Regular Article

The Intergenerational Transmission of At-Risk/Problem Gambling: The Moderating Role of Parenting Practices[1]

Nicki A. Dowling, PhD,[1,2] Kerrie A. Shandley 0000-0001-7844-4443, PhD,[1] Erin Oldenhof, BA(Hon),[1,3] Julia Affleck,[2] BA(PostGradDip), George J. Youssef, PhD,[1,4] Erica Frydenberg, PhD,[2] Shane A. Thomas, PhD,[5] Alun C. Jackson,PhD,[2]

Affiliations

1 School of Psychology, Deakin University, Burwood, Australia

2 Melbourne Graduate School of Education, University of Melbourne, Melbourne, Australia

3 School of Psychological Sciences, Monash University, Clayton, Australia

4 Centre for Adolescent Health, Murdoch Childrens Research Institute, Melbourne, Australia

5 Centre for Research on Ageing, Health and Wellbeing, Australian National University, Canberra, Australia

Running Head (50 characters): Parenting in intergenerational gambling transmission

Corresponding author & contact details

Nicki A. Dowling

Associate Professor of Psychology

Deakin University

School of Psychology, Faculty of Health

Melbourne Burwood Campus

Room BC5.116, 221 Burwood Highway, Burwood, VIC, 3125

T: +61 (3) 9244 5610

F: +61 (3) 9244 6858

E: nicki.dowling@deakin.edu.au

School of Psychology, Faculty of Health

Abstract

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Abstract

Background and Objectives: Although parenting practices are articulated as underlying

mechanisms or protective factors in several theoretical models, their role in the

intergenerational transmission of gambling problems has received limited research attention.

This study therefore examined the degree to which parenting practices (positive parenting,

parental involvement, and inconsistent discipline) moderated the intergenerational

transmission of paternal and maternal problem gambling.

Methods: Students aged 12-18 years (N=612) recruited from 17 Australian secondary

schools completed a survey measuring parental problem gambling, problem gambling

severity, and parenting practices.

Results: Participants endorsing paternal problem gambling (23.3%) were 4.3 times more

likely to be classified as at-risk/problem gamblers than their peers (5.4%). Participants

endorsing maternal problem gambling (6.9%) were no more likely than their peers (4.0%) to

be classified as at-risk/problem gamblers. Paternal problem gambling was a significant

predictor of offspring at-risk/problem gambling after controlling for maternal problem

gambling and participant demographic characteristics. The relationship between maternal

problem gambling and offspring at-risk/problem gambling was buffered by parental

involvement.

Discussion and Conclusions: Paternal problem gambling may be important in the development of adolescent at-risk/problem gambling behaviours and higher levels of parental involvement buffers the influence of maternal problem gambling in the development of offspring gambling problems. Further research is therefore required to identify factors that attenuate the seemingly greater risk of transmission associated with paternal gambling problems.

Scientific Significance: Parental involvement is a potential candidate for prevention and intervention efforts designed to reduce the intergenerational transmission of gambling problems.

Background

Parental gambling problems are now a well-established risk factor for the development of offspring gambling, with considerable evidence that the children of problem gamblers report an elevated prevalence of problem gambling compared to the children of non-problem gamblers[1-4]. For example, in a large-scale Australian community telephone survey, 4.0% of participants reported paternal problem gambling and 1.7% reported maternal problem gambling. Compared to their peers, participants reporting paternal problem gambling were 5.1 times more likely to be moderate risk gamblers and 10.7 times more likely to be problem gamblers. Participants reporting maternal problem gambling were 1.7 times more likely to be moderate risk gamblers and 10.6 times more likely to be problem gamblers. There is also some limited evidence that the parent-and-offspring problem gambling relationship, particularly in relation to paternal problem gambling, remains significant after controlling for socio-demographic factors and maternal gambling behaviours[1-4].

Despite the accumulation of evidence of the magnitude and specificity of risk associated with this intergenerational transfer of gambling problems, theoretical or conceptual models that articulate the processes underlying this transmission are under-developed. Theoretical models attempting to explain the etiologic mechanisms underlying the intergenerational transfer of alcohol use problems can potentially guide the selection of potentially relevant variables for study in the mediation and moderation of risk for the development of problem gambling behaviour in the children of problem gamblers[5-7]. For example, Sher [7] proposed three etiological pathways: (1) the enhanced reinforcement pathway, which posits that positive offspring alcohol expectancies (through temperament/personality, cognitive dysfunction, and ethanol sensitivity) are mediating mechanisms; (2) the deviance proneness pathway, in which peer influence is conceptualised as the most proximal mediating factor to offspring alcohol dependence, and parental monitoring of deviant peer relationships is viewed as a protective factor; and (3) the negative affect pathway, in which the major mediating factors are negative affective states, high levels of life stress, and the effectiveness of coping resources. Integrating two addiction hypotheses, Tepperman, Albanese, Stark [8] posited a model for the intergenerational transfer of gambling problems: the social modelling hypothesis, which emphasises acceptability of gambling practices, gambling-focused opportunities, and social modelling of gambling behaviour; and the childhood distress hypothesis, which emphasises current stressors, childhood distress, maladaptive coping, parenting practices, and mental health problems.

To date, the mechanisms underlying the transmission of gambling problems from one generation to the next have received minimal empirical research attention. In an investigation of the potential mediating role of parental psychopathology (problem drinking, drug use problems, and mental health issues), Dowling and colleagues[1] found that paternal problem

drinking and maternal drug use problems partially mediated the relationship between paternal-and-offspring problem gambling, and fully mediated the relationship between maternal-and-offspring problem gambling. In contrast, parental mental health issues failed to significantly mediate the transmission of gambling problems by either parent. Dowling and colleagues[2] also explored the role of positive gambling expectancies (enjoyment, self-enhancement, money), negative gambling expectancies (over-involvement, emotional impact), and gambling motives (enhancement, coping, social) in the intergenerational transmission of gambling problems and found that money and emotional impact expectancies, as well as enhancement and coping motives, significant mediated the relationship between parent-and-offspring problem gambling. In contrast, Oei and Raylu[4] found that offspring gambling cognitions (cognitive distortions/positive expectancies) failed to mediate the parent-to-offspring problem gambling relationship.

Each of the available theoretical models emphasise the role of parenting practices in the intergenerational transfer of addiction. Windle [5] posited that parenting deficits, including inconsistency and harsh discipline, combine with life stressors as mediators of transmission. Seilhamer and Jacob's model[6] posits that three main intergenerational pathways (ethanol, family, and modelling effects) are explained by the risk factors of disrupted parenting, including inconsistent unstable environment, poor socialisation, and lack of nurturance. Sher's[7] deviance proneness pathway emphasises parental behaviour, including parenting monitoring, as a protective factor in the intergenerational transmission. Finally, the childhood distress path in Tepperman and colleagues' model[8] proposes that offspring gambling problems result from the expression of childhood distress (e.g., neglect, abuse, and parentification – the reversal in roles between parent and child). To date, however, only Vachon, Vitaro, Wanner, Tremblay [3] have directly explored the role of parenting practices in

the intergenerational transfer of gambling problems. In this study, neither inadequate discipline nor parental monitoring moderated the relationship between parent-and-offspring problem gambling in a Canadian community adolescent/parent sample.

A greater understanding of the role of parenting practices in the transmission of gambling problems from one generation to the next has implications for the development of parent training programs with parenting practices as intervention targets to reduce the influence of parental problem gambling on the development of adolescent gambling difficulties. The aim of the present study is therefore to further investigate the influence of parenting practices on the intergenerational transmission of gambling problems. It is hypothesised that (a) there will be a significant positive relationship between paternal/maternal-and-offspring problem gambling and that these relationships will remain significant after controlling for demographic characteristics and other-parent problem gambling; and (b) the relationship between paternal/maternal-and-offspring problem gambling will be moderated by parenting practices (positive parenting, parental involvement, and inconsistent discipline).

Methods

Participants and procedure

The sample consisted of 612 secondary school students aged between 12 and 18 years. Overall, 95.0% of participants completing the measure of problem gambling severity (n=597) was classified as non-problem gamblers (NPG group), 4.4% as at-risk gamblers, and 0.7% as problem gamblers. The demographic characteristics and gambling participation estimates for the sample, broken down by the non-problem gambling (NPG) and combined 'at-risk/problem gambling' (ARPG) groups, is displayed in Table 1. The sample comprised 39.3% males, with a mean age of 16.0 years (*SD* = 1.3). The majority of the sample (81.9%)

was born in Australia. Over two-thirds of participants (67.5%) had gambled at least once in the past year. The most common gambling activities were instant scratch tickets/lotteries (47.4%) and private card games (40.8%), with smaller proportions reporting off-course horse or dog racing (20.6%), sports betting (17.2%), on-course horse or dog racing (13.2%), electronic gaming machines (6.6%), internet gambling (6.0%), and casino table games (4.3%).

[Insert Table 1]

This study obtained ethics approval from the University of Melbourne Human Research Ethics Committee (No. 0825006), Victorian Department of Education and Early Development (No. SOS003985), Catholic Education Melbourne (No. GE0810009), Catholic Diocese of Ballarat, and Catholic Diocese of Sale. In total, fourteen government and three independent schools from metropolitan and regional areas of Victoria (Australia) participated in the study. Written consent from parents and subsequent verbal assent from students was obtained before participation in the study. Surveys were administered under supervision during the school day and required approximately 20 minutes to complete. Participants received a movie ticket upon receipt of the questionnaire in compensation for their time.

Measures

Participants were required to answer two single screening items assessing the perceived presence of parental problem gambling: 'Have you ever thought that your [father/male guardian]/[mother/female guardian] had a gambling problem?' They were asked to consider each question in relation to the Australian national definition of problem gambling ('*someone who spends too much money or time on gambling which causes problems for themselves or other people'*). Response options for each item were: Yes, now; Yes, in the past (>12 months

ago); No; Don't know; My [father/male guardian]/[mother/female guardian] doesn't gamble. These responses were recoded into a negative (No; Don't know; My [father/male guardian]/[mother/female guardian] doesn't gamble) or positive endorsement (Yes, now; Yes, in the past) of each item (paternal and maternal problem gambling) for the statistical analyses.

There is substantial evidence that the reliability and validity of single-item questions for identifying the presence of parental alcohol use disorders using family history methods is satisfactory[9-10].

Participants were asked to indicate how often they gambled on a range of gambling activities with money or possessions during the previous 12 months (never; at least once; once a month or more often). The *DSM-IV-Multiple Response-Juvenile* (DSM-IV-MR-J)[11] was employed to evaluate participant problem gambling severity. The DSM-IV-MR-J is a 12-item measure of past year problem gambling among people aged 12-18 years. The scale comprises nine dimensions of pathological gambling: preoccupation, tolerance, loss of control, withdrawal, escape, chasing, lies, unsocial/illegal acts, falling out with family/truancy. Items are answered on a 4-point scale from (1) *never* to (4) *often*. Although a cut-off score of ≥ 4 indicates problem gambling[11], an 'at-risk' category for scores of 2-3 is often employed[12-14]. The DSM-IV-MR-J is the most commonly employed measure of youth problem gambling severity and has demonstrated acceptable internal consistency ($\alpha = .78$), construct validity, and factor structures in previous research[11]. This scale displayed acceptable internal consistency in the current study ($\alpha = .78$).

The *Alabama Parenting Questionnaire* (APQ)[95] subscales of positive parenting (6-items; use of positive reinforcement), parental involvement (10-items; degree of parental involvement),

and inconsistent discipline (6-items; consistency in applying discipline) were employed to assess perceived parenting practices. All items are answered on a 5-point scale from (1) *never* to (5) *always.* These subscales have demonstrated adequate psychometric properties validated for children aged 6-13 years[15], and displayed good internal consistency in the current study (α = .70-.90).

Statistical analysis

SPSS (v.22)[16] was used for data cleaning, and all analyses were conducted in Mplus (v.7.2)[17]. For the small percent of missing data (less than 5%), pairwise deletion was applied to cases with more than 30% of any scale missing, and single imputation using Estimation Maximisation was used for cases with less than 30% missing[18]. Because participant DSM-IV-MR-J scores were positively skewed and transformations did not improve normality, DSM-IV-MR-J categories were employed in the analyses. Given the small proportion of problem gamblers in this sample, the at-risk and problem gambling categories were merged to create the ARPG group. Pearson's chi-square analyses were employed to explore the relationship between paternal/maternal problem gambling and participant DSM-IV-MR-J categories. A binary logistic regression was then employed to examine whether paternal problem gambling, maternal problem gambling, and participant demographic factors (gender, age, and country of birth) predicted participant ARPG status. Finally, a series of six moderated binary logistic regressions were conducted to explore whether the three parenting practices (APQ positive parenting, parental involvement, and inconsistent discipline) moderated the relationship between paternal/maternal-problem gambling and participant ARPG status. Simple slopes analysis was performed to further investigate significant interaction effects. These analyses were repeated controlling for demographic characteristics.

Results

Participants endorsing paternal problem gambling were 4.3 times more likely to be classified in the ARPG group (23.3%) than their peers (5.4%), χ^2 (1) = 15.44, p < 0.01. There was, however, no significant difference in the endorsement of maternal problem gambling between the ARPG (6.9%) and NPG (4.0%) groups, χ^2 (1) = 0.57, p = 0.45. A logistic regression performed to determine if maternal problem gambling, paternal problem gambling, and participant demographic characteristics (gender, age, and country of birth) were predictors of participant ARPG status (Table 2) revealed that while the overall model was significant ($\chi2$ (5) = 11.62, p = 0.04), the only significant predictor was paternal problem gambling (OR = 4.54, p = 0.002).

[Insert Table 2]

A total of six moderated binary logistic regressions were conducted to explore whether the three parenting practices moderated the relationship between paternal/maternal-problem gambling and participant ARPG status. The only significant interaction detected was between maternal problem gambling and parental involvement (Table 3). Simple slopes analysis (Figure 1) performed to further investigate this interaction revealed that one slope was significantly different from zero; participants who reported having a problem gambling mother had a higher probability of being in the NPG group (relative to the ARPG group) if they scored higher on parental involvement (OR = 0.08, SE = 2.80, p = 0.01, 95%CI [0.01, 0.57]).

Notably, there were few changes in interpretation of the findings (i.e., the effects were of same magnitude, direction, and statistical significance) when the regression analyses were redone with the inclusion of socio-demographic characteristics (gender, age and country of

birth) as covariates. The only difference is that the interaction between maternal problem gambling and positive parenting became significant (p=0.044) (Table 3). Simple slopes analysis, however, performed to further investigate this interaction did not reveal either slope to be significantly different from zero.

[Insert Table 3 and Figure 1]

Discussion

The objective of this study was to investigate the effect of parenting practices (positive parenting, parenting involvement, and inconsistent discipline) on the transmission of problem gambling behaviour from parents to their offspring. The results revealed that adolescents who endorsed paternal problem gambling were more than four times more likely to be classified within the ARPG group than adolescents who did not report paternal problem gambling. Moreover, paternal problem gambling significantly predicted offspring ARPG status after controlling for demographic characteristics and maternal problem gambling. In contrast, adolescents positively and negatively endorsing maternal problem gambling did not differ in ARPG group classification; and maternal problem gambling was not a significant predictor of offspring ARPG status after controlling for demographic factors and paternal problem gambling. These findings are consistent with previous research[1,3,4] that has indicated that paternal problem gambling, in particular, may be important in the development of adolescent at-risk/problem gambling behaviours.

There was limited support for the hypothesis that parenting practices would moderate the relationship between paternal/maternal-and-offspring problem gambling. Consistent with theoretical intergenerational transmission addiction models[5-8], but inconsistent with previous empirical findings[3], the results indicate that parental involvement moderates the relationship

between maternal problem gambling and offspring at-risk/problem gambling. These findings suggest that greater levels of parental involvement buffers the influence of maternal problem gambling as a contributing factor in the development of offspring difficulties with gambling. Given the prominent role paternal problem gambling appears to have in the development of adolescent at-risk and problem gambling behaviours, however, it is particularly noteworthy that none of the parenting practices evaluated in this study mitigated the relationship between paternal problem gambling and offspring at-risk/problem gambling. Further research is therefore required to identify factors that attenuate the seemingly greater risk of transmission associated with paternal gambling problems.

The findings of this study, in combination with previous research results[1,2], suggest that parent or family training programs with parental involvement, parental psychopathology, and offspring gambling expectancies and motives, as intervention targets will likely reduce the influence of parental problem gambling on the development of adolescent gambling difficulties. Although there is a lack of parent- or family-focused interventions specifically designed for the treatment of problem gambling, a serious attempt has been made in the addiction literature to combine the traditional treatment of problem drinking parents (involving educational training) with preventative services for their children (involving training in communication, coping, and resistance skills)[109-20]. There is evidence that these programs significantly reduce parental and offspring substance use, as well as parental educational skills and self-efficacy, offspring social skills, and family relations[19-20]. It is reasonable to assume that this type of program, which could be integrated relatively easily into traditional problem gambling treatment settings, could be applied to problem gambling families.

This study is limited by the cross-sectional design, the use of a non-representative sample, the failure to employ a corroborating measure of youth problem gambling, failure to assess school type (to assess possible clustering effects), and the measurement of parental problem gambling by participants. Although collecting data from a family member regarding the presence of addictive behaviours within their parents is a fast, simple, efficient, and inexpensive method that displays good to excellent specificity, it is likely to underestimate the effects of parental gambling problems[9-10]. Moreover, despite evidence for the reliability and validity of single-item questions for identifying the presence of parental alcohol use disorders[9-10], there is a need for the development of a standardised instrument that evaluates the presence of parental gambling problems. Ideally, future study of the intergenerational transmission of gambling problems would involve family study methods that involve the direct assessment of parent-child dyads for the presence of gambling problems[9-10]. Finally, the small number of participants reporting parental problem gambling and small proportion of at-risk and problem gambling adolescents may have reduced the statistical power to detect transmission and interaction effects. This issue is compounded by some concerns that problem gambling rates for adolescents are inflated and that those categorised in 'at-risk' groups are even less likely to experience considerable gambling-related harm[21-22].

There is a clear need for further studies investigating potential mediators and moderators of the intergenerational transmission of problem gambling, particularly in relation to the influence of paternal problem gambling. Despite the limitations of this study, the findings suggest that adolescents with possible gambling problems are at higher risk for the development of gambling problems themselves and that parental involvement buffers the influence of maternal problem gambling. These findings add to our growing understanding of

the transmission of gambling problems from one generation to the next and highlight parental involvement as a potential candidate for targeted prevention and intervention efforts.

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Declaration of interest

Table 1: Sample demographic characteristics and gambling participation

	NPG[a] n (%) (n=567)	ARPG[a] n (%) (n=30)	Total sample [b] (n=612)
Gender (male)	220 (38.8%)	13 (43.3%)	240 (39.3%) [c]
Age (years)	M=16.0 (1.3)	M=16.0 (1.2)	M=16.0 (1.3)
Country of birth (Australia)	466 (82.2%)	23 (76.7%)	489 (81.9%)
Past-year gambling participation			
Off-course horse/dog racing	111 (19.6%)	13 (43.3%)	124 (20.6%)
On-course horse or dog racing	71 (12.5%)	9 (30.0%)	80 (13.2%)
Electronic gaming machines	33 (5.8%)	7 (23.3%)	40 (6.6%)
Instant scratch tickets/lotteries	262 (46.2%)	22 (73.3%)	285 (47.4%)
Casino table games (in-venue)	16 (2.8%)	10 (33.3%)	26 (4.3%)

Sports betting	90 (15.9%)	14 (46.7%)	104 (17.2%)
Private card games	221 (40.0%)	24 (80.0%)	246 (40.8%)
Internet gambling	26 (4.6%)	10 (33.3%)	36 (6.0%)

a Based on the sample completing the DSM-MR-J
b Based on the total sample (n=612) but sample sizes vary slightly according to missing data (n=601-603)
c One participant did not report gender

Table 2 Binary logistic regressions exploring the prediction of parental problem gambling on

participant ARPG status

	Odds Ratio	Robust SE	p	[95% CI]
Age	1.00	0.14	0.978	[0.76, 1.32]
Gender	1.17	0.47	0.693	[0.53, 2.57]
Country of birth	0.64	0.28	0.315	[0.26, 1.54]
Paternal Problem Gambling	4.54	2.18	0.002	[1.77, 11.62]
Maternal Problem Gambling	0.98	0.71	0.980	[0.24, 4.03]

Table 3 Moderated binary logistic regressions exploring the interaction between paternal- and

maternal-problem gambling with parenting practices on participant ARPG status

	Odds Ratio	Robust SE	p	[95% CI]
Inconsistent discipline	1.11	0.06	0.039	[1.01, 1.23]
Paternal PG	0.12	0.40	0.532	[<0.01, 99.66]
Inconsistent discipline X Paternal PG	1.21	0.20	0.250	[0.87, 1.69]
Parental involvement	0.94	0.02	0.016	[0.86, 0.99]
Paternal PG	1.12	2.34	0.957	[0.02, 66.83]

Parental involvement X Paternal PG	1.05	0.07	0.465	[0.92, 1.20]
Positive parenting	0.92	0.04	0.041	[0.84, 1.00]
Paternal PG	0.32	0.52	0.480	[0.04, 7.35]
Positive parenting X Paternal PG	1.15	0.08	0.058	[1.00, 1.33]
Inconsistent discipline	1.13	0.06	0.011	[1.03, 1.25]
Maternal PG	4.11	9.07	0.521	[0.05, 310.04]
Inconsistent discipline X Maternal PG	0.95	0.10	0.645	[0.77, 1.18]
Parental involvement	0.93	0.02	0.002	[0.88, 0.97]
Maternal PG	<0.01	<0.01	<0.001	[<0.01, 0.01]
Parental involvement X Maternal PG	1.31	0.09	<0.001	[1.14, 1.50]
Positive parenting	0.93	0.03	0.043	[0.86, 1.00]
Maternal PG	<0.01	<0.01	0.093	[<0.01, 4.19]
Positive parenting X Maternal PG	1.47	0.29	0.052	[1.00, 2.18]

Reference category for dependent variable = Non-Problem Gambling

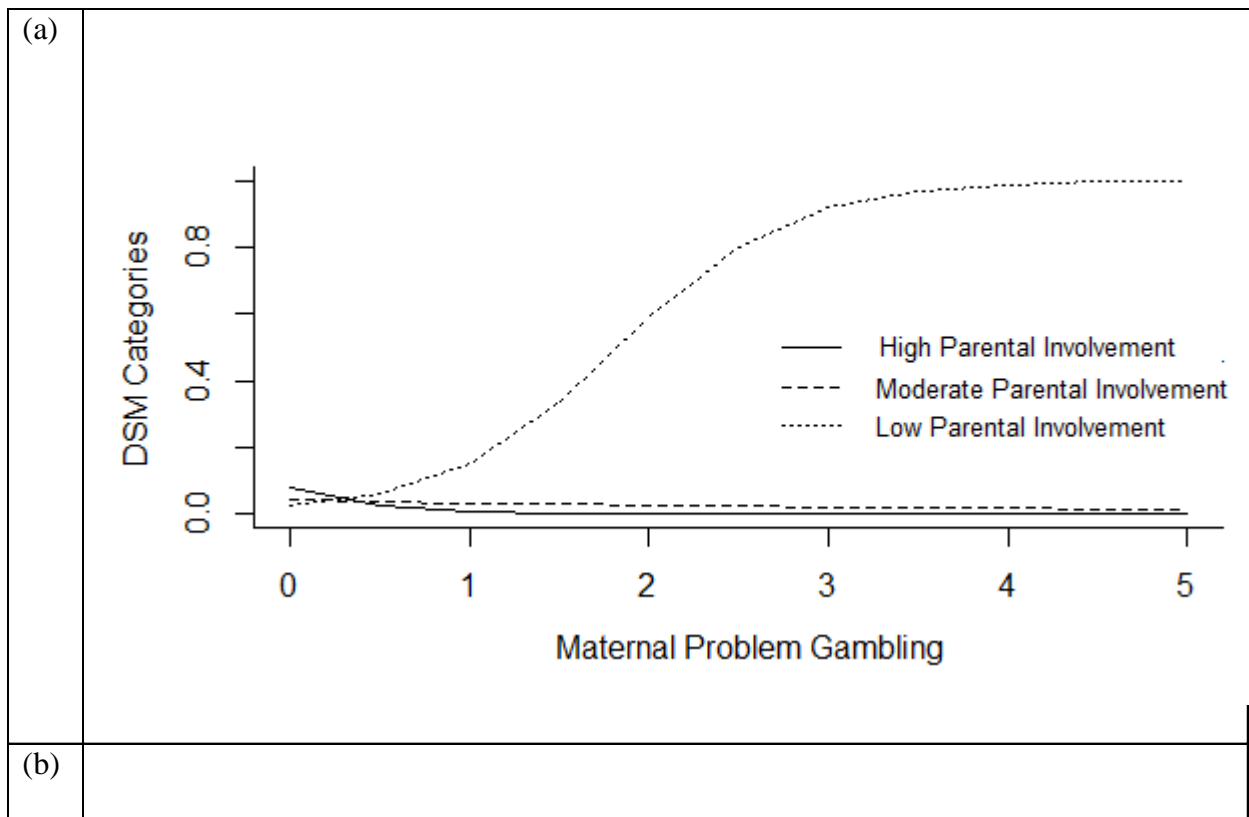Note: ARPG = At risk/problem gambling, PG = problem gambling

Figure 1

Simple slopes analysis investigating the interaction between: (a) maternal problem gambling

and parental involvement and (b) maternal problem gambling and positive parenting (after

controlling for participant socio-demographic characteristics)

Author/s:
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