

THE ROLE OF SOCIAL CONTEXT AND SOCIAL MOTIVATIONS TO GAMBLE IN THE ASSOCIATION BETWEEN MARITAL STATUS AND PROBLEM GAMBLING FOR OLDER ADULTS

Tara Elton-Marshall,^{1,2,3} Rochelle Wijesingha,⁴ Taryn Sendzik,⁵ Steven E. Mock,⁶ Mark van der Maas,¹ John McCready,⁷ Nigel E. Turner,^{1,2}

1. Institute for Mental Health Policy Research, Centre for Addiction and Mental Health

2. Dalla Lana School of Public Health, University of Toronto

3. Department of Epidemiology and Biostatistics, Western University

4. Department of Sociology, McMaster University

5. School of Public Health and Health Systems, University of Waterloo

6. Recreation and Leisure Studies, University of Waterloo

7. Healthy Horizons Consulting, Toronto Ontario

Contact corresponding author at:

Institute for Mental Health Policy Research,
Centre for Addiction and Mental Health,
200-100 Collip Circle,
London, Ontario
N6G 4X8, Canada

E- mail: Tara.EltonMarshall@camh.ca
Telephone: +1 519 858 5010 ext. 22025.
Fax: +1 519 858 5199.

Funding for this research was provided by Gambling Research Exchange Ontario (GREO).

This study was reviewed by and received ethics clearance from the Centre for Addiction and Mental Health Research Ethics Board for research involving human subjects.

ABSTRACT

Older adults are the fastest growing age group in Canada. They also represent the highest proportion of gamblers. Being married has been found to be a protective factor against problem gambling. Married people report lower problem gambling in comparison to unmarried respondents. Un-partnered older adults may be more socially isolated and lonely. Consequently, they may be more likely to engage in gambling and be at greater risk for problem gambling. The current study examines whether social motivations (gambling to socialize or gambling due to loneliness) and social context (going to the casino with friends and family) mediate the relation between marital status and problem gambling for older adults. Data are from a randomly selected representative sample of 2,103 older adults surveyed at seven gambling venues across Ontario. Mediation analyses indicated that gambling with family or friends, and loneliness mediated the relationship between marital status and Problem Gambling Severity Index (PGSI) scores. Relative to older adults who were married, those who were divorced, widowed or single were less likely to gamble with family or friends and had higher PGSI scores. Un-partnered older adults were also more likely to gamble due to loneliness and had higher PGSI scores. Gambling to socialize mediated the relation between marital status and PGSI score for widowed relative to married older adults only. Gender differences in these relationships were found. Problem gambling treatment and prevention initiatives should examine ways to decrease loneliness and social isolation among older adults and offer alternative social activities.

Keywords: older adults, problem gambling, marital status, social isolation, loneliness, social reasons for gambling

INTRODUCTION

The majority of gamblers in Ontario are older adults. According to the Ontario Lottery and Gaming Corporation (OLG), more than 78% of gaming patrons are over the age of 50 (2012). Gambling is a popular leisure activity for older adults. Three-quarters of adults 55 years of age and older reported gambling in the past year (McCready, Mann, Zhao, & Eves, 2005). Older adults are the fastest growing age group in the Canadian population (Statistics Canada, 2015) and this trend is likely to continue due to an aging baby boomer population, increased life expectancy, and low birth rate (Human Resources and Skills Development Canada, 2016a; 2016b). Understanding gambling among older adults is therefore a priority for informing problem gambling treatment and prevention initiatives.

According to prevalence estimates of problem gambling among older adults in Ontario, 4.3% were “at risk” problem gamblers, 2.0% were “moderate” problem gamblers, and 0.1% were “severe” problem gamblers (Wiebe, Single, Falkowski-Ham, & Mun, 2004). Although problem

gambling estimates among the older adult population in Ontario are generally lower than their younger counterparts (McCready, Mann, Zhao, Birchall, & Eves, 2010; Wiebe, Single, Falkowski-Ham, & Mun, 2004), a concern with problem gambling among older adults is that their unique life circumstances make it more difficult to overcome gambling losses. Many older adults are retired and therefore have limited resources to recover from financial losses (Grant Stitt, Giacomassi, & Nicols, 2003; Ladd, Molina, Kerins, & Petry, 2003; McCready et al., 2005; Petry, 2002). Retired adults also have more time for leisure activities such as gambling, and are also more likely to experience changes in social contacts and relationships, feelings of usefulness, boredom, and income inadequacy, which may motivate them to gamble (Kerber, Adelman-Mullally, & Schafer Astroth, 2015; Kim & Moen, 2002; Loro, 2004; McNeilly & Burke, 2000; Parekh & Morano, 2009; Wiebe, 2002). Decreases in social support networks can also make them less likely to be able to recover from gambling problems (Zaranek & Lichtenberg, 2008).

Older adults are also at an increased risk of experiencing social isolation and loneliness. Canadian studies have reported prevalence rates of social isolation for older adults ranging from 20% (Gilmour, 2012) to estimates as high as 83% (Hall & Havens, 1999). Life changes such as widowhood, death of family and friends, retirement, increased disability and/or declining health, and moving to a retirement home can contribute to increases in social isolation and loneliness among older adults (Cohen-Mansfield, Hazan, Lerman, & Shalom, 2015; Victor, Scambler, Bowling, & Bond, 2005; Victor & Yang, 2012). Married people report lower rates of social isolation or loneliness compared to unmarried people (Dykstra & de Jong Gierveld, 2004; Kobayashi, Cloutier-Fisher, & Roth, 2008; Victor & Yang, 2012), likely because unmarried older adults are less likely to have close or intimate relationships (Dykstra & de Jong Gierveld, 2004). Intimate relationships have been found to be the most meaningful source of social support (Cutrona, 1996). For older adults in particular, losing a spouse (through death or divorce) can mean losing a significant source of social support (Ha & Ingersoll-Dayton, 2011) and can lead to increased loneliness and social isolation (Ferreira-Alves, Magalhães, Viola & Simoes, 2014).

Widowed older adults in particular report the highest rates of loneliness, whereas married older adults report the lowest (Victor et al., 2005). Losing a spouse may be particularly more difficult for men (Chipperfield & Havens, 2001). Other research has demonstrated that unmarried men were lonelier than unmarried women (Pinquart, 2003).

Many older adults gamble to alleviate social isolation, loneliness, and to spend time with others (Hirsch, 2000; Wiebe, Single, & Falkowski-Ham, 2001; Wiebe et al., 2004). In fact, one study of older adults found that the opportunity to socialize was the most common reason to gamble (Hirsch, 2000). Many older adults cite socialization (20.9 %) and “to be around others or reduce isolation” (8.9%) as perceived benefits of gambling (Wiebe et al., 2004).

Experiencing the death of a spouse, family members, or friends may contribute to the desire to gamble to relieve emotional pain and escape feelings of loneliness (Bjelde, Chromy, & Pankow, 2008; Martin, Lichtenberg, & Templin, 2011). Martin et al. (2011) found that 22% of older adults gambled to escape the death of a loved one. There are also important gender differences in motivations for gambling. Women are more likely to report loneliness as a trigger to gamble than men (Grant & Kim, 2002) and loneliness may be one of the main reasons women gamble (Brown & Coventry, 1997). Female problem gamblers also report higher levels of loneliness compared to females who are not problem gamblers (Trevorrow & Moore, 1998). Gambling may be particularly appealing for older un-partnered adults as a way to reduce feelings of social isolation and loneliness; however, there are very few studies examining the relationship between motivations for gambling, such as gambling to socialize or gambling due to loneliness and marital status for older adults (Clarke, 2008).

Gambling to escape feelings of loneliness or social isolation is a risk factor for problem gambling (McQuade & Gill, 2012) and gambling alone is also associated with a greater risk of problem gambling (Bernhard, Dickens & Shapiro, 2007). Given that older adults who are married are less likely to feel lonely or socially isolated (Dykstra & de Jong Gierveld, 2004; Kobayashi et al., 2008; Victor & Yang, 2012), we would expect that married older adults would be less likely to experience gambling problems. Although there are conflicting studies regarding the relationship between marital status and problem gambling (with some research suggesting that

there is no association (Schellinick, Schrans, Walsh, & Grace, 2002; Ladd et al., 2003; Pietrzak & Petry, 2006; Tse, Hong, & Ng, 2013), or a positive association (Zaraneck & Lichtenberg, 2008) between being married and gambling problems), many studies have demonstrated that married older adults are less likely to have gambling problems compared to their unmarried counterparts (Tse, Hong, Wang, & Cunningham-Williams, 2012). Hirshorn and colleagues found that older adult gamblers who were unmarried (i.e., single, separated/divorced, or widowed) were 40% more likely to gamble than married older adult gamblers (Hirshorn, Young, & Bernard, 2007). Additionally, a study of older adults who regularly play electronic gaming machines (EGMs) found that participants who were un-partnered spent more time gambling, bet more money than they could afford to lose, and were 2.86 times more likely to be classified as a moderate risk or problem gambler than those who were partnered (Southwell, Boreham, & Laffan, 2008).

Similarly, in Ontario, McCready et al. (McCready, Mann, Zhao, & Eves, 2008) found that single older adult gamblers had a 118% higher risk of problem gambling, whereas widowed, separated or divorced gamblers had a 75% higher risk of problem gambling than married gamblers. Together these studies suggest that single, divorced, separated, or widowed older adults are more likely to be at-risk for problem gambling.

According to social control theory, social ties and marriage in particular are important determinants of health behaviors (Umberson, 1987; Umberson, 1992) and can inhibit risky behaviour (Sampson, Laub, & Wimer, 2006). Having a spouse may provide social control over negative behaviours (such as problem gambling) by providing social norms that discourage risky behaviour or by monitoring and directly intervening when engaging in risky behaviour (Umberson, 1987; Umberson, 1992). Because married older adults are less likely to gamble alone (Bernhard et al., 2007), they may be less likely to experience gambling problems. Social context may therefore be an important determinant of problem gambling for un-partnered older adults. Some research has demonstrated that having someone watch you play (such as a spouse or partner) may offer social control and limit gambling losses (Mishra, Morgan, Lalumière, & Williams, 2010; Rockloff & Greer, 2011). Alternatively, there is research to suggest that having friends or family who gamble may make gambling more accessible and appear socially acceptable (Welte, Wieczorek, Barnes, & Tidwell, 2006). Moreover, the presence of friends who gamble can encourage risky behaviours such as attempting to showcase higher levels of gambling skill and playing longer (Griffiths & Parke, 2003).

There are few studies examining whether social motivations such as social isolation and loneliness mediate the relation between marital status and problem gambling for older adults. A study of EGM play found that un-partnered older adults were more likely than partnered older adults to wager more money than they could afford to lose (Southwell et al., 2008). They were also more likely to report playing EGMs to reduce their sense of isolation, to be around other people, and to socialize. A recent study found loneliness mediated the relationship between marital status and problem gambling for older adults (Botterill, Gill, McLaren, & Gomez, 2015). Un-partnered older adults (divorced, widowed, or single) had higher levels of loneliness and loneliness was associated with higher problem gambling scores. Interestingly, older adult men who were un-partnered had higher levels of loneliness contributing to higher problem gambling levels than partnered older adults (i.e., married/partnered). Loneliness did not mediate the relationship between marital status and problem gambling among women.

Due to small sample sizes, many of these studies have been unable to distinguish between marital status groups with respondents categorized as partnered and un-partnered. However, research on social isolation among older adults suggests that loneliness is more significant for those who have lost a spouse (divorce or widowed) (Dykstra, Van Tilburg, & de Jong Gierveld, 2005; Ferreira-Alves et al., 2014; Newall, Chipperfield, & Bailis, 2014; Ryan, 1996; Victor et al., 2005). Thus, we would expect that these findings could differ depending on the type of un-partnered relationship (single vs. divorced or widowed). We also know that many older adults gamble to socialize as a way of reducing feelings of loneliness (Wiebe et al., 2004). In these cases, gambling may actually be beneficial. This study will therefore examine how (a) gambling because of loneliness and (b) gambling to socialize, mediate the relationship between marital status and problem gambling.

To date, no studies have examined how social context might mediate the relation between marital status and problem gambling. Married people are less likely to gamble alone (Bernhard et al., 2007). Hence, we would expect that social context would mediate the relation between marital status and problem gambling. This study will therefore examine whether social context mediates the relation between marital status and problem gambling for older adults.

A limitation of the existing research examining the relation between marital status and problem gambling is that most studies rely on small samples and/or general population-based studies of older adults, which include members of the population who are non-gamblers. This may result in an attenuated understanding of problem gambling among those most at-risk for problem gambling (i.e., those who gamble). The current study uses an existing survey of a large, representative sample of older adult gamblers. The study will examine the relationship between marital status (i.e., single, married, divorced/separated, widowed) and problem gambling, and the mediational role of social motivation (i.e., gamble to socialize or because lonely) and context (i.e., gambled with friends or family) by gender.

METHODS

The current study is a secondary analysis of data from the Seniors' gambling in Ontario study led by McCready et al. (2013), a survey of a representative sample of seniors in seven casinos and racinos in Ontario, Canada. This study was designed to better understand the role of gambling in the lives of older adults and the prevalence of gambling among this group. Data was collected between July and September 2013. The study was reviewed by and received approval from the Centre for Addiction and Mental Health Research Ethics Board for research involving human subjects.

STUDY POPULATION

The target population consisted of Ontario residents who were 55 years and older who visited one of the following gambling locations in Ontario: Woodbine Racetrack (n=303); Mohawk Racetrack (n=300); Flamboro Downs (n=300); Brantford Casino (n=300); Woodstock Raceway (n=300); Slots at Western Fair (n=300); and Georgian Downs (n=300). The survey took 20 minutes on average to complete. The overall response rate was 66%, with response rates varying by location. The final sample size consisted of a random sample of 2,103 Ontario seniors.

SAMPLING

Participants were randomly selected to participate in a survey in non-gaming areas of the gambling venues (entering/exiting). Respondents were selected by sex and age (55-64, 75-74, 75+). Further details about sampling and other protocols are detailed elsewhere (McCready et al., 2013).

MEASURES

Problem Gambling

Problem gambling was measured using the nine-item Problem Gambling Severity Index (PGSI) on the Canadian Problem Gambling Index (CPGI) which has demonstrated validity and reliability (Currie, Casey, & Hodgins, 2010; Ferris & Wynne, 2001). Responses for each PGSI item were 0="never", 1="sometimes", 2="most of the time", or 3="always". Responses across each item were summed to derive an overall PGSI score (ranging from 0 to 27), with higher scores indicating more problem gambling severity. For the purposes of this study, the continuous PGSI score was used, which has been used in other gambling research studies (MacLaren, Ellery, & Knoll, 2014; MacLaren, Fugelsang, Harrigan, & Dixon, 2012).

Social Motivations for Gambling

The study asked respondents to indicate their motivations for gambling: "What are the main reasons why you go to casinos or slot locations? Would you say that you mainly go...<check all that apply>". Two items were relevant to socialization as a motivation for gambling: (1) "To socialize with family or friends"; and (2) "To be with other people (loneliness or isolation)" (coded as 1 if the respondent indicated that the item was a motivation to gamble and 0 otherwise).

Social Context of Gambling

To determine whether respondents were gambling socially, respondents were asked: "Did you come here today alone or with others such as family members, friends, or both?" Response options were: alone, with family, with friends, with both friends and family, and recoded as 0=came alone (reference category) or 1=came with family and/or friends.

Marital Status

Marital status was coded into four categories: single/never married, divorced/separated, widowed, and married/equivalent.

Sociodemographic Covariates

Sociodemographic variables included as covariates were: age, gender, race (non-white vs. white), casino/racino location (Woodbine, Mohawk, Flamboro, Brantford, Woodstock, Western Fair, Georgian), distance (km) to the nearest casino or slot location, total household income (less than \$40,000, \$40,001-\$80,000, greater than \$80,000, don't know/prefer not to answer) and education (vocational training/ high school or less, college or university or post graduate/professional, don't know/prefer not to answer).

STATISTICAL ANALYSIS

Descriptive analyses were conducted using STATA version 12. A one-way ANOVA was used to test statistical differences in problem gambling severity score by marital status.

Independent- sample t-tests were conducted to compare problem gambling score by social motivations for gambling (i.e., to be with others, to socialize), and the social context of gambling. Chi-square tests were used to test statistical differences in social motivations for gambling (to socialize with family/friends, to be with other people) and the social context of gambling (with family or friends vs. not) by marital status. Analyses were conducted overall and then separately for males and females.

Mediation models were analyzed using Mplus version 7.4 and followed Hayes model for a multicategorical predictor, binary mediator, and continuous outcome (Hayes & Preacher, 2014). The bootstrap estimates were based on 5,000 bootstrap samples. Bias corrected 95% confidence intervals were used to determine significant mediation effects. Separate mediation models were tested to examine whether: (1) the social context of gambling (gambling with friends/family) mediates the relation between marital status and problem gambling; (2) gambling to be with other people (due to loneliness or isolation) mediates the relation between marital status and

problem gambling; and (3) gambling to socialize with family/friends mediates the relation between marital status and problem gambling. To ensure analyses tested each marital status group compared to the married category, dummy variables were created with married/common law as the reference group. Models were first tested overall and then separately for males and females. All models controlled for sociodemographic covariates. Dummy variables were constructed for casino/racino location (reference=Woodbine), total household income (reference=less than \$40,000), and education (reference=vocational training/high school or less) variables.

RESULTS

Sample characteristics are presented in Table 1. The majority of the sample was married (66.7%), followed by widowed (16.5%), separated/divorced (11.0%), and single (5.7%). Gambling to socialize was a motivation for gambling among 38.8% of respondents, and gambling to be with people was a motivation for 13.5% of respondents. The majority of the sample (74.5%) were gambling socially (they had come to the casino with family or friends). Mean problem gambling scores were higher for older adults who gambled to be with others due to loneliness ($M=2.30$, $SD=3.13$) than those who did not ($M=1.83$, $SD=2.82$), $t=-2.53$, $p=0.01$. Older adults who gambled to socialize with friends and family ($M=1.56$, $SD=2.46$) had significantly lower problem gambling scores than those who did not gamble to socialize ($M=2.11$, $SD=3.09$), $t=4.45$, $p<0.001$. Mean problem gambling scores were lower for respondents who came with family and friends ($M=1.60$, $SD=2.54$), than for those who did not ($M=2.77$, $SD=3.54$) $t=6.99$, $p<0.001$.

Differences in problem gambling, social motivations for gambling, and social context of gambling by marital status

As presented in Table 2, there were significant differences in problem gambling severity across each marital status group ($p<0.001$). Problem gambling severity scores were highest among divorced respondents (mean=3.18), followed by single (mean=2.69), and then widowed (mean=1.92). Married respondents had the lowest PGSI score (mean=1.60). Table 2 also demonstrates significant differences in social motivations to gamble ($p<0.001$) and social context of gambling by marital status ($p<0.001$). A substantial proportion of widowed respondents indicated that they gambled to socialize (49%), compared to 37.5% of married, 35.8% of single and 34.2% of divorced respondents. Widowed respondents were also the most likely to indicate that they gamble to be with people (24.8%) compared to married (10.2%), single (15.0%), or divorced (15.2%) respondents. The majority of married respondents (83.6%) were gambling socially (with family and/or friends), followed by widowed (63.6%), divorced (50.9%), and single (46.7%) respondents.

SOCIAL CONTEXT OF GAMBLING MEDIATION MODELS

Figure 1 presents results of mediation analyses to test whether the social context of gambling mediates the relation between marital status and problem gambling. Figures 1a-c demonstrate that gambling with friends or family mediates the relationship between marital status and problem gambling score for respondents who were: divorced (Fig 1a), widowed (Fig 1b), and single (Fig 1c) compared to those who were married. Older adults who were divorced ($b=-0.98$, $p<0.001$), widowed ($b=-0.90$, $p<0.001$), or single ($b=-1.00$, $p<0.001$) were significantly less likely to be gambling with friends or family compared to those who were married.

Gambling with family or friends was associated with having significantly lower PGSI scores ($b=-0.45$, $p<0.001$). The indirect effect was significant for respondents who were divorced ($b=0.44$, 95% CI 0.30 to 0.62), widowed ($b=0.40$, 95% CI 0.27 to 0.55), and single ($b=0.45$, 95% CI 0.30 to 0.64) relative to married respondents.

SOCIAL MOTIVATIONS FOR GAMBLING MEDIATION MODELS

Figure 2 presents results of mediation analyses to test whether gambling to be with other people (loneliness) mediates the relation between marital status and problem gambling. Figures 2a-c demonstrate that loneliness mediates the relationship between marital status and problem gambling score for respondents who were divorced (Fig 2a), widowed (Fig 2b), and single (Fig 2c) compared to those who were married. Older adults who were divorced ($b=0.25$, $p<0.05$) or widowed ($b=0.42$, $p<0.001$), were significantly more likely to report loneliness as a motivation

for gambling compared to those who were married. Single respondents were no more or less likely than married respondents to report loneliness as a motivation to gamble ($b=0.28$, $p=0.08$). Loneliness as a motivation to gamble was associated with having a significantly higher PGSI score ($b=0.21$, $p<0.05$). The indirect effect was significant for respondents who were divorced ($b=0.05$, 95% CI 0.01 to 0.13) and widowed ($b=0.09$, 95% CI 0.03 to 0.18). The indirect effect was marginally significant for respondents who were single ($b=0.06$, 95% CI 0.007 to 0.16) relative to married respondents.

Gambling to socialize mediates the relation between marital status and problem gambling for widowed compared to married older adults only. Although older adults who gamble to socialize had lower PGSI scores ($b=-0.38$, $p<0.001$), the only significant differences in gambling to socialize relative to married older adults was among widowed respondents. Widowed older adults were significantly more likely than married older adults to gamble to socialize ($b=0.19$, $p=0.02$). Divorced ($b=-0.11$, $p=0.27$) or single ($b=-0.03$, $p=0.79$) older adults were no more or less likely than married adults to gamble to socialize. Mediation analyses demonstrate that for widowed respondents, gambling to socialize is associated with lower problem gambling severity scores compared to married respondents ($b=-0.07$, 95% CI -0.15 to -0.02).

ANALYSES BY GENDER

Mediation analyses examining the social context of gambling among males and females were consistent with the overall models. For both males and females, social context mediated the relation between marital status and PGSI score in every marital status group relative to married older adults.

Mediation analyses were conducted among males and females separately to examine whether gambling due to loneliness mediates the relation between marital status and problem gambling differently for males and females. Among males, there was no mediation effect for divorced or single older adults compared to those who were married. However, for widowed males, there was a significant mediation effect (Figure 3a). Widowed males were significantly more likely to report loneliness as a motivation for gambling compared to those who were married. Loneliness as a motivation to gamble was associated with having a significantly higher PGSI score ($b=0.35$, $p<0.05$). The indirect effect was significant ($b=0.14$, 95% CI 0.03 to 0.34).

Among females, there was no evidence of a mediation effect for any of the marital status groups (divorced, single or widowed) relative to those who were married. Figure 3b demonstrates that widowed females were significantly more likely than those who were married to report loneliness as a motivation for gambling ($p<0.001$). However, in contrast to widowed males, the relation between loneliness as a gambling motivation and problem gambling severity score was not significant and the overall indirect effect was not significant. Mediation analyses were also conducted among males and females separately to examine whether gambling to socialize mediates the relation between marital status and problem gambling differently for males and females. Among males, there was no evidence of mediation for any marital status group. Among females, gambling to socialize mediates the relation between marital status and problem gambling for widowed compared to married older adults only. Figure 4a demonstrates that widowed males were no more likely than married males to gamble to socialize. In contrast, as demonstrated in Figure 4b, widowed females were significantly more likely to gamble to socialize ($b=0.30$, $p<0.01$) compared to married females. For widowed females, gambling to socialize was associated with significantly lower PGSI scores relative to married females ($b=-0.41$, $p<0.001$). The overall indirect effect was significant ($b=-0.12$, 95% CI -0.24 to -0.05).

DISCUSSION

This is the first study of older adult gamblers to examine the role of social context and social motivations to gamble on the association between marital status and problem gambling. Consistent with previous research (Hirshorn et al., 2007), being married was a protective factor against problem gambling severity. Un-partnered older adults (single, widowed, divorced) had higher problem gambling scores, with divorced older adults having the highest scores. According to social control theory, social ties (particularly being married or having children in the home) provide social control over negative behaviours (Sampson et al., 2006; Umberson, 1987; Umberson, 1992). We would therefore expect that divorced people would be more likely to engage in risky behaviour such as problem gambling. Divorced females in particular had the highest problem gambling scores.

Gambling to socialize and because of loneliness are important reasons why older adults gamble and many older adults were gambling with family and friends. Gambling to socialize and going to the casino with family and friends were associated with lower problem gambling scores. However, consistent with previous research (McQuade & Gill, 2012), gambling to escape feelings of loneliness or social isolation was associated with higher problem gambling scores.

The social context of gambling mediates the relation between marital status and problem gambling severity in older adults. Single, divorced, and widowed older adults were less likely than married older adults to be gambling with family and friends and this is consistent with previous research (Bernhard et al., 2007). Yet gambling with family and friends was associated with lower problem gambling severity. Consequently, single, divorced, and widowed older adults had higher problem gambling severity scores compared to married older adults. There were no gender differences in these findings, therefore suggesting that the relation between being un-partnered, gambling with friends and family, and problem gambling severity is just as important for male and female older adults.

Gambling due to loneliness mediated the relationship between each of the marital status groups and problem gambling. Divorced and widowed older adults were significantly more likely to state that they gamble due to loneliness than those who are married. The overall impact was that single, divorced, and widowed respondents had higher problem gambling scores. Previous research has shown that married people report lower rates of social isolation or loneliness in comparison to unmarried individuals (Dykstra & de Jong Gierveld, 2004; Kobayashi et al., 2008; Victor & Yang, 2012). The findings confirm that loneliness is likely an important factor in problem gambling for older adults.

There were also important gender differences. Widowed males were significantly more likely to gamble to be around others (due to loneliness) and this was associated with higher problem gambling severity scores. In contrast, widowed females were more likely than married females to gamble because of loneliness, but loneliness as a motivation for gambling did not predict problem gambling severity relative to married females. This suggests that the relation between the motivation to gamble due to loneliness and problem gambling is different for men and women. Additional research is needed to better understand these gender differences. Botterhill and colleagues found that loneliness mediated the relation between marital status and problem gambling for males but not females (Botterill et al., 2015). Un-partnered males were significantly more likely to be lonely, which in turn made them significantly more likely to be problem gamblers. In contrast, the Botterhill study (2015) found that un-partnered females were no more likely than partnered females to be lonely and therefore loneliness did not mediate the relation between marital status and problem gambling for females. One possible interpretation of our findings therefore could be that there were also differences in felt loneliness. Our study did not measure felt loneliness and we therefore do not know whether

gambling might reduce or exacerbate feelings of loneliness for men and women differently. Although women were motivated to gamble to be around others due to loneliness, going to the casino may have made them feel less lonely.

The motivation to gamble as an opportunity to socialize mediated the relation between marital status and problem gambling for only widowed older adults. Widowed older adults were more likely to state that they gamble to socialize compared to other marital status categories and this is consistent with other research in Ontario (Wiebe et al., 2004). However, we did find that the findings differed significantly by gender. Widowed females were significantly more likely to gamble to socialize compared to married females. Gambling to socialize was associated with lower problem gambling severity. Therefore, relative to married women, widows had a lower problem gambling severity score. There was no evidence of mediation for widowed males. Thus, for widowed females who are motivated to gamble for social reasons, gambling is a positive social benefit that is associated with a lower likelihood of problem gambling relative to married females.

The current study advances the literature in several important ways. Previous studies examining marital status and problem gambling were often based on small sample sizes and/or general population-based studies of older adults that include members of the population who are non-gamblers. Previous research examining the relation between marital status, loneliness, and problem gambling (Botterill et al., 2015) also categorized respondents as either partnered or un-partnered. The current study demonstrates that there are important differences in the type of un-partnered relationship (i.e., divorced or single vs. widowed). The findings of this study therefore offer a better understanding for whom and under which circumstances gambling can be a risk or a benefit.

LIMITATIONS

This study focuses on the gambling behavior of older adults attending one of seven gambling sites throughout Ontario, who may not be representative of the population of those who gamble at casinos or engage in other types of gambling. Further research is needed to determine generalizability.

The severity of gambling behavior was determined from self-reports of gambling behavior using the PGSI. As such, it is possible the results are subject to self-report bias resulting from participants engaging in impression management for reasons of social-desirability.

The results of this study are based on cross-sectional survey data. Longitudinal data analysis is needed to verify and validate the causality of mediational relationships observed. Nevertheless, this study contributes to an understanding of the relationship between social motives and severity of problem gambling behavior.

Although the measure used to assess the social context of gambling provides some insight into the presence of family and friends on older adult gambling behaviour, it does not necessarily mean that older adults who came with family and friends gambled with these individuals or alone. It is possible some individuals gambled as a group, selecting games they could play together at the same time, one after another, or in the same vicinity with high levels of social engagement. In contrast, other individuals may have selected games that could be played independently or were not in the same vicinity, resulting in lower levels of social engagement. Further research is needed to understand the presence, level of engagement, and role of family and friends on gambling behaviour among older adults.

CONCLUSION

Recently, the government of Ontario announced plans to expand gambling venues in Ontario (OLG, 2012). With the increase in the accessibility of gambling including new casinos, programs to prevent and treat problem gambling are urgently needed. Older adults represent a significant proportion of gamblers in gambling venues and therefore are an important priority target group for problem gambling treatment and prevention initiatives. This research highlights a number of important considerations for informing these initiatives. First, unpartnered older adults (single, divorced, and widowed) are at an increased risk of problem gambling because they are gambling out of loneliness. Therefore, treatment and prevention initiatives need to examine ways to decrease levels of loneliness and social isolation among older adults. Secondly, gambling due to loneliness mediated the relationship between marital status and problem gambling for widowed males and not widowed females. As noted elsewhere (Tira, Jackson, & Tomnay, 2014), it is essential for gambling treatment and prevention programs to be aimed at dealing with grief and loss in constructive ways, particularly for men. Third, divorced older adults (particularly, women) had the highest problem gambling scores, suggesting that prevention and treatment programs for divorced older adults are needed. Finally, our paper demonstrates that gambling can have positive social benefits for some older adults and that these benefits do not necessarily translate into increased risk of problem gambling. In particular, widowed females gamble because of loneliness and to socialize, and do not experience any increases in problem gambling severity rates.

REFERENCES

- Bernhard, B. J., Dickens, D. R., & Shapiro, P. D. (2007). Gambling alone? A study of solitary and social gambling in America. *UNLV Gaming Research & Review Journal*, 11(2), 1–13.
- Bjelde, K., Chromy, B., & Pankow, D. (2008). Casino gambling among older adults in North Dakota: A policy analysis. *Journal of Gambling Studies*, 24, 423–440.
- Brown, S., & Coventry, L. (1997). *Queen of hearts: The needs of women with gambling problems*. Financial & Consumer Rights Council.

- Botterill, E., Gill, P. R., McLaren, S., & Gomez, R. (2015). Marital status and problem gambling among Australian older adults: The mediating role of loneliness. *Journal of Gambling Studies*. [Epub ahead of print]. DOI 10.1007/s10899-015-9575-5.
- Chipperfield, J. G., & Havens, B. (2001). Gender differences in the relationship between marital status transitions and life satisfaction in later life. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 56(3), 176–186.
- Clarke, D. (2008). Older adults' gambling motivation and problem gambling: A comparative study. *Journal of Gambling Studies*, 24, 175–192.
- Cohen-Mansfield, J., Hazan, H., Lerman, Y., & Shalom, V. (2015). Correlates and predictors of loneliness in older-adults: A review of quantitative results informed by qualitative insights. *International Psychogeriatrics*, 1–20.
- Currie, S. R., Casey, D. M., & Hodgins, D. C. (2010). *Improving the psychometric properties of the Problem Gambling Severity Index*. Canadian Consortium for Gambling Research. Retrieved from <http://www.ccgr.ca/sites/default/files/Improving-the-Psychometric-Properties-of-the-Problem-Gambling-Severity-Index.pdf>.
- Cutrona, C. E. (1996). *Social support in couples: Marriage as a resource in times of stress* (Vol.13). Sage Publications.
- Dykstra, P. A., & de Jong Gierveld, J. (2004). Gender and marital-history differences in emotional and social loneliness among Dutch older adults. *Canadian Journal of Aging/La Revue Canadienne du Vieillessement*, 23, 141–155.
- Dykstra, P. A., Van Tilburg, T. G., & de Jong Gierveld, J. (2005). Changes in older adult loneliness: results from a seven-year longitudinal study. *Research on Aging*, 27(6), 725–747.
- Ferreira-Alves, J., Magalhães, P., Viola, L., & Simoes, R. (2014). Loneliness in middle and old age: Demographics, perceived health, and social satisfaction as predictors. *Archives of Gerontology*, 59(3), 613–623.
- Ferris, J., & Wynne, H. (2001) *The Canadian Problem Gambling Index: Final report*. Ottawa, ON, Canada: Canadian Centre on Substance Abuse. Retrieved from <http://ccgr.ca/sites/default/files/CPGI-Final-Report-English.pdf>
- Gilmour, H. (2012). Social participation and the health and well-being of Canadian seniors. *Health Reports*, 23(4), 23–32.
- Grant, J. E., & Kim, S. W. (2002). Gender differences in pathological gamblers seeking medication treatment. *Comprehensive Psychiatry*, 43(1), 56–62.
- Grant Stitt, B., Giacobassi, D., & Nicols, M. (2003). Gambling among older adults: A comparative analysis. *Experimental Aging Research*, 29, 189–203.
- Griffiths, M. D., & Parke, J. (2003). The environmental psychology of gambling. In G. Reith (Ed.), *Gambling: Who wins? Who loses?* (pp. 277–292). New York: Prometheus Books.
- Ha, J.H., & Ingersoll-Dayton, B. (2011). Moderators in the relationship between social contact and psychological distress among widowed adults. *Aging & Mental Health*, 15(3), 354–363.
- Hall, M., & Havens, B. (1999). *The Effect of Social Isolation and Loneliness on the Health of Older Women*. Winnipeg, MB: University of Manitoba. Retrieved from <http://www.pwhce.ca/effectSocialIsolation.htm>

- Hayes, A. F., & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology*, 67(3), 451–470.
- Hirsch, P. (2000). *Seniors and gambling: exploring the issues: Summary report*. Edmonton, AB: Alberta Alcohol and Drug Abuse Commission.
- Hirshorn, B. A., Young, C. A., & Bernhard, B. J. (2007). Factors associated with recreational gambling frequency among older adults. *International Gambling Studies*, 7(3), 345–360.
- Human Resources and Skills Development Canada [HRSDC]. (2016a). *Canadians in context — aging population*. Ottawa, ON, Canada: Human Resources and Skills Development Canada. Retrieved from: <http://well-being.esdc.gc.ca/misme-iowb/.3ndic.1t.4r@-eng.jsp?iid=33>
- Human Resources and Skills Development Canada [HRSDC]. (2016b). *Canadians in context — population size and growth*. Ottawa, ON, Canada: Human Resources and Skills Development Canada. Retrieved from: <http://well-being.esdc.gc.ca/misme-iowb/.3ndic.1t.4r@-eng.jsp?iid=35>
- Kerber, C., Adelman-Mullally, T., Kim, M., & Schafer Astroth, K. (2015). The impact of disordered gambling among older adults. *Journal of Psychosocial Nursing*, 53(10), 41–47.
- Kim, J., & Moen, P. (2002). Retirement transitions, gender, and psychological well-being: A life-course, ecological model. *The Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, 57, 212–222.
- Kobayashi, K. M., Cloutier-Fisher, D., & Roth, M. (2008). Making meaningful connections: A profile of social isolation and health among older adults in small town and small city, British Columbia. *Journal of Aging and Health*, 21(2), 374–397.
- Ladd, G. T., Molina, C. A., Kerins, G. J., & Petry, N. M. (2003). Gambling participation and problems among older adults. *Journal of Geriatric Psychiatry and Neurology*, 16, 172–177.
- Loroz, P. S. (2004). Golden-age gambling: psychological benefits and self-concept dynamics in aging consumers' consumption experiences. *Psychology of Marketing*, 21(5), 323–349.
- MacLaren, V., Ellery, M., & Knoll, T. (2014). Gambling motives and Cognitive Distortions mediate Effects of Personality on Problem Gambling in Electronic Gambling Machine Player. Winnipeg, MB, Canada: Manitoba Gambling Research Program.
- MacLaren V.V., Fugelsang, J.A., Harrigan, K.A., Dixon, M.J. (2012). Effects of impulsivity, reinforcement sensitivity, and cognitive style on pathological gambling symptoms among frequent slot machine players. *Personality and Individual Differences*, 52, 390–394.
- Martin, F., Lichtenberg, P. A., & Templin, T. N. (2011). A longitudinal study: Casino gambling attitudes, motivations and patterns among urban elders. *Journal of Gambling Studies*, 27(2), 287–297.
- McCready, J., Mann, R. E., Turner, N. E., Hamilton, H., Schrans, T., & Ialomiteanu, A. (2013). *Seniors' gambling in Ontario: An assessment of gambling and problem gambling among older adults who patronize Ontario casinos*. Guelph, ON, Canada: Gambling Research Exchange Ontario. Retrieved from <http://greo.ca/content/seniors-gambling-ontario-assessment-gambling-and-problem-gambling-among-older-adults-who>
- McCready, J., Mann, R. E., Zhao, J., Birchall, E., & Eves, R. (2010). Gambling and Older adults: Sociodemographic and Mental Health Factors Associated with Problem Gambling in Older Adults in Canada. Toronto, ON, Canada: Community Outreach Programs in Addictions.

Retrieved from
http://greo.ca/sites/default/files/documents/McCready%20et%20al%282010%29Gambling_and_seniors.pdf

- McCready, J., Mann, R. E., Zhao, J., & Eves, R. (2005). *Seniors and gambling: Sociodemographic and mental health factors associated with problem gambling in older adults in Ontario*. Guelph, ON, Canada: Ontario Problem Gambling Research Centre. Retrieved from [http://greo.ca/sites/default/files/documents/McCready%20et%20al\(2005\)Seniors_and_gambling.pdf](http://greo.ca/sites/default/files/documents/McCready%20et%20al(2005)Seniors_and_gambling.pdf)
- McCready, J., Mann, R. E., Zhao, J., & Eves, R. (2008). Correlates of gambling-related problems among older adults in Ontario. *Journal of Gambling Issues*, 22, 1–21.
- McNeilly, D. P., & Burke, W. J. (2000). Late life gambling: The attitudes and behaviors of older adults. *Journal of Gambling Studies*, 16, 393–415.
- McQuade, A., & Gill, P. (2012). The role of loneliness and self-control in predicting problem gambling behaviour. *Gambling Research: Journal of the National Association for Gambling Studies (Australia)*, 24(1), 18.
- Mishra, S., Morgan, M., Lalumiere, M. L., & Williams, R. J. (2010). Mood and audience effects on video lottery terminal gambling. *Journal of Gambling Studies*, 26(3), 373–386.
- Newall, N. E. G., Chipperfield, J. G., & Bailis, D. S. (2014). Predicting stability and change in loneliness in later life. *Journal of Social and Personal Relationships*, 31(3), 335–351.
- Ontario Lottery and Gaming Corporation [OLG]. (2012). *Modernizing Lottery and Gaming in Ontario. Strategic Business Review/ Advice to Government*. Sault Ste. Marie, ON, Canada: Ontario Lottery and Gaming Corporation. Retrieved from http://www.olg.ca/assets/documents/media/strategic_business_review2012.pdf
- Parekh, R., & Morano, C. (2009). Senior gambling: risk or reward? *Journal of Gerontological Social Work*, 52, 686–694.
- Petry, N. M. (2002). A comparison of young, middle-aged, and older adult treatment-seeking pathological gamblers. *The Gerontologist*, 42 (1), 92–99.
- Pietrzak, R. H., & Petry, N. M. (2006). Severity of gambling problems and psychosocial functioning in older adults. *Journal of Geriatric Psychiatry and Neurology*, 19(2), 106–112.
- Pinquart, M. (2003). Loneliness in married, widowed, divorced, and never-married older adults. *Journal of Social and Personal Relationships*, 20(1), 31–53.
- Rockloff, M. J., & Greer, N. (2011). Audience influence on EGM gambling: The protective effects of having others watch you play. *Journal of Gambling Studies*, 27(3), 443–451.
- Ryan, M. C. (1996). Loneliness, social support and depression as interactive variables with cognitive status: Testing Roy's model. *Nursing Science Quarterly*, 9(3), 107–114.
- Sampson, R. J., Laub, J. H., & Wimer, C. (2006). Does marriage reduce crime? A counterfactual approach to within-individual causal effects. *Criminology*, 44(3), 465–508.
- Schellinck, T., Schrans, T., Walsh, G., & Grace, J. (2002). *2002 Seniors Survey - Prevalence of Substance Use & Gambling Among New Brunswick Adults Aged 55+*. Halifax, NS, Canada: New Brunswick Department of Health and Wellness: Focal Research Consultants Ltd.
- Southwell, J., Boreham, P., & Laffan, W. (2008). Problem gambling and the circumstances facing older people: A study of gaming machine players aged 60+ in licensed clubs. *Journal of Gambling Studies*, 24, 151–174.

- Statistics Canada. (2015). *Population projections for Canada (2013 to 2063), Provinces and Territories (2013 to 2063)*. Statistics Canada Catalogue no. 91-520-X. Ottawa, ON, Canada: Statistics Canada. Retrieved from <http://www.statcan.gc.ca/pub/91-520-x/91-520-x2014001-eng.htm>
- Tira, C., Jackson, A. C., & Tomnay, J. E. (2014). Pathways to late-life problematic gambling in seniors: a grounded theory approach. *The Gerontologist, 54*(6), 1035–1048.
- Trevorrow, K., & Moore, S. (1998). The association between loneliness, social isolation and women's electronic gaming machine gambling. *Journal of Gambling Studies, 14*(3), 263–284.
- Tse, S., Hong, S., & Ng, K. (2013). Estimating the prevalence of problem gambling among older adults in Singapore. *Psychiatry Research, 210*, 607–611.
- Tse, S., Hong, S. I., Wang, C. W., & Cunningham-Williams, R. M. (2012). Gambling behaviour and problems among older adults: A systematic review of empirical studies. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 67*(5), 639–652.
- Umberson, D. (1987). Family status and health behaviors: Social control as a dimension of social integration. *Journal of Health and Social Behavior, 28*(3), 306–319.
- Umberson, D. (1992). Gender, marital status and the social control of health behavior. *Social Science & Medicine, 34*(8), 907–917.
- Victor, C. R., Scambler, S. J., Bowling, A. N. N., & Bond, J. (2005). The prevalence of, and risk factors for, loneliness in later life: a survey of older people in Great Britain. *Ageing and Society, 25*(06), 357–375.
- Victor, C., & Yang, K. (2012). The prevalence of loneliness among adults: a case study of the United Kingdom. *The Journal of Psychology, 146*(1-2), 85–104.
- Welte, J., Wieczorek, W.F., Barnes, G.M., and Tidwell, M, O. (2006). Multiple risk factors for pathological gambling: Individual, social, and ecological. *Journal of Applied Social Psychology, 36*, 1545–1565.
- Wiebe, J. (2002). *Gambling behaviour and factors associated with problem gambling among older adults*. Unpublished Ph.D. thesis, University of Manitoba, Winnipeg, MB.
- Wiebe, J., Single, E., & Falkowski-Ham, A. (2001). *Measuring gambling and problem gambling in Ontario*. Ottawa, ON, Canada: Canadian Centre on Substance Abuse, Responsible Gambling Council (Ontario).
- Wiebe, J., Single, E., Falkowski-Ham, A., & Mun, P. (2004). *Gambling and problem gambling among older adults in Ontario*. Toronto, ON, Canada: Responsible Gambling Council.
- Zarnek, R. R., & Lichtenberg, P. A. (2008). Urban elders and casino gambling: Are they at risk of a gambling problem? *Journal of Aging Studies, 22*, 13–23.

Table 1 Sample Characteristics of the Seniors Gambling in Ontario Study (2013)

	N	Percent (%)
Location		
Woodbine	301	14.3
Mohawk	300	14.3
Flamboro	300	14.3
Brantford	300	14.3
Woodstock	300	14.3
Western Fair	302	14.4
Georgian	300	14.3
Sex		
Male	1002	47.6
Female	1101	52.4
Age		
55-59 years	318	15.1
60-64 years	380	18.1
65-69 years	393	18.7
70-74 years	375	17.8
75 and over	636	30.2
Marital Status		
Single	120	5.7
Married	1401	66.7
Separated/Divorced	231	11.0
Widowed	347	16.5

Distance to the nearest casino		
0-10 km	662	31.6
11-25 km	672	32.1
26-50 km	573	27.4
51-100 km	141	6.7
Over 100 km	45	2.2
Race		
White	1460	69.4
Non-White	643	30.6
Education		
High school or less	1409	67.0
College or more	675	32.1
Don't know/refused to answer	19	0.9
Income		
Less than \$40,000	854	40.6
\$40,000 to \$80,000	647	30.8
\$80,000 or more	232	11.0
Don't know/refused to answer	370	17.6
Social motivations for gambling		
Gambling to socialize	817	38.8
Gambling to be with other people	283	13.5
Social context of gambling		
Alone	535	25.5
Family and friends	1565	74.5

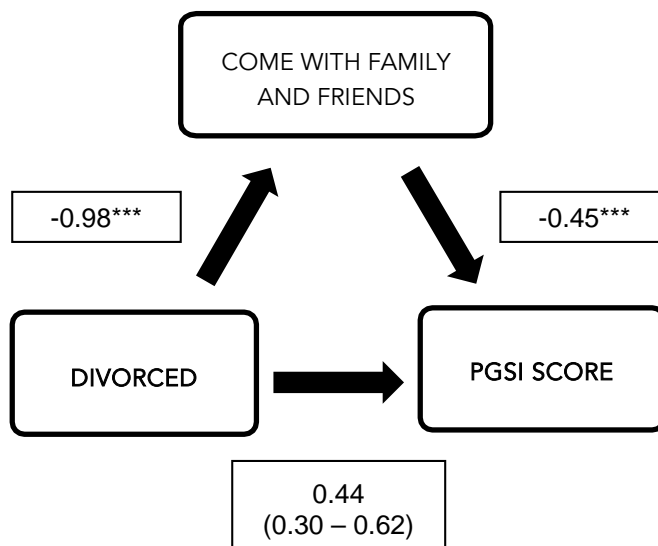
Table 3 ANOVA and Chi-Square Analyses of the Association between Marital Status and Problem Gambling Severity Score, Social Motivations for Gambling, and Social Context of Gambling for **Males**

Males Only	Marital Status				
	Married	Single	Divorced	Widowed	Significance
Problem Gambling Severity Index Score (mean, std dev)	1.65 (2.73)	2.60 (2.48)	2.98 (3.77)	1.97 (3.12)	$F=8.34$ $p=0.000$
Social Motivations for Gambling					
Socialize	35.6%	32.4%	31.2%	38.2%	$\chi^2=1.40$ $p=0.706$
Lonely	9.9%	16.2%	14.7%	24.7%	$\chi^2=18.13$ $p=0.000$
<i>Social context of gambling</i> Come with Family and Friends	78.9%	36.8%	37.6%	4.09%	$\chi^2=146.77$ $p=0.000$

Table 4 ANOVA and Chi-Square Analyses of the Association between Marital Status and Problem Gambling Severity Score, Social Motivations for Gambling, and Social Context of Gambling for **Females**

Females Only	Marital Status				
	Married	Single	Divorced	Widowed	Significance
Problem Gambling Severity Index Score (mean, std dev)	1.55 (2.25)	2.82 (4.54)	3.36 (4.40)	1.91 (2.54)	$F=16.70$ $p=0.000$
Social Motivations for Gambling					
Socialize	39.6%	40.4%	36.9%	52.7%	$\chi^2=15.01$ $p=0.002$
Lonely	10.5%	13.5%	15.6%	24.8%	$\chi^2=30.79$ $p=0.000$
<i>Social context of gambling</i> Come with Family and Friends	88.7%	59.6%	62.8%	71.3%	$\chi^2=80.91$ $p=0.000$

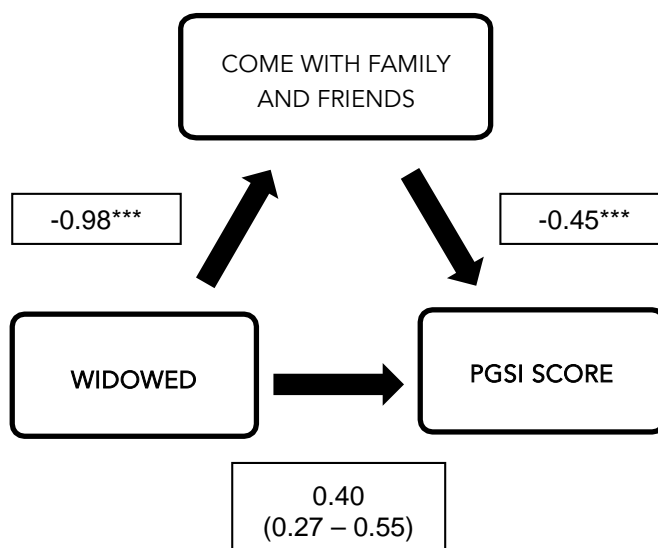
Fig. 1a Unstandardized regression coefficients for the relationship between divorced and problem gambling as mediated by coming to the casino with family and friend



* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Fig. 1b Unstandardized regression coefficients for the relationship between widowed and problem gambling as mediated by coming to the casino with family and friends

* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$



* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Fig. 1c Unstandardized regression coefficients for the relationship between single and problem gambling as mediated by coming to the casino with family and friends

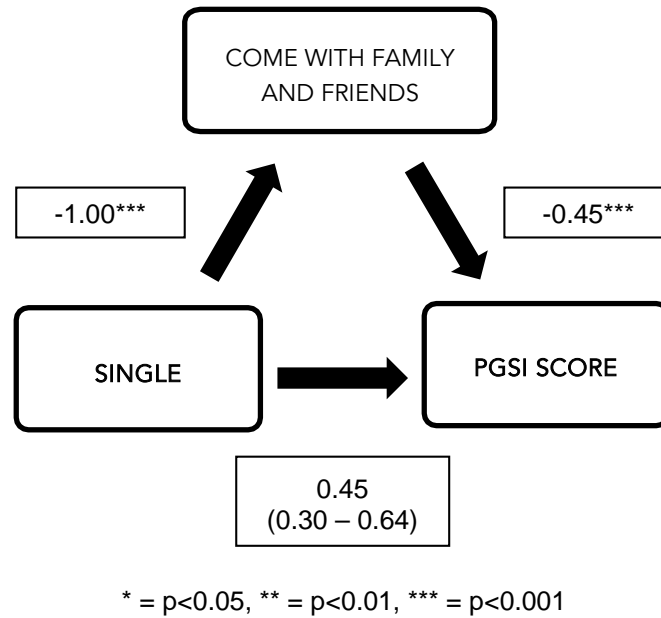


Fig. 2a Unstandardized regression coefficients for the relationship between divorced and problem gambling as mediated by coming to the casino to be with other people (loneliness or isolation)

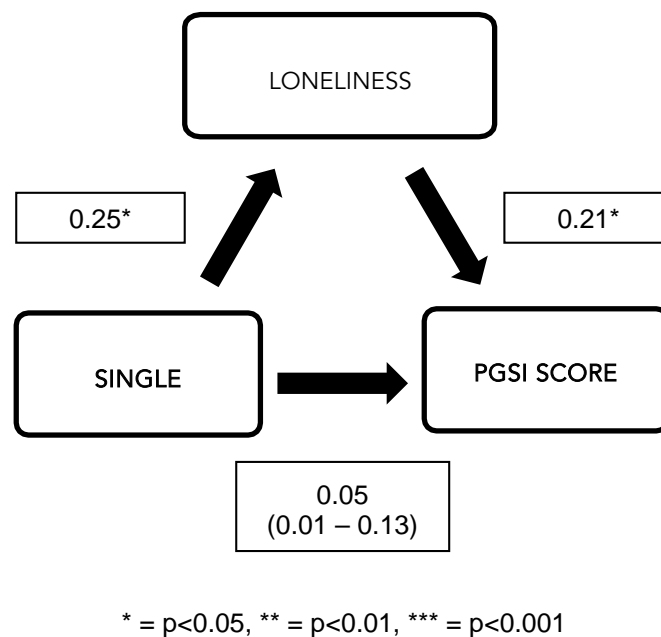
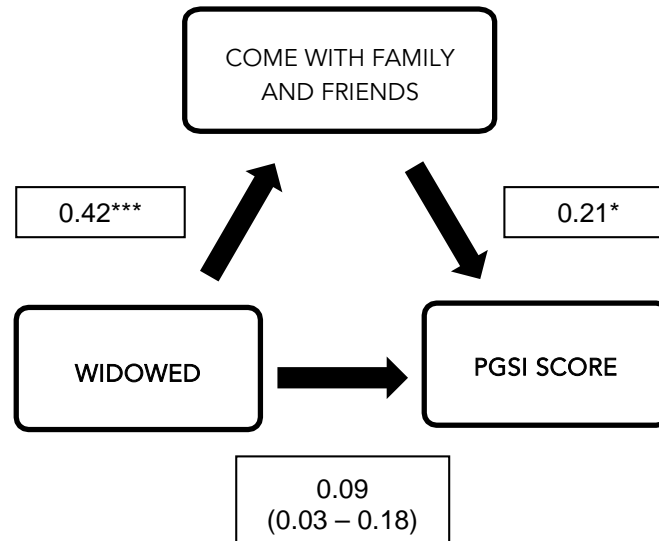
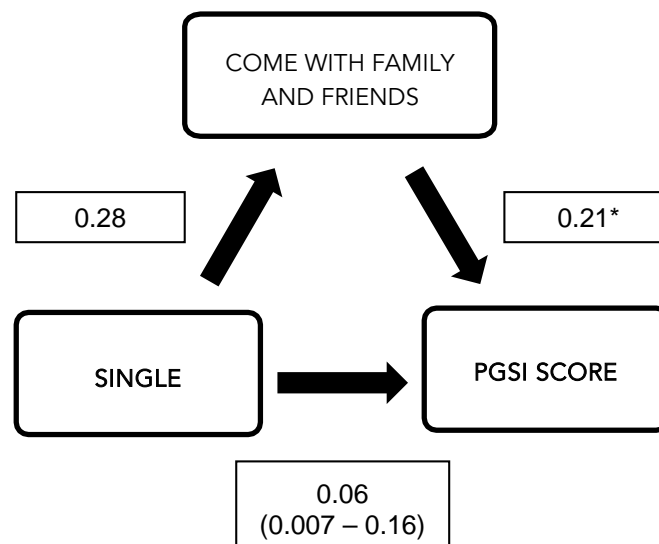


Fig. 2b Unstandardized regression coefficients for the relationship between widowed and problem gambling as mediated by coming to the casino to be with other people (loneliness or isolation)



* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

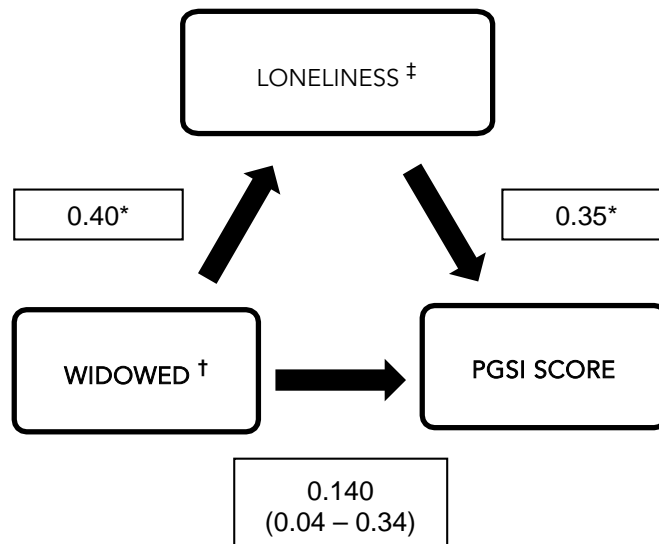
Fig. 2c Unstandardized regression coefficients for the relationship between single and problem gambling as mediated by coming to the casino to be with other people (loneliness or isolation)



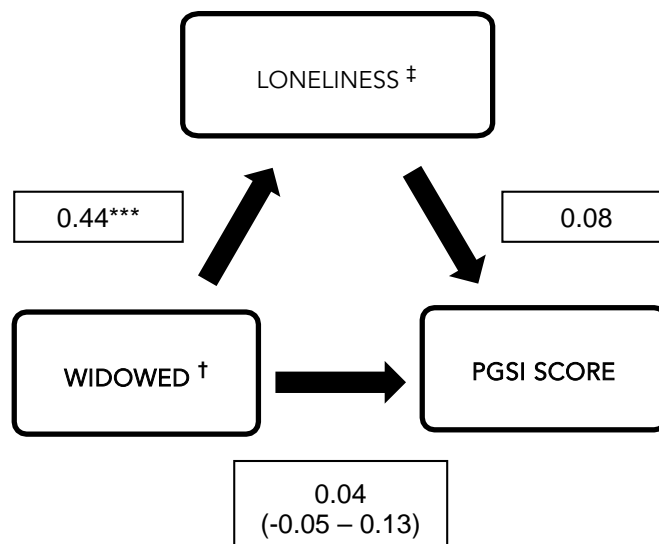
* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Fig. 3a Unstandardized regression coefficients for the relationship between widowed and problem gambling as mediated by coming to the casino to be with other people (loneliness or isolation)

3a - Males



3b - Females



^a Models included controls for: age, race, casino/racino location, distance to the nearest, total household income and education

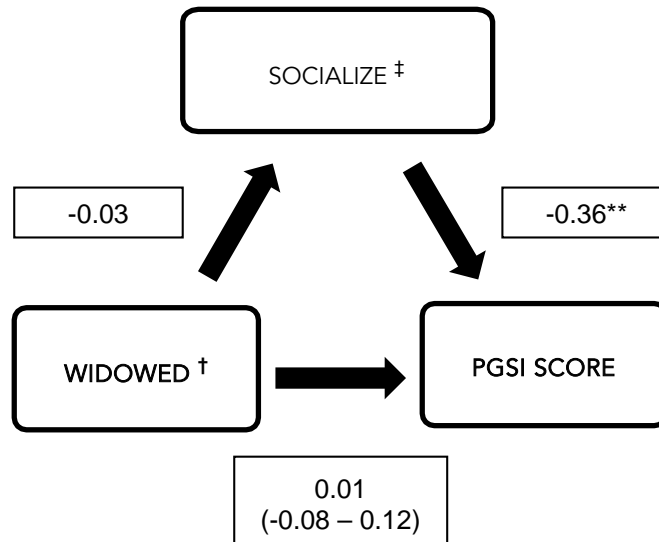
† Reference category: Married

‡ Reference category: To be with others not a motivation to gamble

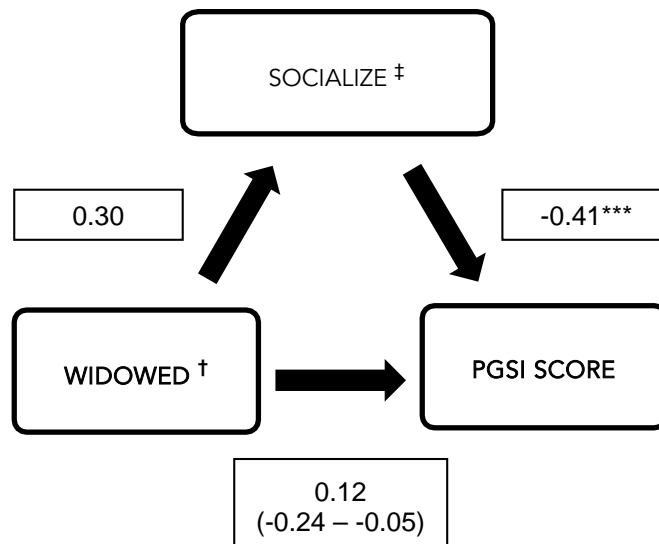
* = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$

Fig. 4a Unstandardized regression coefficients for the relationship between widowed and problem gambling as mediated by coming to the casino to be with other people (loneliness or isolation)

4a - Males



4b - Females



^a Models included controls for: age, race, casino/racino location, distance to the nearest, total household income and education

† Reference category: Married

‡ Reference category: To be with others not a motivation to gamble

* = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$