan Administration schools	Student self-report of primary caregiver gambling frequency (i.e. Do not play, play occasionally, play regularly)	Physical abuse	Student self-report of aggressive behavior of primary caregiver	Students whose parents gambled occasionally or regularly reported significantly higher number of types of aggressive behavior (e.g. physical aggression, verbal aggression, neglect) by their primary caregiver than students whose parents did not gamble. Do not play (mean = 3.192) Play occasionally (mean = 3.993) Play regularly (mean = 4.589) $p < .05$. 32.5% of problem gamblers had history of PA or SA vs. 0% controls
Specker et al. (1996)	Cross-sectional Convenience sample	40 gamblers in outpatient treatment; 64 controls newspaper recruitment no prev. psychiatric care	SOGS ≥ 5 and DSM-III-R criteria for pathological gambling via SCID	Sexual abuse Physical abuse	“As a child, were you ever sexually abused?” “Were you ever physically abused?”	

Abbreviations: DSM, Diagnostic and Statistical Manual of Mental Disorders; OR, odds ratio; SOGS, South Oaks Gambling Screen; SCID, structured clinical interview for DSM disorders.

Bland study, 16.7% of problem gamblers reported hitting a child and 10–16.7% reported various forms of neglecting their children.

3.2. Cohort Studies with comparison groups

Cohort studies included all studies with non-gambling comparison groups. These included five studies with bivariate analyses only (i.e. no controlling for confounding factors – see Table 2) (Dickson, Derevensky, & Gupta, 2008; Felsher, Derevensky, & Gupta, 2010; Isaranurug, Nitirat, Chauytong, & Wongarsa, 2001; McCormick, Delfabbro, & Denson, 2012; Specker et al., 1996), and twelve studies incorporating multivariable analysis (Afifi, Brownridge, MacMillan, & Sareen, 2010;

Black, Shaw, McCormick, & Alien, 2012; Dion, Cantinotti, Ross, & Collin-Vezina, 2015; Hayatbakhsh et al., 2013; Hodgins et al., 2010; Iusitini, Gao, Sundborn, & Paterson, 2011; Larsen, Curtis, & Bjerregaard, 2013; Pérez-Fuentes, Olfson, Villegas, Morcillo, Wang, & Blanco, 2013; Scherrer et al., 2007; Sharma & Sacco, 2015; Stevens & Bailie, 2012; Zhu et al., 2015). Among the twelve with multivariable analysis, nine examined gamblers' exposure to maltreatment as children (Black et al., 2012; Dion et al., 2015; Hayatbakhsh et al., 2013; Hodgins et al., 2010; Larsen et al., 2013; Pérez-Fuentes et al., 2013; Scherrer et al., 2007; Sharma & Sacco, 2015; Zhu et al., 2015), two examined gamblers' maltreatment of their own children (Iusitini et al., 2011; Stevens & Bailie, 2012), and one examined both (Afifi et al., 2010) (Tables 3 and 4). Only the studies with multivariable analysis will be discussed below.

3.3. Association between child maltreatment exposure and problem gambling

Among the twelve articles examining the association between childhood maltreatment and gambling problems, there was great variability in populations studied, how maltreatment and gambling were measured, and what covariates were included in the multivariable analyses. Four of these studies used large population-based samples (Afifi et al., 2010; Hodgins et al., 2010; Pérez-Fuentes et al., 2013; Sharma & Sacco, 2015) and therefore may be considered nationally representative. Most of the articles addressed more than one form of maltreatment. However, four articles focused only on sexual abuse (Dion et al., 2015; Larsen et al., 2013; Pérez-Fuentes et al., 2013; Zhu et al., 2015), one focused solely on physical abuse (Afifi et al., 2010), and one conducted multivariable analysis only for all forms of maltreatment combined.

All maltreatment combined. Only one study combined all forms of maltreatment into one measure, reporting mean scores on a maltreatment rating scale (Hodgins et al., 2010). The authors found that adults with problem gambling had significantly higher overall scores on the Childhood Trauma Questionnaire (CTQ) than adults without problem gambling, controlling for family functioning, antisocial features, stress, alcohol dependence, and drug dependence. Significant associations between problem gambling and individual types of maltreatment were also identified; however, these were only examined as part of stratified analyses with gender – no other covariates were included in these analyses.

Sexual abuse. Eight studies met inclusion criteria for the association between sexual abuse exposure and problem gambling. Seven of these studies reported odds ratios for the likelihood of sexual abuse among problem gamblers (Black et al., 2012; Dion et al., 2015; Larsen et al., 2013; Pérez-Fuentes et al., 2013; Scherrer et al., 2007; Sharma & Sacco, 2015; Zhu et al., 2015), with five of seven showing a significant association between gambling and child sexual abuse (Black et al., 2012; Dion et al., 2015; Larsen et al., 2013; Sharma & Sacco, 2015; Zhu et al., 2015). Odds ratios ranged from 2.01 to 3.65. One study reported associations without providing odds ratios. In this nested case-control study, Hayatbakhsh et al. (2013) found that sexual abuse was significantly associated with both problem gambling and greater expenditures on gambling ($p < .001$).

Specifics of the findings varied among studies. The increased risk in the Larsen study applied only to women; male problem gamblers in their study did not have an increased risk of child sexual abuse. Zhu also stratified by sex and found an increased risk of child sexual abuse in both men and women. The increased risk in the Sharma study was seen when controlling only for sociodemographic factors. When adjusting for other mental health disorders, the association between gambling and child sexual abuse was no longer significant. It should be noted that while Pérez-Fuentes et al. (2013) did not find any significant association between CSA and gambling on multivariable analysis, they used the same data as Sharma and Sacco (2015) who did find a significant association – but only when they did not adjust for other mental health disorders. All of Pérez-Fuentes' multivariable analyses adjusted for other mental health disorders.

The populations studied were quite different, ranging from Greenland Inuit (Larsen et al., 2013) to Vietnam veteran twin pairs (Scherrer et al., 2007), to adults residing in Iowa (Black et al., 2012). Sharma and Sacco (2015) used a nationally representative study of U.S. adults. Each used a different method of measuring problematic gambling, and a different method of measuring sexual abuse. Several studies used a single question to identify sexual abuse (Dion et al., 2015; Larsen et al., 2013; Zhu et al., 2015), Scherrer and colleagues used the National Comorbidity Study assessment of traumatic event exposure, and Black et al. used the Revised Childhood Experiences Questionnaire. Sharma and Sacco and Pérez-Fuentes, et al. used an adapted measure of maltreatment, combining variables from the CTQ and the Conflict Tactics Scale (CTS; Straus, 1979) patterned on recent work by Harford, Yi, and Grant (2014).

Physical abuse. Five studies met inclusion criteria for the association between problem gambling and physical abuse (Afifi et al., 2010; Black et al., 2012; Hodgins et al., 2010; Scherrer et al., 2007; Sharma & Sacco, 2015). Of the four studies that adjusted for confounding variables and looked at physical abuse alone, three showed a significant association between problem gambling and childhood physical abuse (Afifi et al., 2010; Scherrer et al., 2007; Sharma & Sacco, 2015). In these studies, childhood physical abuse increased the likelihood of problem or pathologic gambling by odds ratios of 2.3–2.8. Authors of all three studies conducted additional analyses controlling for mental health disorders in addition to the sociodemographic variables. When mental health diagnoses were included in the analyses, the association between gambling and childhood physical abuse remained statistically significant only in the Scherrer et al. (2007) study, and in that study, only for pathologic gamblers.

Emotional abuse. Two studies measured emotional abuse or neglect separately from other forms of maltreatment (Black et al., 2012; Sharma & Sacco, 2015). Both identified significant associations between problem or pathologic gambling and childhood emotional abuse when controlling only for sociodemographic variables. After controlling for mental health disorders, Sharma no longer found a statistically significant association.

Table 3

Association between adults with pathological gambling and history of maltreatment – studies with multivariable analysis.

Article	Study type	Sample	Gambling measurement	Covariates	Maltx type(s)	Measurement	Core findings
Affi et al. (2010)	Cross-sectional Population based	National Comorbidity Survey Replication (NCS-R) 2001–2003 Population survey N = 5692 Multistage clustered sampling design (Kessler, Chiu, Demler, & Walters, 2005)	Lifetime gambling by DSM-IV 2.3% problem gamblers 0.6% pathologic gamblers Non-gamblers Non-problem gamblers Problem gamblers (1–4 sx) Pathologic gamblers (5–10 sx)	Age, gender, marital status, income, ethnicity, education	Physical abuse	Single question – “Were you ever beaten up badly by your parents or the person who raised you?” (Child physical abuse if prior to age 16)	Logistic regression Victim of severe child abuse: OR = 2.8 (1.1–7.0) for problem gambling $p < 0.05$ OR = 2.6 (0.8–9.0) for pathological gambling After adjusting for lifetime psychiatric disorder: OR = 1.9 (0.8–4.7) for problem gambling OR = 1.5 (0.4–5.1) for pathologic gambling N’s for pathologic gambling <5
Black et al. (2012)	Case-control Convenience sample	95 pathologic gamblers from registry, GA, advertisements; 91 controls via random digit dialing matched to cases by age, sex, education ≥ 18 years, English speaking, no psychotic, cognitive or chronic neurologic disorder	Cases: SOGS score ≥ 5 and NODS ≥ 5 + meet DSM-IV criteria for pathologic gambling Controls: SOGS ≤ 2 ; NODS = 0	Education, race/ethnicity	Sexual abuse Physical abuse Emotional abuse Verbal abuse Neglect Any type Multiple types	Revised Childhood Experiences Questionnaire	Neglect 2.17 (0.78–6.09) $p = -0.139$ Emotional abuse 4.51 (2.09–9.70) $p < 0.001$ Verbal 3.53 (1.79–6.97) $p < 0.001$ Physical 1.93 (0.88–4.23) $p = 0.102$ Sexual 3.65 (1.38–9.68) $p = 0.009$ Any type 4.02 (2.12–7.64) $p < 0.001$ Multiple types 3.74 (1.8–7.76) $p < 0.001$
Dion et al. (2015)	Cross-sectional	358 Indigenous Canadian adult randomly sampled from list; ½ volunteers	South Oaks Gambling Screen Past 12 months	Sex, age, residential schooling	Sexual abuse	1 Q – sexually abused before age 18?	OR = 2.95 (1.2–7.7) $p = 0.016$
Hayatbakhsh et al. (2013)	Nested case control	3691 young adults who were born to mothers delivering at Mater Hospital in Brisbane, Australia	Do you spend money on gambling (e.g. Buy lottery tickets, play the pokies, go to the casino, bet on horses, dogs, etc.)? If ever gambled, respondents asked how much money spent per week on gambling.	Gender, externalizing behavior, school performance, adolescent drinking, adolescent smoking, maternal education, maternal smoking, maternal alcohol use	Child sexual abuse	Categorical variable (no abuse, non-penetrative sexual abuse, penetrative abuse)	Self-reported experience of sexual abuse before age 16 was significantly associated with both gambling and greater expenditure on gambling ($p < .001$)
Hodgins et al. (2010)	5-year longitudinal study BUT used only cross-sectional data from wave 1 for this comparison CTQ test-retest used wave 1 and 2 Population based study	Community sample N = 1372 Weighted to reflect full pop Oversampling of at risk gamblers	PGSI and CIDI Non-gambler Problem gambler Low risk Moderate risk Problem gambler	ANOVA with Gender as interaction Multiple regression – antisocial features, alcohol, drug dependence, stress, gambling frequency gender, Family Environment (FES)	Sexual abuse Physical abuse Emotional abuse Emotional neglect Physical neglect	Childhood Trauma Questionnaire (CTQ)	Significant associations between gambling and all forms of maltreatment PA, Emotional abuse, SA, Physical neglect, Emotional neglect For gambling severity vs. CTQ score Beta = 0.07 $p < 0.05$ For gambling frequency vs. CTQ score Beta = 0.09 $p < 0.05$

Table 3 (Continued)

Article	Study type	Sample	Gambling measurement	Covariates	Maltx type(s)	Measurement	Core findings
Larsen et al. (2013)	Cross-sectional population-based general health study Data weighted	Greenland Inuit	Problem gambling Y/N via Lie/bet and Have you felt you had a problem or were told so by others	Place of residence and age group Stratified by sex	Sexual abuse	(1 Q whether anyone had forced sexual activity upon them before age 13)	Women OR = 2.01 (1.07–3.81) $p = 0.03$ Men OR = 1.53 (0.80–2.90) 0.196
Perez-Fuentes et al. (2013)	Cross-sectional Population based	National epidemiologic survey on alcoholism and related conditions (NESARC) – multistage stratified sample design (Chen, Yi, Falk, Stinson, Dawson, & Grant, 2006; Chen, Yi, Dawson, Stinson, & Grant, 2010) Wave 2 $N = 34,653$	DSM-IV lifetime pathological gambling	Sex, USA nativity, race/ethnicity, marital status, education, urbanicity. Income, region, insurance status, low family support, parental psychopathology, Hx. of physical abuse and neglect	Childhood sexual abuse	Questions based on ACE study Sexual abuse – 4 Q's about touching, fondling, intercourse	Unadjusted OR = 1.57 (0.96–2.57) Adjusted OR = .68 (0.36–1.27)
Scherrer et al. (2007)	Cross-sectional Convenience sample	Vietnam vets born 1939–1955 MZ and DZ twin pairs	Pathologic gamblers vs. non-pathologic gamblers Via DSM-IV criteria	Marital status, income, nicotine, ETOH dependence, drug dependence	Sexual abuse Physical abuse Neglect	NCS assessment of traumatic event exposure (Kessler et al., 2005)	Molested as child vs. path gambling Adjusted 2.18 (0.95–5.02) NS Unadjusted 3.02 (1.29–7.07) $p < 0.05$ Physical abuse as child 2.31 (1.04–5.13) $p < 0.05$ Serious neglect 5.53 (1.9–16.12) $p < 0.05$ Rates of molested as child increase from no gambling (6.3%) to at risk (6.9%) to problem gambling (11%) to pathological gambling (16.8%) Rates of physically abused as child increase from no gambling (13.1%) to at risk (19.6%) to problem gambling (22.8%) to pathological gambling (37.8%)

Sharma and Sacco (2015)	Cross-sectional Population based	National epidemiologic survey on alcoholism and related conditions (NESARC) – multistage stratified sample design (Chen et al., 2006, 2010) Wave 2 N = 34,653	DSM-IV criteria Lifetime gambling: non-gamblers Non-problem gamblers Problem gamblers Pathological gamblers	Age, gender, race, education, income Lifetime alcohol use disorder, lifetime drug use disorders, mood disorders, anxiety disorders, PTSD	Physical abuse Sexual abuse Emotional abuse Neglect	Questions based on CTQ and conflict tactics scale (CTS; Straus, 1979) Physical abuse – 2 Q's – hitting and other violent behavior; leaving visible marks Sexual abuse – 4 Q's about touching, fondling, intercourse Emotional abuse – threatened, sworn at Neglect – 5 Q's on hazardous chores, left alone unsupervised, lack of basic necessities, lack of meals, lack of medical treatment	Multinomial logistic regression Adjusting for demographic variables: physical abuse: problem gambler (PG) 1.62 (1.03–2.55) Pathologic gambler (PGD) 2.96 (1.63–5.35) Sexual abuse: PG: 2.01 (1.48–2.72) PGD: 2.01 (1.22–3.30) Emotional abuse: PG: 1.58 (1.19–2.10) PGD: 2.76 (1.54–4.96) Neglect: PG: 1.44 (0.99–2.09) PGD: 2.77 (1.65–4.67) Adjusting for demographic variables, lifetime PTSD, mood/anxiety disorders, substance use disorder: Physical abuse: PG: 0.97 (0.58–1.60) PGD: 1.42 (0.76–1.42) Sexual abuse: PG: 1/28 (0.92–1.78) PGD: 1.00 (0.58–1/70) Emotional abuse: PG: 0.95 (0.70–1.30) PGD: 1.36 (0.71–2.59) Neglect: PG: 0.99 (0.67–1.47) PGD: 1.63 (0.93–2.85) Males OR = 1.87 (1.2–2.9) $p < 0.01$ Females OR = 2.17 (1.39–3.37) $p < 0.001$
Zhu et al. (2015)	Population-based cross-sectional	Three-city collaborative study of adolescent health. 4100 Taipei residents age 15–24 sampled from schools and community dwellings	1 Q – ever gambled for money?	Age, urban/rural, economic status, education, employment, household instability	Sexual abuse	1 Q – experienced any of the following before age 14? with list of contact and non-contact sexually abusive behavior	Males OR = 1.87 (1.2–2.9) $p < 0.01$ Females OR = 2.17 (1.39–3.37) $p < 0.001$

Abbreviations: DSM IV, Diagnostic and Statistical Manual of Mental Disorders, 4th edition; OR, odds ratio; Q, question; SOGS, South Oaks Gambling Screen; NODS, NORC DSM screen for gambling problems; PGSI, problem gambling screening index; CIDI, composite international diagnostic interview; MZ, monozygotic twins; DZ, dizygotic twins.

Table 4
Pathological gambling and maltreatment of their own children – articles with multivariable analysis.

Article	Study type	Sample	Gambling measurement	Covariates	Maltx type(s)	Measurement	Core findings
Afifi et al. (2010)	Cross-sectional Population based	National Comorbidity Survey Replication (NCS-R) 2001–2003 Population survey N = 5692 Multistage clustered sampling design (Kessler et al., 2005)	Lifetime gambling by DSM-IV 2.3% problem gamblers 0.6% pathologic gamblers Non-gamblers Non-problem gamblers Problem gamblers (1–4 sx) Pathologic gamblers (5–10 sx)	Age, gender, marital status, income, ethnicity, education	Minor physical assault Severe child physical abuse	CTS-PC	Multinomial logistical regression Non-problem gambler: OR = 2.0 (1.5–2.7) for minor physical assault $p < 0.01$ OR = 3.0 (1.0–7.3) for severe child abuse perpetration Problem gambler OR = 1.7 (0.7–3.9) for minor phys assault OR = 3.0 (0.6–15.2) for severe child abuse Pathological gambler OR = 2.9 (0.98–8.3) for minor phys assault OR = 13.2 (2–88.4) for severe child abuse $p < 0.01$ Controlling for lifetime psychiatric d/o... Significant findings Non-problem gambler: OR = 1.9 (1.4–2.6) for minor physical assault $p < 0.01$ Pathological gambler: OR = 7.2 (1.2–44.0) for severe child abuse $p < 0.05$ Respondents who gambled significantly more likely to use harsh discipline (42.9% of gamblers vs. 19.0% non-gamblers) but were also significantly more likely to be high nurturers (86.2% of gamblers vs. 76.1% of non-gamblers).
Iusitini et al. (2011)	Cross-sectional	823 fathers of a cohort of Pacific children born in a New Zealand hospital	Dichotomous yes/no variable	Ethnicity, marital status, acculturation, harmful alcohol use	Dichotomous discipline and nurturance	Variables created from modified subscales of the parent behavior checklist	Gambling problems in home associated with: 1.8 (1.07–3.05) × increased risk of scabies 1.68 (1.09–2.58) × increased risk of ear infections
Stevens and Bailie (2012)	Cross-sectional population based	10 Northern Territory Aboriginal communities all families with children <7 yrs	Negative life events scale Gambling problem Y/N	Socioeconomic (age, caregiver living with spouse), psychosocial (relationship to homeowner, child care attendance), and dwelling (human and animal hygiene) variables	Child neglect	Past 2 weeks of: 1 – skin infection 2 – scabies 3 – respiratory infection 4 – diarrhea/vomiting 5 – ear infection 6 – 2 or more of above	Gambling problems in home associated with: 1.8 (1.07–3.05) × increased risk of scabies 1.68 (1.09–2.58) × increased risk of ear infections

Neglect. Three studies measured neglect separately from other forms of maltreatment (Black et al., 2012; Scherrer et al., 2007; Sharma & Sacco, 2015). Two of the three identified significant associations between problem or pathologic gambling and childhood neglect when controlling only for sociodemographic variables (Scherrer et al., 2007; Sharma & Sacco, 2015). After controlling for mental health disorders, Sharma and Sacco no longer found a statistically significant association. Scherrer et al. (2007) continued to find a difference even after controlling for mental health disorders, but only for pathologic gamblers, not for problem gamblers.

3.4. Association between problem gambling and maltreatment of one's own children

Only three studies met inclusion criteria for abusive or neglectful behavior among pathological gamblers (see Table 4). Two of these three focused on physical abuse and one focused on neglect. [Iusitini et al. \(2011\)](#) looked at harsh physical punishment rather than more severe forms of physical abuse. [Afifi et al. \(2010\)](#) examined both the respondents' personal history of childhood physical abuse as well as behavior toward their own children. On multinomial logistic regression analysis, excluding history of psychiatric disorders, the authors found a significant association between pathologic gambling (vs. non-gambler) and severe child abuse (OR = 13.2; 95% CI 2.0–88.4). The only other significant association was between non-problem gambling (vs. non-gambler) and minor physical assault (OR = 2.0; 95% CI 1.5–2.7). When the authors controlled for lifetime history of psychiatric disorder, the same comparisons remained significant.

[Iusitini et al. \(2011\)](#) examined the association between problem gambling and the use of harsh discipline with one's own children among Pacific peoples of New Zealand. The authors found that respondents who gambled were significantly more likely to use harsh discipline compared to non-gamblers. However, they were also significantly more likely to describe themselves as high nurturers ([Iusitini et al., 2011](#)).

The article by [Stevens and Bailie \(2012\)](#) was the only one to examine gambling behavior and likelihood of neglecting one's own children. Gambling problems in the home were associated with an increased risk of childhood scabies (OR = 1.80; 95% CI 1.07–3.05), and with an increased risk of ear infections (OR = 1.68; 95% CI 1.09–2.58) after adjusting for socioeconomic, psychosocial, and hygiene variables.

4. Discussion

As far as we are aware, this is the first systematic review to examine the association between childhood maltreatment experiences and adult problem or pathologic gambling. It is also the first systematic review to assess the association between problem or pathologic gambling and abusive or neglectful behavior toward one's own children. Despite the variation in populations studied, the majority of articles examining childhood history of maltreatment and subsequent problem gambling demonstrated a significant association between the two. This finding held true across study designs and for multiple forms of maltreatment, including physical abuse, sexual abuse, neglect, and psychological maltreatment.

In studies where multivariable analyses adjusted for psychiatric comorbidity such as PTSD, mood and anxiety disorders, and substance use disorders ([Afifi et al., 2010](#); [Pérez-Fuentes et al., 2013](#); [Sharma & Sacco, 2015](#)), the significant association between maltreatment history and problem gambling no longer remained after adjustment. There are a number of possible explanations for these findings. It is possible that other psychiatric disorders serve as mediators in the development of problem gambling after maltreatment, though it is difficult to effectively tease out causal order using cross-sectional data. Similarly, child maltreatment may function as a shared cause of both gambling disorders and other mental health and substance use disorders. There may also be unmeasured variables that influence both risk of child abuse victimization and perpetration as well as risk of problem gambling such as problems with distress tolerance and impulsivity. For example, research by [Parikh \(2012\)](#) has indicated that altered self-capacities such as relationship difficulties and identity disturbance may mediate the relationship between child maltreatment and gambling motives. Additional studies designed to test causal pathways, such as mediation and moderation are needed to clarify these relationships. A recent study by [Elliott et al. \(in press\)](#) identified personality disorder symptoms as mediators of the relationship between childhood maltreatment and persistent alcohol and nicotine dependence in adulthood. Perhaps similar mechanisms are at work in the development of gambling problems among adults with a history of childhood maltreatment; among individuals who experience maltreatment, risk of developing personality disorder symptoms is greater. Those symptoms then confer greater risk of a wide range of psychiatric disorders, including gambling problems.

While it makes intuitive sense that adults who are preoccupied with gambling activities and stressed by gambling losses would be at increased risk for maltreating their own children, the extent to which this occurs, as well as the severity among problem gamblers, is essentially unknown. Very few studies have examined whether problem gambling increases the risk for abuse or neglect of one's own children. We found only three studies, two of which focused on physical abuse, and one of which focused on neglect. [Iusitini et al. \(2011\)](#) looked at harsh punishment, rather than more severe forms of physical abuse. While there is some difference of opinion in the identification of harsh discipline as maltreatment, the growing consensus from researchers on corporal punishment is that children who are physically punished are at significantly higher risk for physical and mental health problems compared to similar children who are not physically punished ([Durrant, Ensom, & Coalition on Physical Punishment of Children and Youth, 2004](#); [Gershoff, 2002](#); [MacMillan et al., 1999](#)). Therefore, we felt that this article was appropriate to include in our analysis. Likewise, [Stevens and Bailie \(2012\)](#) looked at outcomes that might not be considered neglect by all. We opted to include this article as it was the only article in our literature search that examined a possible association between gambling and neglect of one's own children.

There were a number of limitations to this systematic review. First, the articles included used many different definitions of problem gambling. Unfortunately, while measures that mirror DSM criteria will measure problem gambling most accurately, researchers often use other measures for brevity or other reasons. Most of the identified articles in this review did use a validated gambling measure and many used DSM criteria to identify problem gamblers. However, changes in DSM definitions and terminology over time have also made it difficult to directly compare studies, even when DSM criteria were used.

Another limitation is that many different definitions of child maltreatment were used in these articles, and defining child maltreatment may be even more challenging than defining problem gambling. Definitions that include Child Protective Services substantiation of maltreatment have high specificity, but poor sensitivity. Adults may not know the outcome of a CPS investigation that occurred as a child, and they may not recall abuse that occurred when they were very young children. Questionnaires such as the Parent-Child Conflict Tactics Scale (CTS-PC) have better sensitivity but require significant time for completion, making them difficult to incorporate into population-based surveys. The authors of one study in our review used the CTS-PC to examine gambling and maltreatment of one's own children (Afifi et al., 2010). Sharma and Sacco (2015) used an abbreviated version of the CTS-PC, as well as the CTQ, to examine the association between maltreatment history and problem gambling.

Further research on the relationship between problem gambling and maltreatment of one's own children is needed. Further knowledge about the frequency with which problem gamblers abuse and/or neglect their own children might lead to increased attention to and assessment of children of problem gamblers. Increased awareness of the potential harms to children could also encourage problem gamblers to seek help. When designing future studies of gambling pathology, researchers should consider including questions about the effects of gambling on children.

In summary, there is moderate evidence to support an association between child maltreatment and development of gambling problems as an adult. However, the extent to which this is mediated by other psychiatric disorders needs to be more clearly elucidated. Those who treat problem gamblers should consider assessing their clients for maltreatment history when they assess for other comorbid mental health conditions.

There is some evidence suggesting that problem gamblers may be more likely to physically abuse, punish harshly, and neglect their children. However, the evidence is not adequate at this point to make a strong recommendation to those who treat problem gamblers that they should be inquiring about abuse and neglect perpetration, particularly given their required mandate to report to child protective services.

From an ethical or child-centered perspective, asking these questions makes intuitive sense. However, additional data may be needed to convince mental health providers who treat problem gamblers that they should be asking about child safety. In particular, longitudinal studies of problem gamblers should ask about family relationships and specifically about the abuse and neglect of children in their care. While incorporation of such questions into surveys may lead to some discomfort on the part of researchers and participants, this is not uncharted territory, and child maltreatment researchers have successfully navigated these issues. Without strong data, we may be continuing to place the children of problem gamblers at risk for ongoing abuse and neglect.

For those who care for maltreated children, the evidence base is adequate to recommend asking parents about gambling behavior in their assessments of parental challenges and strengths. Doing so may help identify additional ways to intervene in at-risk families, stop ongoing abuse or neglect, and reduce the long-term sequelae of maltreatment.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.chiabu.2016.06.003>.