

Family Influences on Adolescent Gambling Behavior: A Review of the Literature

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Abstract Gambling, and gambling related problems, are recognized as an emerging health issue among adolescents. Adolescent gambling is associated with numerous individual, social, and family characteristics. This paper provides a review of 21 empirical studies published between 1997 and 2008 that examine family influences on adolescent gambling behavior. Family influences on gambling behavior are conceptualized in the following five domains: (1) family sociodemographic factors, (2) general family climate, (3) family members' attitudes and behaviors, (4) parenting practices, and (5) family relationship characteristics. Based on the review of extant literature, there is empirical evidence that family characteristics are associated with adolescent gambling and further examination of family system influences on gambling behavior is needed. Gaps in the current literature and recommendations for future research are discussed to help inform the study of family influences on adolescent gambling behavior.

Keywords Adolescent gambling · Families · Gambling · Adolescents · Literature review

In the past two decades, gambling has become a widely accessible and socially accepted leisure activity. According to Jacobs (2004), the median level of past year gambling participation by middle and high school students in 1984–1988 was 45% and increased to 65% in 1989–2002. It is estimated that between 49 and 91% of adolescents have gambled in the past year (Gupta and Derevensky 2004; Magoon and Ingersoll 2006; Welte et al. 2008). Although most adolescents do not gamble excessively or experience negative

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consequences as a result of their gambling, research has suggested that approximately 2.1–12% of adolescents meet the criteria for problem or pathological gambling (Gupta and Derevensky 2004; Welte et al. 2008). Despite the lack of consensus and ongoing debate regarding the prevalence of adolescent problem and pathological gambling (Derevensky et al. 2003), adolescent gambling is increasingly recognized as an emerging problem among today's youth. It is important to identify and understand the possible factors associated with adolescent gambling, including the potential influence of family characteristics, relationships, and processes.

There is extensive empirical support for the influence of family relationships and processes on adolescent risk behaviors including: substance use (van der Vorst et al. 2006; Velleman et al. 2005), smoking (Tilson et al. 2004), and sexual and contraceptive behavior (Miller 2002). Although the links between family influences and adolescent gambling behavior are not well understood or extensively studied, there is some preliminary evidence that the family environment and family relationships are associated with adolescent gambling behavior. This paper provides a critical review of the empirical literature related to family influences on adolescent gambling behavior, attempts to identify gaps in the current literature, and provides recommendations for future research.

Boundaries of the Review

This review will be focused on exploring the empirical literature related to *family influences on adolescent gambling*. The 21 studies included in this review met the following criteria: (i) published in a peer-reviewed journal; (ii) examined at least one family influence variable (defined as a variable that describes the family environment, structure, relationships, or overall processes), (iii) included at least one gambling measure, and (iv) included adolescent participants who were at least 13 years of age. The upper age limit was not identified given the differences among articles studying adolescent behavior. For example, 17 of the studies reviewed included participants under the age of 20 (see Table 1). The remaining four studies either did not report age characteristics of their sample ($N = 1$) or used longitudinal research designs and hence had follow-up data on participants in early adulthood (aged 20–24 years, $N = 3$). These studies were deemed appropriate for the review due to their focus on adolescent gambling behavior.

PsychINFO, Medline, and PubMed were searched for articles that fulfilled the inclusion criteria. Search terms included 'gambling' 'problem gambling' 'gambling addiction' 'pathological gambling' 'compulsive gambling' and 'family' 'parents' 'siblings' and 'adolescents' 'adolescence' 'youth'. Manual searching of reference lists was used to identify any articles that were not identified in the computer-based search. The search strategies resulted in the identification of 21 studies that met the inclusion criteria (see Table 1).

Family Influences on Adolescent Gambling Behavior

To date, most of the family variables examined in the gambling literature are derived from risk and protective factors associated with adolescent substance use and misuse. For the purpose of this review, these family factors can be conceptualized into five domains: (1) family sociodemographic factors, (2) general family climate, (3) parenting practices, (4) family members' attitudes and behaviors, and (5) relationship characteristics. Whereas

Table 1 Articles included in review

Author (year), design, Country	Subjects	Family measures	Gambling measures/classification (if applicable)
1. Barnes et al. (1999), CS, USA ^a	N = 1,324 Age = 13–19	Family SES; parental monitoring (PM)	Gambling frequency past year
2. Barnes et al. (2005), L, USA	N = 1,324 Age = 13–19 (T1), 17–20 (F/U)	Family SES; PM	Gambling frequency past year
3. Chalmers and Willoughby (2006), CS, CAN	N = 3,767 Age = 13–18	Parental education; at-risk family background; PM; IPPA; sibling modeling of risk behaviors	SOGS-RA; gambling activities past month; gambling level of risk No risk, low risk, at-risk, high risk
4. Crouce et al. (2007), CS, USA	N = 532 Age = 14–18	Family gambling, alcohol or drug use problems	SOGS-RA; age at first bet; quantity, frequency and diversity of gambling; self-perception of gambling problems at-risk, problem gambler
5. Delfabbro and Thrupp (2003), CS, AUS	N = 505 Age = 14–17	Perception of familial gambling attitudes and behaviors	DMS-IV-J; gambling habits; future gambling intentions; attitudes towards gambling; Initial gambling experience Never gambled, infrequent gambling, frequent gambling
6. Dickson et al. (2008), CS, CAN	N = 2,179 Age = 11–19	Family cohesion subscale of FACES-II	DSM-IV-MR-J; GAQ Non gamblers, social, at-risk, PPGs
7. Ellenbogen et al. (2007), CS, CAN	N = 1,265 Age = 12–18	FACES II; individual protective factor index	DSM-IV-MR-J Social, at-risk, PPG
8. Felsher et al. (2003), CS, CAN	N = 1,072 Age = 10–18	Parental influences on lottery participation	DSM-IV-MR-J Never, social, at-risk, PPG
9. Gupta and Derevensky (1997), CS, CAN	N = 477 Age = 9–14	With whom adolescents gamble	Gambling behaviors (types, with whom, where, reasons); perceptions of own gambling as excessive or problematic
10. Gupta and Derevensky (1998), CS, CAN	N = 817 Age = 12–17	Parental gambling behavior; family and peer influences on gambling	DSM-IV-J; gambling behavior questionnaire No gambling, social, problem, pathological

Table 1 continued

Author (year), design, Country	Subjects	Family measures	Gambling measures/classification (if applicable)
11. Hardoon et al. (2004), CS, CAN	<i>N</i> = 2, 336 Age = 12–19	Connors–Wells adolescent self-report scale: long version; perceived social support from friends and family scale	GAQ; DSM-IV-MR-J Non-gamblers, social, at-risk, PPGs
12. Langhinrichsen-Rohling et al. (2004), CS, USA	<i>N</i> = 1,846 Age = NR	Parental education; family composition; family cohesion; parental gambling/drinking	SOGS-RA Non-gamblers, non-problem, at-risk, problem, PPG
13. Magoon and Ingersoll (2006), CS, USA	<i>N</i> = 116 Age = 14–19	Parental modeling of gambling; IPPA; Alabama parenting questionnaire-parental monitoring and supervision scale	SOGS-RA Not a problem, at risk, problem
14. Vachon et al. (2004), CS, CAN	<i>N</i> = 938 Age <i>M</i> = 15.6	Pittsburg youth study (parenting practices): occupation prestige scale (SES)	SOGS-RA; SOGS At-risk, problem (SOGS-RA) PPG (SOGS)
15. van Hamel et al. (2007), CS, CAN	<i>N</i> = 1,998 Age = 11–18	Family cohesion (FACES II)	DSM-IV-MR-J Social, some risk, seriously at-risk, PPG
16. Vitaro et al. (1998), L, CAN	<i>N</i> = 765 Age = 10–14 (T1), 17 (T2)	Family sociodemographics	SOGS-RA Non-gamblers, low recreational, high recreational, problem
17. Vitaro et al. (2001), L, CAN	<i>N</i> = 717 Age = 13–14 (T1), 16–17 (T2)	Parental supervision; family sociodemographics	SOGS-RA
18. Wanner et al. (2006), L, CAN	<i>N</i> = 903 Age = 11–16, FU = 17 and 23	Parental knowledge about adolescents' activities (self reported delinquency questionnaire)	SOGS-RA early onset, late onset
19. Wickwire et al. (2007), CS, USA	<i>N</i> = 188 Age <i>M</i> = 15.9	Parent gambling; parent disapproval of problem behavior; family controls; family support	SOGS-RA No problem, at-risk, problem
20. Winters et al. (2002), L, USA	<i>N</i> = 305 Age <i>M</i> = 16.0 (T1), 17.6 (T2), 23.8 (T3)	Parental gambling history	SOGS; SOGS-RA At-risk, problem

Table 1 continued

Author (year), design, Country	Subjects	Family measures	Gambling measures/classification (if applicable)
21. Wood and Griffiths (1998), CS, UK	$N = 1,195$ Age = 11–15	Level of parental play	Nine dimensions of problem gambling; DSM-IV-J Possible problem gambler

^a Data drawn from L studies/data analysis CS

CS cross-sectional; L longitudinal; NR not reported; F/U follow-up; T1 data collection time 1; USA United States; CAN Canada; UK United Kingdom; SOGS South Oaks Gambling Screen; SOGS-RA South Oaks Gambling Screen Revised for Adolescents; GAQ Gambling Activities Questionnaire; SES socioeconomic status; DSM-IV-J Diagnostic and Statistical Manual, version 4, juvenile version; FACES-II Family Adaptability and Cohesion Scale II; PPG probable pathological gambler

these domains are not entirely distinct, each of the studies in this review examined family variables that were conceptualized as primarily related to one of these areas.

The theory of triadic influence (TTI; Flay and Petraitis 1994; Petraitis et al. 1995) provides a theoretical framework that can organize these five domains of family influences with respect to their proximity to adolescent gambling behavior. According to the TTI, there are three levels of influence: proximal, distal, and ultimate (Petraitis et al. 1995). The five domains included in the current review can be conceptualized in the distal and ultimate levels of influence. Family sociodemographic factors and characteristics of the general family climate are ultimate influences on adolescent gambling behavior, as they are broad and exogenous factors that can influence behavior. Parenting practices, family members' attitudes and behaviors, and relationship characteristics are conceptualized as more proximal, but still distal influences, on gambling behavior. Based on this conceptualization, it is possible that factors at the distal level of influence (i.e., parenting practices) mediate the influence of factors at the ultimate level of influence (i.e., family sociodemographic). Furthermore, distal influences (i.e., family members' attitudes and behaviors) can influence adolescent gambling behavior by their affect on more proximal influences (i.e., adolescent attitudes and expectations towards gambling, gambling related cognitions). Due to limitations imposed by the variables studied, this review is focused on ultimate and distal family influences on adolescent gambling behavior.

Family Sociodemographic Characteristics

Family sociodemographic characteristics such as parental divorce/separation, family structure, family socioeconomic status, and having older siblings are associated with increased engagement in risk taking behaviors during adolescence and across the life span (Crawford and Novak 2008; Miller 2002; Otten et al. 2007; Thompson et al. 2008). However, these family sociodemographic characteristics are rarely examined in the adolescent gambling literature.

Among the 21 studies included in this review, three studies (Vachon et al. 2004; Vitaro et al. 1998, 2001) reported simply controlling for family demographic characteristics in the primary analysis. Vitaro et al. (1998) found no significant difference between groups (co-morbid group, problem gamblers only, problem substance use only, no problem) on measures of parental education, parental occupational prestige, and family configuration.

Four studies have examined the association between family demographic characteristics and adolescent gambling behavior. Langhinrichsen-Rohling et al. (2004) found that family composition (i.e., if the adolescent lived with both parents or not) was not related to gambling group classification. Among the studies included in this review, SES, measured by family income and/or parental education, had a weak at best relationship with adolescent gambling behavior (Barnes et al. 1999; Chalmers and Willoughby 2006; Langhinrichsen-Rohling et al. 2004). In a follow-up study by Barnes et al. (2005), SES was weakly associated with gambling for females only.

Based on these findings, it is evident that little attention has been given to the relationship between family sociodemographic characteristics and adolescent gambling behaviors. Although family structural characteristics appear to be weaker correlates of adolescent substance use behaviors compared to family relational characteristics (Coombs and Paulson 1988; Velleman et al. 2005), they remain important variables to examine in the context of gambling behavior. Furthermore, ecological models of health behavior (i.e., problem behavior theory) recognize family demographic characteristics as determinants of health behavior (Flay and Petraitis 1994; Jessor 1987).

General Family Climate

Factors such as family support, family cohesion and family functioning have been negatively associated with adolescents' externalizing behaviors, including substance abuse (Henderson et al. 2006; Richmond and Stocker 2006; Velleman et al. 2005). To date, there is limited empirical attention to the influence of general family climate on gambling behaviors in adolescence.

Family Problems and Support

In the adolescent gambling literature, Hardoon et al. (2004) found support for their hypothesis that youth who report family problems and perceive their families as unsupportive are at increased risk for developing a gambling problem. In this study, approximately 32% of probable pathological gamblers (PPG) reported experiencing family problems that exceeded the clinical cutoff (defined as a *T* score one and a half standard deviations above the mean, ≥ 65). The prevalence of family problems increased linearly across gambling groups (8% non-gamblers, 11% social gamblers, 19% at-risk gamblers) and was a significant predictor of PPG classification. In addition, Hardoon et al. (2004) found significant differences in level of family support between gambling classification groups, indicating that non-gamblers and social gamblers had significantly higher mean scores on family support than did at-risk and pathological gamblers.

Some contradictory evidence has emerged about the association between family support and gambling behaviors. A study of predominantly African-American adolescents found that for every one point increase in family support (on a 4 point Likert scale ranging from not at all true to very much true), adolescents were 1.1 times *more likely* to be classified as an at-risk/problem gambler (Wickwire et al. 2007). Subsequent analysis revealed that there was a significant interaction between gender and family support. For female adolescents only, family support was positively correlated with gambling risk. These findings provide support for the association between family problems, family support, and gambling-related problems among adolescents and highlight the importance of future research to further elucidate the relationship between these variables.

Family Cohesion

Family cohesion, defined as the degree of emotional bonding between family members (Olson 2000), is another family variable included in studies of adolescent gambling. Although van Hamel et al. (2007) included family cohesion in their model of adolescent risk behavior, the modeling strategy they used did not allow conclusions to be drawn about the relationship between family cohesion and gambling behavior. Nonetheless, two studies have reported that higher levels of family cohesion are associated with decreased gambling behavior (Dickson et al. 2008; Langhinrichsen-Rohling et al. 2004). In spite of this observed relationship, Langhinrichsen-Rohling et al. (2004) reported that family cohesion did not make a significant contribution to discriminating between gambling classification groups. Dickson et al. (2008) found significant differences in family cohesion between gambling groups and that family cohesion mean scores decreased as level of gambling severity increased. In fact, 57% of PPG reported being disengaged (low score on family cohesion scale) from their family compared to 29% of non-gamblers. Conversely, only 11% of PPG reported being connected to their family compared to 21.8% of at-risk gamblers, 28.7% of social gamblers and 34.2% on non-gamblers. However, Dickson et al.

found that family cohesion did not increase one's odds of developing gambling-related problems when risk factors (i.e., school problems, risk propensity, trait anxiety) were included in the model. Based on these findings, it is possible that the association between family cohesion and gambling is mediated by other known risk factors—suggesting that it is an important indirect correlate of adolescent gambling.

Family Functioning

Family functioning, a measure of perceived overall family bonding, conflict, and task functioning (Clarke et al. 1998), is related to a variety of adolescent risk behaviors, including but not limited to alcohol and drug use, aggression, and delinquent behavior (Engels et al. 2005; Henderson et al. 2006). To date, the relationship between family functioning and adolescent gambling behaviors remains elusive. In one cross-cultural study, Ellenbogen et al. (2007) explored the association between family functioning, measured by family cohesion and adaptability, and problem gambling classification among Francophone, Anglophone, and Allophone high school students. Results indicated that family functioning was not a significant predictor of at-risk/pathological gambling. These findings are surprising considering the association between family functioning and other adolescent risk behaviors and warrant further attention.

Due to the extensive empirical support for the relationship between general family characteristics and other risk behaviors in adolescence, research needs to focus on further elucidating the relationship between these family-level variables and gambling behaviors. These family-level variables provide a more global measure of the overall family environment as they extend beyond the influence of dyadic family relationships. Future research could expand the variables examined in the current literature by examining the possible influence of family conflict and family communication, which are factors associated with other adolescent substance use and risk behaviors.

Parenting Practices

There is increasing attention on the relationship between parental influences and the development and maintenance of gambling and gambling-related problems among adolescents.

Parental Monitoring/Supervision

Parental monitoring and supervision is associated with a variety of child and adolescent problem behaviors (Chilcoat and Anthony 1996; Parker and Benson 2004). The terms parental monitoring and parental supervision are often used interchangeably (although monitoring is the more frequently used term) to refer to the extent of parental involvement and limit setting (i.e., curfews, monitoring of adolescents' whereabouts and peer associations) with their children. Preliminary studies did not find support for a relationship between parental monitoring and adolescent gambling (Barnes et al. 1999, 2005; Vitaro et al. 2001). However, subsequent studies have found evidence that there is an association between parental monitoring and adolescent gambling behavior (Chalmers and Willoughby 2006; Magoon and Ingersoll 2006; Vachon et al. 2004; Wanner et al. 2006). Vachon et al. (2004) found that higher parental monitoring was associated with lower levels of adolescent gambling frequency and inadequate disciplinary practices were associated with

heightened levels of adolescent gambling *problems* after controlling for the influence of gender, impulsivity, and SES. Subsequent moderation analyses revealed that parental monitoring and inadequate discipline did not moderate the link between parental gambling and adolescent gambling indicating that parenting practices do not function as protective or risk factors for adolescents with parents who gamble.

The discrepancy in the findings linking parental practices and adolescent gambling might be a result of methodological differences between the studies. With the exception of the study by Wanner et al. (2006), the association between *current* parenting practices and gambling has been observed in cross-sectional studies (Chalmers and Willoughby 2006; Vachon et al. 2004; Magoon and Ingersoll 2006). In the longitudinal assessments, no association between parental monitoring and gambling behavior was observed (Barnes et al. 2005; Vitaro et al. 2001). It is possible that parenting practices in early adolescence do not *predict* later gambling behaviors but that lower levels of parental monitoring in late adolescence are associated with increased gambling. To further our understanding of the relationship between parenting practices and adolescent gambling behavior, future research could use a prospective longitudinal research design to examine if the association between parental monitoring and gambling behaviors change over time. Furthermore, researchers could examine if parental attitudes towards gambling moderate the relationship between parenting practices and gambling behavior.

Family Members' Attitudes and Behaviors

The link between family members' role modeling behaviors and adolescent behavior is well documented in the health behavior literature and is often included as a key variable in theoretical models (Dickson et al. 2002; Eccles-Parsons 1983; Flay and Petraitis 1994; Jessor 1987). Family members' attitudes towards and engagement in risk behaviors (i.e., cigarette use, alcohol use, marijuana use) are risk factors for adolescents' involvement in these behaviors (Beyers et al. 2004). Similar findings have emerged on the relationships between family members' attitudes and behaviors and adolescent gambling. Cronce et al. (2007) found that adolescents' perceptions that one or more of their family members gamble a lot, or problematically, is associated with gambling more frequently and increased self-perception of having a gambling problem. In addition, there is empirical evidence of the possible influence of specific family members (i.e., parents and siblings) on adolescent gambling behavior.

Parental Attitudes

Unlike other adolescent risk behaviors, parents often approve of and are involved in their children's gambling activities (Felsher et al. 2003; Gupta and Derevensky 1997). Felsher et al. (2003) found that 77% of youth reported that their parents purchased scratch tickets for them. Furthermore, there was a linear increase in adolescents' reports of parent lottery and sports ticket purchases across levels of gambling severity (52.3% for social gambler, 53.3% for at-risk gamblers, and 73.9% for PPG). Parental involvement in their children's gambling reflects parental approval, which has been shown to be associated with an increase in the prevalence of gambling and gambling-related problems among adolescents (Delfabbro and Thrupp 2003; Felsher et al. 2003; Wickwire et al. 2007). Parental approval and involvement in adolescent gambling conveys a message to adolescents that gambling is a socially acceptable and harmless activity. Although not examined in the empirical

literature, sibling and extended family members' attitudes towards gambling might also influence adolescent gambling behavior and are worthwhile areas of future research.

Parental Gambling

Parental gambling is the most extensively studied, and empirically supported, family variable in the adolescent gambling literature (Dickson et al. 2008; Felsher et al. 2003; Gupta and Derevensky 1998; Hardoon et al. 2004; Langhinrichsen-Rohling et al. 2004; Magoon and Ingersoll 2006; Vachon et al. 2004; Wickwire et al. 2007; Winters et al. 2002; Wood and Griffiths 1998). There is extensive empirical support linking parental gambling and adolescent gambling. Furthermore, frequency and severity of parental gambling has been associated with adolescent gambling behavior (Vachon et al. 2004).

Langhinrichsen-Rohling et al. (2004) found that parental gambling was associated with adolescent gambling and that its influence progressed across problem gambling classification (e.g., non-gamblers reported lowest levels of parental gambling and PPG probable reported the highest levels). Winters et al.'s (2002) prospective study of youth gambling behaviors examined how predictor variables measured during early adolescence were associated with gambling behavior in early adulthood (7–8 years after the baseline assessment). Participants who reported having a parent with a gambling problem during early adolescence were seven times more likely to meet the criteria of problem gambling in early adulthood. Surprisingly, parental problem gambling was not significantly associated with at-risk gambling in young adulthood. A subsequent study by Wickwire et al. (2007) found that parental gambling was associated with adolescents being 2.8 times more likely to report at-risk or problem gambling. These findings propose a more modest relationship between parental gambling, yet highlight the consistent relationship between parental and child gambling risk. In spite of differences in study design (i.e., cross-sectional vs. prospective), sample characteristics, and measures used to assess parental gambling, these findings suggest that the association between parental gambling and adolescent gambling behaviors is robust.

Sibling Gambling

To date, there is limited empirical evidence linking sibling gambling and adolescent gambling behavior. This is surprising since adolescents report gambling more frequently with their siblings than with parents or other relatives (Gupta and Derevensky 1997). Based on findings reported by Gupta and Derevensky (1997), there is an increase in the prevalence of gambling with siblings (48% in grade four, 54% in grade six, and 55% in grade eight) as children progress through adolescence. Although these findings are limited by the cross-sectional research design and the predominantly child sample, they provide preliminary evidence that gambling with siblings might increase over time.

A more recent study by Dickson et al. (2008) found that adolescent reports of having a sister or brother with a gambling problem significantly differentiated between non-gamblers, social gamblers, at-risk gamblers and PPGs. These findings provide evidence that perceptions of sibling behaviors may be related to adolescent gambling and that future research is necessary to understand this relationship. Due to the reliance on adolescent reports of sibling behavior, future research using sibling reports of risk behavior would provide a more robust measure of sibling behavior and the association with adolescent gambling.

Extended Family Members' Gambling Behaviors

Researchers have paid little attention to the association between the gambling beliefs and behaviors of extended family members (e.g., aunts, uncles, cousins) and adolescent gambling behaviors. Gupta and Derevensky (1997) found that the prevalence of gambling with extended family members was higher than the prevalence of gambling with parents. Furthermore, Dickson et al. (2008) found that having relatives with a gambling problem significantly differentiated between non-gamblers, social gamblers, at-risk gamblers and PPGs. These findings provide support for the importance of research being undertaken to better understand the possible influence of extended family members' gambling behaviors on adolescent gambling.

Family Members' Substance Use Behaviors

Parental substance abuse is another family variable that is associated with gambling-related problems among adolescents (Dickson et al. 2008; Hardoon et al. 2004; Langhinrichsen-Rohling et al. 2004). According to Hardoon et al. (2004), PPGs and at-risk gamblers report significantly more family members with drug or alcohol problems. More specifically, PPGs reported significantly more substance abuse by their fathers or stepfathers than at-risk gamblers. Although the reported prevalence of substance abuse among mothers and stepmothers was also higher for probable pathological and at-risk gamblers (when compared to non-gamblers and social gamblers) no significant differences were found between the two gambling risk groups. A more recent study by Dickson et al. (2008) found evidence that parental substance abuse significantly differentiated between adolescent gambling group classifications (higher prevalence of family substance abuse among PPGs when compared to at-risk gamblers, social gambler and non-gamblers).

The association between family substance use and adolescent gambling behavior extends beyond parental influence. Dickson et al. (2008) found that having a sister, brother, or other relative with a substance abuse problem significantly differentiated between adolescent non-gamblers, social gamblers, at-risk gamblers and probable pathological gamblers. It is important to note that these findings are based on adolescent reports of family members substance abuse and lack confirmatory evidence, which might result in under or over representation of family members' substance use behaviors. Future research in this area would be enhanced by including family members reports of gambling behaviors and attitudes; and by examining the individual and contextual factors that moderate the influence of family members' attitudes and behaviors (i.e., gender, adolescent–family relationship quality, self-esteem).

Relationship Characteristics

Although not extensively studied by gambling researchers, family relationships are beginning to emerge as potential factors linked to the development of adolescent gambling.

Parent–Adolescent Relationship Characteristics

Close, supportive dyadic family relationships have been associated with lower rates of externalizing behaviors among adolescents (Parker and Benson 2004; Youngblade et al. 2007). There is preliminary evidence that characteristics of parent–adolescent relationships are also important to understand with respect to adolescent gambling behaviors. Magoon

and Ingersoll (2006) explored parent–adolescent attachment (the level of emotional support that is characterized by involvement, trust, warmth and nurturance) and found that adolescents who reported higher levels of trust and communication with their parents were less likely to participate in gambling games of skill and less likely to meet the criteria for problem gambling. In addition, increased parental attachment was associated with lower levels adolescent gambling. Conversely, participants who reported lower levels of parental trust and communication were more likely to be classified as problem gamblers. Although it is impossible to establish casual relationships in correlational research, these findings highlight the possible influence of parent–adolescent relationship quality on gambling behaviors and provide support for longitudinal research to establish temporal precedence.

Chalmers and Willoughby (2006) examined if the association between parent–adolescent relationships and gambling outcomes differed by gender. In their study, the parental relationship construct included the following variables: attachment to mother and father, having fun with parents, communicating with parents, and parental knowledge of activities. They found evidence that parental relationship quality differentiated between low and high-risk gamblers for females but not males. In addition, they found evidence that parental variables appeared to be more influential and predictive of gambling behavior among female adolescents. Gender differences in the influence of family variables on gambling behavior must be examined further.

Adolescent–Sibling Relationships

None of the studies included in this review examined the influence of adolescent–sibling relationships on gambling behavior, suggesting that this is an understudied area of research. Future research in this area is warranted due to the cross-sectional and longitudinal evidence that sibling relationships influence emotional adjustment (Kim et al. 2007), substance use (East and Khoo 2005), and sexual risk taking (East and Khoo 2005). It is important to expand the conceptualization of family influences to include adolescents' relationships with other members of the family system. Despite sibling relationships providing a source of support for some individuals, few studies have explored the protective function of sibling relationships (Gass et al. 2007). One area worthy of attention is the possible protective function of adolescent–sibling relationship quality on gambling behavior in the presence of family problems.

Recommendations for Future Research

The study of family influences and adolescent gambling behavior is more prevalent than it was a decade ago, yet there continue to be notable gaps in the literature. These gaps include: (1) the lack of attention to the influence of a variety of family relationships and processes; (2) limited research on ethnically diverse families; (3) reliance on active parental consent; (4) reliance on adolescent self-reports; (5) limitations imposed by research designs; and (6) bridging research and practice. Each of these limitations will be discussed.

Variety of Family Factors Studied

As reflected in the literature reviewed, only a narrow range of family factors have been studied. The literature needs to be expanded to examine a wider range of family variables,

with a focus on those that are known to be associated with other adolescent risk behaviors including: family engagement, parental expectations, family communication, parental warmth, sibling relationship quality, and marital conflict. In addition, the extant literature falls short of understanding the interpersonal or intrapersonal micro-processes (e.g., parental neglect, perception of important other's expectations about gambling, self-efficacy, gambling-related cognitions) that might link the five family domains and adolescent gambling behavior. According to the TTI, these micro-processes can be conceptualized as proximal influences, the most immediate precursors of a behavior, through which more distal influences (i.e., parental monitoring) affect behavior (Petratis et al. 1995). Future research is needed to identify the micro-processes (proximal influences) that link more distal family influences to adolescent gambling behavior.

Furthermore, the literature should be expanded to examine other general family characteristics such as SES and family beliefs about money as correlates of adolescent gambling. Among the 21 studies included in this review, results from the four studies exploring family SES were inconclusive for the association with adolescent gambling (Barnes et al. 1999, 2005; Langhinrichsen-Rohling et al. 2004; Vachon et al. 2004). Due to the potential influence of SES on adolescents' access to and relationship with money, this is an important variable to examine in more detail. Furthermore, family beliefs and expectations about money should be examined as potential factors associated with adolescent gambling. Based on clinical experience working with adolescent problem gamblers, it appears that families that emphasize the importance of having money and associate money with success and power might have a role in the onset of gambling behaviors among adolescents. More specifically, adolescents who are highly motivated to access money sometimes perceive gambling as an easy way to get money and secure the admiration and respect of their family.

It is also important to note that many of the studies included in this review used non-standardized measures to assess family constructs. The use of standardized measures will further our understanding of family influences and gambling behavior during adolescence, and facilitate comparison to related literature.

Attention to Ethnically Diverse Families

Although there is limited research comparing gambling behavior in minority and non-minority groups, there is some evidence of differences in the prevalence of gambling and gambling-related problems among non-Caucasian adolescents and their Caucasian peers (Stinchfield 2000; Welte et al. 2008; Westphal et al. 2000). Specifically, adolescent problem and pathological gamblers are more likely to be African American and non-Caucasian (Westphal et al. 2000; Wickwire et al. 2007). Due to differences in attitudes towards gambling and the prevalence of gambling among cultural groups (Raylu and Oei 2004), we can hypothesize that familial influences might vary across diverse groups. To date, most of the participants included in the research studies under review are Caucasian, which has resulted in a notable gap in the current understanding of the relationships between family influences and gambling behaviors among non-Caucasian adolescents. Furthermore, Wickwire et al. found that parental gambling had a more modest relationship with gambling behavior among a predominantly African American sample than findings that have emerged from studies of Caucasian adolescents (Winters et al. 2002). Therefore, the association between family influences and gambling behavior might differ by ethnic group and this proposition requires further research.

Reliance on Active Parental Consent

Research related to adolescent risk behavior is often confounded by issues related to active parental consent (Tiggs 2003), such as a self-selection bias towards a lower risk sample (Magoon and Ingersoll 2006). Active parental consent is often received from participants from two parent families, who are involved in health intervention programs and extra-curricular activities, and who are less likely to engage in problem behaviors (Anderman et al. 1995). Of the studies reviewed that reported consent procedures, 87% (13/15) required active parental consent from participants. This is an important contextual factor to consider when interpreting the study results as active parental consent limits sample representativeness and can result in sample bias (Rojas et al. 2008). Therefore, it is important to highlight that what is currently known about familial influences on gambling behavior might be a conservative estimate of actual behavior and family processes. It is possible that the participants who receive parental consent to participate in these studies are less likely to engage in high-risk behaviors (e.g., gambling) and might be less likely to have parents who gamble or engage in other high-risk behaviors.

Reliance on Adolescent Self-Report

Another methodological limitation of the literature under review is the almost exclusive reliance on adolescent self-report. Only three studies included in this review collected collateral information from family members to verify adolescent reports (Barnes et al. 1999, 2005; Vachon et al. 2004). Therefore, the extent to which stated behaviors reflect actual behaviors, including problem gambling severity, is unknown. The use of adolescent self-report is particularly limiting when used to report on other people's gambling behaviors (i.e., parental gambling), as this is the adolescent's perception of their parent's gambling behaviors. It is possible, and maybe likely, that adolescents are not aware of actual parental gambling behaviors due to the extent that gambling can be kept secret from family and friends. Research examining the reliability of adolescents' reports of family gambling behaviors would be a valuable contribution to the literature. Furthermore, the inclusion of family members' reports of family processes and their own behaviors would further address this limitation of the current literature.

Limitations Imposed by Research Designs

Lack of Longitudinal Research

The importance and need for longitudinal research on the influence of family factors on adolescent gambling is noted in the literature (Dickson et al. 2008; Langhinrichsen-Rohling et al. 2004). Longitudinal research is needed to identify the temporal and causal nature of the associations between family factors and gambling behavior. Among the 21 studies included in this review, there are five longitudinal studies related to family influences on adolescent gambling behavior. The limitations in the longitudinal study of familial influences on gambling behavior are reflective of the general gaps in the current literature (i.e., a narrow range of familial variables studied, reliance on adolescent self-reports, and little attention to the relational factors that might mediate or moderate the longitudinal associations).

Lack of Experimental Research

All of the studies included in this review used a non-experimental design. This is a notable limitation of this body of research as it prevents identification of the causal role of family variables in regard to adolescent gambling behavior. Although there is empirical evidence that these family factors are associated with adolescent gambling behavior, the current research designs do not eliminate the possibility that these associations are spurious (accounted for by their relation to other variables). Although some of the family variables examined in this review are not easily manipulated for experimental research, there are some modifiable family factors that can be targeted in randomized controlled trials (RCTs). For example, an intervention aimed to foster close, supportive parent–child relationships could test if changes in parent–child relationships are associated with significant changes in adolescent gambling behavior when compared to treatment as usual or a psychoeducational control group. Findings from experimental research could be used to inform the development of empirically based gambling prevention and intervention programs that address the social and interpersonal influences on adolescent gambling behavior.

Lack of Attention to Mechanisms of Change

In the empirical literature there is increasing attention placed on studying underlying causal mechanisms and processes by which relationships between variables exist. The move towards studying mediation and moderation reflects a progression in family research from investigating the overall relationships among variables, as exemplified by the research reviewed, to elucidating more detailed explanations of the causal pathways by which a variable brings about change in another. Although a few of the more recent studies included in this review examined moderators of the relationships among family influences and adolescent behaviors (Cronce et al. 2007; Ellenbogen et al. 2007; Magoon and Ingersoll 2006; Wickwire et al. 2007), more attention is needed to understand the processes influencing the associations between family factors and gambling behavior.

Lack of Attention to Genetic Influences on Gambling Behavior

When studying family influences on gambling behavior, it is important to note that biologically based traits might be influencing gambling behavior. To date, the study of family influences and adolescent gambling behavior has focused on the social/interpersonal factors that are associated with behavior with little to no consideration of the genetic transmission of characteristics that put adolescents at risk for gambling (e.g., impulsivity). It is possible that any relationship between family relational factors (e.g., parent adolescent gambling behavior) and gambling behavior in early adulthood can be explained by other individual and family influences such as a genetic propensity towards being impulsive. Therefore, to account for the possible influence of biologically based traits and to reduce the likelihood of spurious correlations between variables, future research should examine these factors.

Lack of Appropriate Control Variables

Many of the studies reviewed did not control for variables known to be associated with gambling behavior (i.e., demographic factors, impulsivity, substance use), to ensure that the association between the family variables and adolescent gambling behavior is robust.

For example, in Barnes et al.'s (1999) study, parental monitoring was significantly correlated with adolescent gambling behavior but was not a significant predictor of gambling after controlling for the influence of demographic factors, impulsivity and moral disengagement. Future research focused on family influences and adolescent gambling behavior needs to include correlates of gambling behavior as control variables so that the unique role of the family can be estimated.

Bridging Research and Practice

Finally, not unlike the trend in many areas of family research, the articles reviewed seldom noted the clinical implications of their findings. To help bridge the gap between research and practice, articles on family influences on adolescent gambling should outline the implications of their findings for the prevention and treatment of adolescent gambling and problem gambling. Bridging the gap between research and practice is important because despite the prevalence of problem gambling among adolescents there are currently no empirically supported treatments for adolescent problem gambling (Gupta and Derevensky 2008).

Conclusion

There is considerable evidence that family factors are associated with increasing risk and also in protecting adolescents from engaging in gambling behaviors. Due to increasing recognition that adolescent gambling is a risk behavior that warrants attention from researchers and clinicians, further attention needs to be directed towards understanding family influences on gambling behavior.

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