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FULL-LENGTH REPORT



# The effect of gambling problems on the subjective wellbeing of gamblers' family and friends: Evidence from large-scale population research in Australia and Canada

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## ABSTRACT

*Background and Aims:* Excessive time and money spent on gambling can result in harms, not only to people experiencing a gambling problem but also to their close family and friends (“concerned significant others”; CSOs). The current study aimed to explore whether, and to what extent, CSOs experience decrements to their wellbeing due to another person’s gambling. *Methods:* We analysed data from The Household Income and Labour Dynamics in Australia Survey (HILDA;  $N = 19,064$ ) and the Canadian Quinte Longitudinal Study (QLS;  $N = 3,904$ ). Participants either self-identified as CSOs (QLS) or were identified by living in a household with a person classified in the problem gambling category by the PGSI (HILDA). Subjective well-being was measured using the Personal Wellbeing Index and single-item questions on happiness and satisfaction with life. *Results:* CSOs reported lower subjective wellbeing than non-CSOs across both countries and on all three wellbeing measures. CSO status remained a significant predictor of lower wellbeing after controlling for demographic and socio-economic factors, and own-gambling problems. There were no significant differences across various relationships to the gambler, by gender, or between household and non-household CSOs. *Discussion and Conclusions:* Gambling-related harms experienced by CSOs was reliably associated with a decrease in wellbeing. This decrement to CSO’s wellbeing was not as strong as that experienced by the person with the first-order gambling problem. Nevertheless, wellbeing decrements to CSOs are not limited to those living with a person with gambling problems in the household and thus affect many people.

## KEYWORDS

problem gambling, concerned significant others, gambling harms, subjective wellbeing, HILDA, Quinte Longitudinal Study

## INTRODUCTION

Intrinsic to gambling-related harm, and a crucial part of its definition, is a reduction of health and wellbeing suffered by affected gamblers and potentially also to those around them (Langham et al., 2016). Several researchers have modelled this relationship between gambling problems and wellbeing (e.g. ACIL Allen Consulting et al., 2017; Browne & Rockloff, 2019). Gambling exceeding sustainable resources of time and money and/or behavioural addiction,

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can result in experiencing gambling-related harms, leading to a reduction in wellbeing. However, it is not clear whether this impact on wellbeing also applies to those in close relationships with people experiencing gambling problems (i.e., CSOs). The purpose of the current study is to discover whether, and to what extent, CSOs experience decrements in subjective wellbeing as a consequence of another person's gambling.

CSOs often experience gambling-related harms, which are understood to originate with the actions of the gambler themselves, and then spread to surrounding family and friends (Jeffrey et al., 2019; Riley, Harvey, Crisp, Battersby, & Lawn, 2018). Kourgiantakis, Saint-Jacques, and Tremblay (2013) and Riley et al. (2018) identified a range of harms experienced by CSOs. These harms can be experienced directly by the CSO via financial difficulties, physical and mental health problems, and psychological distress. They may manifest within their relationships as, for example, increased conflict and violence. As well as direct financial or health-related impacts, their wellbeing may also be impacted by emotional contagion; where the negative emotions and related behaviours of one person may trigger similar emotions and behaviours in others (Fowler & Christakis, 2008). Harm can also be directed to CSOs from outside the relationship, such as the experience of discrimination and stigma, or involvement with legal problems brought about by the gambling. From the basic definition of gambling-related harm, these experiences are assumed to have an impact on a CSO's wellbeing.

The concepts of health and wellbeing are often conflated. Health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 2020, para. 1), while wellbeing can be conceptualised as individuals “judging life positively and feeling good” (Centers for Disease Control and Prevention, 2018, sec. 4). Health has typically received much more attention than wellbeing with respect to gambling problems, however, this is changing. In examining subjective wellbeing, or a “person's cognitive and affective evaluation” of their life (SWB; Diener, Oishi, & Lucas, 2012, p. 63), recent studies have shown that having a gambling problem is associated with decreased SWB (Awaworyi Churchill & Farrell, 2020; Blackman, Browne, Rockloff, Hing, & Russell, 2019; Farrell, 2018). In research exploring CSO wellbeing, CSOs have been found to show signs of high psychological distress (Chan, Dowling, Jackson, & Shek, 2016; Hodgins, Shead, & Makarchuk, 2007) and mood disorders (Dannon, Lowengrub, Aizer, & Kotler, 2006; Svensson, Romild, & Shepherdson, 2013; Wenzel, Øren, & Bakken, 2008). Lower SWB has been reported in children (Jacobs et al., 1989) and adults (Centre for Social and Health Outcomes Research and Evaluation & Te Ropu Whariki, 2008), however another study reported no SWB impacts to the majority of CSOs (Bellringer et al., 2013). Cunha and Relvas (2015) found total Quality of Life (QOL) Inventory scores for CSOs were similar to population norms; however, wellbeing was significantly reduced across two domains “family friends and health” and “financial

wellbeing.” Overall, most existing studies use small, specialised samples making it difficult to evaluate or generalise the findings.

It is difficult to establish how many people are negatively affected by another person's gambling. Large population-representative studies examining gambling-related harm to CSOs have been conducted in Scandinavian countries (Salonen, Alho, & Castrén, 2016; Salonen, Castrén, Alho, & Lahti, 2014; Salonen, Hellman, Latvala, & Castrén, 2018; Svensson et al., 2013; Wenzel et al., 2008) and in some Australian states (ACIL Allen Consulting et al., 2017; Paterson, Leslie, & Taylor, 2019; Rockloff et al., 2020; Stevens, 2017; Woods, Sproston, Brook, Delfabbro, & O'Neil, 2018). These studies found the general population prevalence of CSOs varied widely, between 2% and 19%, which may be due to methodological differences in identifying and defining CSOs. Taking a different approach, Goodwin, Browne, Rockloff, and Rose (2017) estimated that around six people are impacted significantly by each problem gambler (Goodwin et al., 2017). Despite the evidence of absolute harm among CSOs, no population-representative studies have analysed the scale of impacts from gambling on CSOs' SWB.

## Aims and objectives

The paper uses secondary analysis of existing population studies to explore the SWB of CSOs, specifically aiming to:

1. Describe the prevalence and risk factors of CSOs in Australia and Canada
2. Assess if the SWB of CSOs is lower than people without a person with a gambling problem in their lives, and how this compares to the SWB of the person with the gambling problem
3. Assess whether the relationship to the person experiencing the gambling problem (e.g., spouse, friend) impacts CSOs' wellbeing, and
4. Identify the unique impact of being a CSO on SWB, after controlling for potential personal gambling problems of the CSO, as well as demographic and socioeconomic factors of the CSO/household.

## METHODS

### Participants and procedure

This study conducted secondary analysis of The Household Income and Labour Dynamics in Australia Survey (HILDA<sup>1</sup>; Department of Social Services & Melbourne Institute of Applied Economic and Social Research, 2019) and the

<sup>1</sup>This paper uses unit record data from Household, Income and Labour Dynamics in Australia Survey [HILDA] conducted by the Australian Government Department of Social Services (DSS). The findings and views reported in this paper, however, are those of the author[s] and should not be attributed to the Australian Government, DSS, or any of DSS' contractors or partners. DOI: 10.26193/IYBXHM.



Canadian Quinte Longitudinal Study (QLS; Williams et al., 2006). These datasets provide the necessary information to identify CSOs, and appropriate SWB measures. Australia and Canada provide a useful point of comparison. They have similar socioeconomic and cultural characteristics, as well as similarities in policy frameworks (such as transitioning to public health policy models [Productivity Commission, 2010]), and gambling behaviours, including problem gambling prevalence rates (Armstrong & Carroll, 2017; Williams et al., 2021). However, they have different regulatory approaches to gambling and areas of research focus, as detailed in Baxter, Hilbrecht, and Wheaton (2019). The following provides an overview of the datasets. Full information for HILDA can be found in Summerfield et al. (2019) and Watson and Wooden (2012), and information on the QLS in Williams et al. (2015).

HILDA is an ongoing Australian longitudinal survey that began in 2001. The survey collects a broad range of social and economic information. Wave 1 started with a large national probability sample of 7,682 Australian households and extended to include new household members as household compositions changed. The sample was selected using a multi-stage approach covering all Australian households, except those in very remote locations (0.8%; Australian Institute of Health and Welfare, 2019). In Wave 11, the sample was topped up with an extra 2,153 households. By wave 18, there were 9,639 responding households, comprising a total of 23,237 persons, including 4,831 children under 15 years. Participants aged 15 and over were asked to respond to a “Person Questionnaire”, which included questions about wellbeing, and was conducted via face-to-face interview, and a paper-based, privately completed “Self-Completion Questionnaire”, which included gambling-related questions.

The QLS is a large-scale gambling study conducted in the Quinte regions of Ontario, Canada between 2006 and 2011. It was originally designed to follow the impacts of a proposed new gambling venue. While the venue was never built, the cohort was maintained to understand problem gambling’s stability. Recruitment methods resulted in a “general population” sample ( $n = 3,065$ ), and an “at risk” sample ( $n = 1,056$ ) of participants aged 15 years and over. Sample selection consisted of random dialling of phone numbers within a 70 km radius of the proposed venue at Belleville. People were asked to participate in a short phone survey and if deemed eligible, they were asked if they were willing to participate in a paid research study. A total of 3,904 participants completed the study in Wave 3.

## Measures

Both datasets contain a wide range of assessment measures. The variables of interest for the current study are briefly described below.

**Problem Gambling:** Gambling problems were identified in both datasets using the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001). The nine-item PGSI is a well-validated measure of problem gambling severity (Currie,

Hodgins, & Casey, 2013) commonly used in general population surveys. Total summed scores range between 0 and 27 which are then classified as either non-problem gamblers (total score of 0), low-risk gamblers (1–2), moderate-risk gamblers (3–7), or problem gamblers (8+).

**CSOs:** In HILDA, CSOs were identified as people living in the same household as others classified as being “problem gamblers” by the PGSI (PG). While all people aged 15 and over (“adults”) were asked to complete the Self-Completion Questionnaire containing the PGSI, some did not. In this case, where one or more adults in the household did not complete the PGSI, all household members were excluded from this study ( $n = 4,173$ ) as their CSO status was unknown. If all other adults in the household did complete the PGSI and were not a PG, the individual was allocated to the “non-CSO” group. If any other adult in the household was identified as a PG, then the person was categorised as a “household CSO”, regardless of their own PGSI status (i.e., if two PGs lived in the same household, they would both be categorised as CSOs as they were living with a PG). PGs who were not also CSOs were categorised exclusively as “PG.” This ensured the “non-CSO” group contained only people without a gambling problem in the household. Personal gambling-risk status was accounted for as a covariate in analysis, so as not to conflate personal gambling problem impacts with CSO-related impacts. Once identified, the CSO’s relationship to the PG was classified by the groups: “partner”, “parent/grandparent”, “child/grandchild under 15 years”, “child/grandchild 15 years and over”, “sibling”, “friend” and “other/unknown”.

In the QLS, participants were asked, “*how many of your close friends/family would you say have had gambling problems in the past 12 months? Note: Someone is a “problem gambler” if significant problems (e.g., psychological, health, financial, school/employment, social, illegal activity) have occurred to the individual, someone in the person’s immediate social network as a consequence of that person’s gambling.*”. A similarly phrased question then asked about PGs “*in their household*”. Responses were “yes”, “no” and “unsure”. We presented “unsure” in the descriptive statistics but excluded them from further analysis to guarantee the inclusion of only those CSOs who positively identified gambling as a problem. An integrated variable was then created from these two questions. This variable identified people without a PG in their life (non-CSO); or with at least one close friend/family member (“non-household CSO”), or member of their household (“household CSO”), with a gambling problem. Again, PGs who were not also household CSOs were categorised as “PG”, meaning there are no PGs within the non-household CSO or non-CSO categories. Participants were asked about their relationship to the person with the gambling problem within their household, and these were classified as per HILDA.

**Subjective Wellbeing:** HILDA utilises a single-item life satisfaction question: “*All things considered, how satisfied are you with your life?*”. Responses are rated on an 11-point scale from 0 (totally dissatisfied) to 10 (totally satisfied). The QLS contains the Personal Wellbeing Index (PWI, International

Wellbeing Group, 2013), a self-report measure covering seven core domains of quality of life (Cummins, Eckersley, Pallant, van Vugt, & Misajon, 2003). The first question asks, “How satisfied are you with your standard of living?” and is rated on a scale of 0 (*completely dissatisfied*) to 10 (*completely satisfied*). Participants are then asked to similarly rate other areas of wellbeing, including their health, achievements, personal relationships, safety, community and future security. Scores were summed and standardised, resulting in a score ranging from 0 to 100 (International Wellbeing Group, 2013). Reported Cronbach alphas range between 00.70 and 00.85 (International Wellbeing Group, 2013); in this study, Cronbach alpha was 00.88. Additionally, single-item life satisfaction and happiness questions asked participants: “In the past 12 months I would rate my overall level of (life satisfaction/happiness) as” from 1 (*extremely low*) to 7 (*extremely high*). While conceptually different to PWI and life satisfaction, happiness is closely related (Medvedev & Landhuis, 2018) and an important construct to understand in relation to CSO global wellbeing. SWB score distributions in this study showed a typically-found skew, with most respondents reporting within the higher range (OECD, 2013).

Control Variables – Both datasets assessed a range of socio-demographics. Where possible, these were grouped to contain a set of common responses. For example, marital status variables were condensed in both datasets to reflect “never married”, “married/cohabiting”, “separated/divorced”, and “widowed”; education as “did not complete high school”, “completed high school” and “completed further education”; and employment as “part-time”, “full-time”, “unemployed”, “retired”, or “other.” Household income could not be standardised across both datasets due in part to (unstable) currency differences and, in each case, uses a condensed version of the original groupings. In HILDA, household debt was collected as an absolute number, while the QLS collected nominal debt categories containing figure ranges.

### Statistical analysis

Although the source datasets are longitudinal, the current study applies a cross-sectional analysis on selected waves only. We analysed QLS Wave 3, the first to collect comprehensive wellbeing data, and HILDA Wave 18, the most recent to collect gambling-related data. Analysis for each dataset was conducted separately. Data weights (supplied; Watson & Wooden, 2012) were used where noted to weight the HILDA results to the Australian population. While not designed to be representative, the QLS sample is described as overall reflective of the demographic profile of the Canadian adult (15+) population, except for the following minor differences. Younger ages (18–24) were slightly under-represented, and couples in relationships, post-secondary education, and gambling problems were over-represented. QLS sampling weights are not available.

Initial prevalence statistics in Australia included all participants identified as “Household CSOs” or “Non-CSOs” ( $N = 19,064$ , 51.2% female). For subsequent analysis, respondents aged under 15 and others who did not complete

the SWB question were removed, leaving a sample of 14,768. Descriptive statistics detailed the prevalence and risk factors, and group differences were assessed using chi-square tests and *t*-tests. One-way between groups ANOVAs were conducted to explore the impact of gambling on SWB, as measured by each dataset. Ordinary least squares regression was used to isolate CSO status’ impact on SWB whilst controlling for other factors. Ordinal independent variables (income and debt) were treated as continuous. Assumptions of normality, linearity, independence of residuals, and homoscedasticity were met, and there was no evidence of multicollinearity in either regression calculation.

### Ethics

Ethics approval for secondary analysis was granted by CQUniversity Human Research Ethics Committee (#22878).

## RESULTS

### Prevalence and risk factors

In Australia, 1.4% ( $n = 276$ ) reported living in the same household as a PG (“household CSOs”), with PGs representing a further 1.0% of respondents ( $n = 158$ ). Weighted for the Australian national population at the time, this equates to approximately 250,000 people impacted by another person’s problem gambling in Australia ( $n = 250,640$ ). These CSOs ranged in age from 0 to 91 years, with a mean age of 27.5 years. As seen in Table 1, the majority of household CSOs were children under 15 years (33.3%), followed by partners (28.3%) and parents/grandparents (13.0%).

In the Canadian sample, comprising only adults, 14.7% of respondents were identified as CSOs. Of these, 2% ( $n = 78$ ) were household CSOs, while the remainder (12.7%,  $n = 494$ ) identified non-household family members and/or close friends as PGs (“non-household CSOs”). A further 11% of the sample ( $n = 429$ ) were unsure whether any close friends or family members had a gambling problem and were excluded from further analysis. PGs comprised 1.4% of the sample ( $n = 40$ ). The majority of household CSOs were partners (59.0%), followed by parents/grandparents (14.1%) and friends (10.3%). While children under the age of 15 were

Table 1. Household CSO relationships to PGs across Australia and Canada

| Relationship                      | Australia |      |          | Canada |      |          |
|-----------------------------------|-----------|------|----------|--------|------|----------|
|                                   | N         | %    | % Female | N      | %    | % Female |
| Child/Grandchild under 15 years*  | 92        | 33.3 | 50.0     | –      | –    | –        |
| Partner                           | 78        | 28.3 | 70.5     | 46     | 59.0 | 52.2     |
| Parent/Grandparent                | 36        | 13.0 | 63.9     | 11     | 14.1 | 72.7     |
| Child/Grandchild 15 year and over | 31        | 11.2 | 48.4     | 6      | 7.7  | 83.3     |
| Sibling                           | 21        | 7.6  | 38.1     | 3      | 3.8  | 33.3     |
| Friend                            | 16        | 5.8  | 31.3     | 8      | 10.3 | 37.5     |
| Other/unknown                     | 2         | 0.7  | 50.0     | 4      | 5.1  | 75.0     |

\*Note: children under 15 were not included in the Canadian data.



not included in the Canadian sample, 71.8% of household CSOs and 79.4% of non-household CSOs indicated they had at least one child.

In the Australian sample, all further analysis includes respondents aged 15 years and over who completed the Person Questionnaire ( $N = 14,768$ , 52.1% female, ages ranging from 15 to 99). In this group, Household CSOs ( $n = 167$ ) were aged from 15 to 91 with a mean age of 39.39 years. As seen in Table 2, CSOs were younger than non-CSOs, more likely to be female, and less likely to be retired or have completed further education. CSOs were more likely to score in the moderate-risk or problem gambling categories and less likely to be a non-problem gambler than non-CSOs. There were no significant differences between CSOs and non-CSOs in marital status or household debt.

In the Canadian sample (Table 3) household CSOs are significantly younger than non-CSOs, however, there were no significant differences found between non-household CSOs, household CSOs, and non-CSOs for the demographics of gender, marital status, education, employment, income or household debt. CSOs were more likely to be a moderate-risk gambler than non-CSOs, and 13.9% of household CSOs were also PGs.

### Subjective wellbeing

In the Australian data, there was a significant difference between the life satisfaction scores of PGs, CSOs and people without a gambling problem in the household (Welch  $t(212.128) = 20.64, P < 0.001$ ). Respondents who were PGs ( $M = 7.06, SD = 1.99$ ), and CSOs ( $M = 7.57, SD = 1.67$ )

Table 2. The proportion of Australian CSOs and associated risk factors

|  | N (% in sample)     | Proportion of Household CSOs<br>(n = 167)      | Proportion of Non-CSO <sup>^</sup><br>(n = 14,451) |
|--|---------------------|--|--|
| All respondents aged 15 years and over     | 14,768 (100%)       | 1.1%   | 98.9%  |
| <i>Gender</i>                              |                     | $(\chi^2(1) = 5.12, P = 0.024)$                |  |
| Female                                     | 7,701 (52.1%)       | <b>61.1%*</b>                                  | 52.3%  |
| Male                                       | 7,067 (47.9%)       | 38.9%  | 47.7%  |
| <i>Age</i>                                 |                     | $(\text{Welch } t(170.81) = 26.01, P < 0.001)$ |  |
| Mean (SD)                                  | 46.09 (19.14)       | 39.39 (17.18)                                  | <b>46.22 (19.17)***</b>                            |
| <i>Marital Status</i>                      |                     | $(\chi^2(3) = 5.243, P = 0.155)$               |  |
| Never married                              | 3,387 (22.9%)       | 28.7%  | 22.8%  |
| Married/Cohabiting                         | 8,772 (59.4%)       | 57.5%  | 59.6%  |
| Separated/Divorced                         | 1,864 (12.6%)       | 11.4%  | 12.5%  |
| Widowed                                    | 743 (5.0%)          | 2.4%   | 5.1%   |
| <i>Education</i>                           |                     | $(\chi^2(2) = 8.55, P = 0.014)$                |  |
| Did not complete high school               | 3,627 (24.6%)       | 29.9%  | 24.4%  |
| Completed high school                      | 2,218 (15.0%)       | 20.4%  | 15.0%  |
| Completed further education                | 8,917 (60.4%)       | 49.7%  | <b>60.6%*</b>                                      |
| <i>Employment Status</i>                   |                     | $(\chi^2(4) = 26.03, P < 0.001)$               |  |
| Employed Part-time                         | 3,076 (20.8%)       | 17.4%  | 21.0%  |
| Employed Full-time                         | 6,319 (42.8%)       | 47.3%  | 42.7%  |
| Unemployed                                 | 483 (3.3%)          | 4.8%   | 3.2%   |
| Retired                                    | 3,050 (20.7%)       | 9.0%   | <b>20.9%***</b>                                    |
| Other                                      | 1,828 (12.4%)       | <b>21.6%***</b>                                | 12.3%  |
| <i>Household Income**</i>                  |                     | $(\chi^2(8) = 18.883, P = 0.015)$              |  |
| Less than \$20,000                         | 496 (3.4%)          | 1.8%   | 3.4%   |
| Between \$20,000 and \$39,999              | 2,150 (14.7%)       | 8.4%   | 14.8%  |
| Between \$40,000 and \$59,999              | 1,971 (13.5%)       | 15.7%  | 13.4%  |
| Between \$60,000 and \$79,999              | 1,551 (10.6%)       | 15.7%  | 10.5%  |
| Between \$80,000 and \$99,999              | 1,497 (10.3%)       | 10.8%  | 10.3%  |
| Between \$100,000 and \$124,999            | 1,772 (12.2%)       | 13.9%  | 12.2%  |
| Between \$125,000 and \$149,999            | 1,419 (9.7%)        | 3.6%   | <b>9.9%*</b>                                       |
| Between \$150,000 and \$199,999            | 1,908 (13.1%)       | 16.3%  | 13.1%  |
| More than \$200,000                        | 1,813 (12.4%)       | 13.9%  | 12.5%  |
| <i>Household debt (Australian Dollars)</i> |                     | $(F(1) = 1.146, P = 0.284)$                    |  |
| Mean (SD)                                  | \$221,277 (421,312) | \$256,649 (536,280)                            | \$221,495 (420,359)                                |
| <i>Respondent PGSI</i>                     |                     | $(\chi^2(3) = 766.07, P < 0.001)$              |  |
| Non-problem gambler                        | 13,327 (92.8%)      | 78.1%  | <b>94.0%***</b>                                    |
| Low-risk gambler                           | 545 (3.8%)          | 7.7%   | 3.8%   |
| Moderate-risk gambler                      | 331 (2.3%)          | <b>9.0%***</b>                                 | 2.3%   |
| Problem gambler                            | 158 (1.1%)          | <b>5.2%***</b>                                 | 0%   |

<sup>^</sup> excluding PGs, \*  $P < 0.05$ , \*\*\*  $P < 0.001$ .

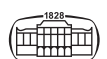


Table 3. The proportion of Canadian CSOs and associated risk factors

|  | N (% in sample) | Proportion of Household CSO's<br>(n = 78) | Proportion of<br>Non-Household CSO's <sup>^</sup><br>(n = 477) | Proportion Non-<br>CSO <sup>^</sup><br>(n = 2,899) |
|--|-----------------|---|--|--|
| All respondents                            | 3,904 (100%)    | 2.0%                                      | 12.7%  | 74.3%  |
| <i>Gender</i>                              |                 |   | ( $\chi^2(2) = 2.49, P = 0.289$ )                              |  |
| Female                                     | 2,161 (55.4%)   | 56.4%                                     | 59.1%  | 55.3%  |
| Male                                       | 1,743 (44.6%)   | 43.6%                                     | 40.9%  | 44.7%  |
| <i>Age</i>                                 |                 |   | (Welch t (191.77) = 16.24, P < 0.001)                          |  |
| Mean (SD)                                  | 48.09 (13.87)   | 44.31 (12.43)                             | 45.34 (12.86)  | 48.83 (14.02)***                                   |
| <i>Marital Status</i>                      |                 |   | ( $\chi^2(6) = 8.01, P = 0.238$ )                              |  |
| Never married                              | 392 (10.0%)     | 11.5%                                     | 11.7%  | 9.6%   |
| Married/Cohabiting                         | 2,815 (72.1%)   | 71.8%                                     | 70.6%  | 73.0%  |
| Separated/Divorced                         | 536 (13.7%)     | 16.7%                                     | 14.3%  | 13.0%  |
| Widowed                                    | 161 (4.1%)      | 0%  | 3.4%   | 4.4%   |
| <i>Education</i>                           |                 |   | ( $\chi^2(4) = 10.48, P = 0.033$ )                             |  |
| Did not complete high school               | 418 (10.7%)     | 17.9%                                     | 10.3%  | 10.3%  |
| Completed high school                      | 1,625 (41.6%)   | 50.0%                                     | 41.5%  | 40.6%  |
| Completed further education                | 1,861 (47.7%)   | 32.1%**                                   | 48.2%  | 49.1%  |
| <i>Employment Status</i>                   |                 |   | ( $\chi^2(8) = 15.57, P = 0.049$ )                             |  |
| Employed Part-time                         | 485 (12.4%)     | 11.5%                                     | 14.0%  | 12.1%  |
| Employed Full-time                         | 1,971 (50.5%)   | 50.0%                                     | 52.2%  | 50.2%  |
| Unemployed                                 | 194 (5.0%)      | 6.4%                                      | 4.8%   | 4.7%   |
| Retired                                    | 765 (19.6%)     | 15.4%                                     | 14.3%  | 21.0%  |
| Other                                      | 486 (12.4%)     | 16.7%                                     | 14.7%  | 12.0%  |
| <i>Household Income (Canadian Dollars)</i> |                 |   | ( $\chi^2(10) = 10.61, P = 0.389$ )                            |  |
| Less than \$20,000                         | 375 (10.1%)     | 17.1%                                     | 10.7%  | 9.7%   |
| Between \$20,000 and \$39,999              | 928 (25.0%)     | 30.3%                                     | 23.5%  | 24.1%  |
| Between \$40,000 and \$59,999              | 785 (21.1%)     | 17.1%                                     | 21.9%  | 21.8%  |
| Between \$60,000 and \$89,999              | 886 (22.7%)     | 18.4%                                     | 22.6%  | 24.7%  |
| Between \$90,000 and \$119,999             | 484 (12.4%)     | 9.2%                                      | 14.9%  | 13.4%  |
| More than \$120,000                        | 261 (6.7%)      | 7.9%                                      | 6.4%   | 7.4%   |
| <i>Household debt (Canadian Dollars)</i>   |                 |   | ( $\chi^2(10) = 9.72, P = 0.465$ )                             |  |
| \$1,000 or less                            | 537 (14.0%)     | 7.8%                                      | 11.3%  | 14.5%  |
| \$1,000 to \$9,000                         | 470 (12.3%)     | 11.7%                                     | 11.5%  | 11.8%  |
| \$10,000 to \$25,000                       | 587 (15.3%)     | 22.1%                                     | 15.9%  | 14.7%  |
| \$30,000 to \$90,000                       | 864 (22.5%)     | 19.5%                                     | 24.0%  | 22.6%  |
| \$100,000 to \$300,000                     | 1,326 (34.6%)   | 37.7%                                     | 36.3%  | 34.9%  |
| Over \$300,000                             | 50 (1.3%)       | 1.3%                                      | 1.1%   | 1.4%   |
| <i>PGSI</i>                                |                 |   | ( $\chi^2(4) = 40.80, P < 0.001$ )                             |  |
| Non-problem gambler                        | 2,162 (74.1%)   | 48.6%                                     | 67.9%***   | 77.3%***   |
| Low-risk gambler                           | 517 (17.7%)     | 22.2%                                     | 20.5%  | 17.2%  |
| Moderate risk gambler                      | 200 (6.9%)      | 15.3%***                                  | 11.7%***   | 5.5%   |
| Problem gambler*                           | 40 (1.4%)       | 13.9%                                     | -  | -  |

<sup>^</sup> Excluding PGs and “unsure”, \* excluded from Chi-Square test as PGs who were not also household CSOs were categorised as “PGs” and therefore not reported here, \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

reported significantly lower life satisfaction than non-CSOs ( $M = 7.98, SD = 1.40$ ). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for Household CSOs was significantly lower than non-CSOs ( $P = 0.001$ ), although significantly higher than for PGs ( $P = 0.004$ ). There was no significant interaction effect with

gender ( $P = 0.418, ns$ ). Regarding the relationship to the PG on wellbeing, there was no significant difference between partners, parents/grandparents, children 15 and over, siblings, friends, or others ( $f(5,165) = 1.99, P = 0.083, ns$ ).

In the Canadian data, there was a significant difference between the PWI scores of PGs, Household CSOs, non-



household CSOs, and non-CSOs (Welch  $t(103.64) = 23.57, P < 0.001$ ). PGs reported the lowest mean PWI score, followed by household and non-household CSO, with non-CSO reporting the highest PWI. Significant differences were also found across the groups for life satisfaction (Welch  $t(104.69) = 20.84, P < 0.001$ ) and overall happiness (Welch  $t(104.67) = 14.83, P < 0.001$ ) as described in Table 4. There was no significant interaction effect of gender for either PWI ( $P = 0.393, ns$ ), life satisfaction ( $P = 0.652, ns$ ) or happiness ( $P = 0.492, ns$ ). There were no significant differences across the various relationships of household CSOs to the PG for either PWI, ( $f(5,72) = 2.13, P = 0.071, ns$ ), life satisfaction ( $f(5,72) = 1.21, P = 0.314, ns$ ) or happiness ( $f(5,72) = 1.10, P = 0.367, ns$ ).

After controlling for demographic and socioeconomic factors that may impact SWB (age, gender, marital status, education, employment, household income and debt and gambling problems), being a household CSO was significantly associated with lower wellbeing in both samples (Tables 5 and 6).

## DISCUSSION

To our knowledge, this is the first study to use quantitative methods to explore SWB in CSOs and make comparisons to both people with first-order gambling problems and non-CSOs. The results confirm that CSOs experience

Table 4. Subjective wellbeing of Canadians impacted by a gambling problem

|                   |                   | Mean (SD)     | Non-Household CSO | Household CSO | PG       |
|-------------------|-------------------|---------------|-------------------|---------------|----------|
|                   |                   |               | Mean difference   |               |          |
| PWI               | Non-CSO           | 71.06 (16.02) |                   |               |          |
|                   | Non-Household CSO | 65.94 (17.63) | 5.12***           | 9.54***       | 15.68*** |
|                   | Household CSO     | 61.52 (20.36) | –                 | 4.42          | 10.56**  |
|                   | PG                | 55.38 (17.59) |                   | –             | 6.14     |
| Life Satisfaction | Non-CSO           | 4.81 (1.04)   |                   |               |          |
|                   | Non-Household CSO | 4.61 (1.11)   | 0.19**            | 0.46**        | 1.04***  |
|                   | Household CSO     | 4.34 (1.34)   | –                 | 0.26          | 0.85***  |
|                   | PG                | 3.77 (0.82)   |                   | –             | 0.57     |
| Happiness         | Non-CSO           | 4.75 (1.01)   |                   |               |          |
|                   | Non-Household CSO | 4.60 (1.04)   | 0.16**            | 0.29          | 0.89***  |
|                   | Household CSO     | 4.46 (1.11)   | –                 | 0.13          | 0.73**   |
|                   | PG                | 3.87 (0.86)   |                   | –             | 0.59*    |

\*Identifies the mean difference is significant at the  $P < 0.05$  level using posthoc comparisons with Turkey's HSD, \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

Table 5. Multiple regression predicting life satisfaction for Australians, controlling for demographic, sociographic and gambling-related factors

|   | B            | SE   | Beta  | t      | P            | 95% CI for B |       |
|---|--------------|------|-------|--------|--------------|--------------|-------|
|   |              |      |       |        |              | Lower        | Upper |
| Constant  | 7.59         | 0.07 |       | 104.66 | 0.000        | 7.45         | 7.73  |
| Gender (1 = male, 2 = female)                       | <b>0.06</b>  | 0.02 | 0.02  | 2.60   | <b>0.009</b> | 0.02         | 0.11  |
| Age (years)   | <b>0.00</b>  | 0.00 | –0.03 | –2.59  | <b>0.010</b> | 0.00         | 0.00  |
| Marital Status (reference = married)                |              |      |       |        |              |              |       |
| Never married                                       | <b>–0.24</b> | 0.03 | –0.07 | –7.13  | <b>0.000</b> | –0.31        | –0.17 |
| Divorced  | <b>–0.42</b> | 0.04 | –0.10 | –11.31 | <b>0.000</b> | –0.49        | –0.34 |
| Widowed   | –0.03        | 0.06 | 0.00  | –0.44  | 0.657        | –0.14        | 0.09  |
| Education (reference = completed further education) |              |      |       |        |              |              |       |
| Did not complete high school                        | <b>0.20</b>  | 0.03 | 0.06  | 6.55   | <b>0.000</b> | 0.14         | 0.25  |
| Completed high school                               | <b>0.08</b>  | 0.04 | 0.02  | 2.39   | <b>0.017</b> | 0.02         | 0.15  |
| Employment (reference = full-time employment)       |              |      |       |        |              |              |       |
| Part-time employment                                | <b>0.10</b>  | 0.03 | 0.03  | 3.22   | <b>0.001</b> | 0.04         | 0.17  |
| Unemployed  | <b>–0.36</b> | 0.07 | –0.05 | –5.27  | <b>0.000</b> | –0.49        | –0.23 |
| Retired   | <b>0.55</b>  | 0.05 | 0.16  | 12.25  | <b>0.000</b> | 0.46         | 0.63  |
| Other   | <b>–0.12</b> | 0.04 | –0.03 | –2.94  | <b>0.003</b> | –0.20        | –0.04 |
| Household Income                                    | <b>0.07</b>  | 0.01 | 0.12  | 10.87  | <b>0.000</b> | 0.05         | 0.08  |
| Household Debt                                      | 0.00         | 0.00 | 0.01  | 0.81   | 0.418        | 0.00         | 0.00  |
| CSO (0 = no, 1 = yes)                               | <b>–0.31</b> | 0.11 | –0.02 | –2.82  | <b>0.005</b> | –0.53        | –0.10 |
| PG (0 = no, 1 = yes)                                | <b>–0.66</b> | 0.11 | –0.05 | –5.93  | <b>0.000</b> | –0.87        | –0.44 |
| $R^2 = 00.05$                                       |              |      |       |        |              |              |       |
| $F = 51.43, P < 0.001$                              |              |      |       |        |              |              |       |

Bold indicates significant.

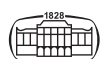


Table 6. Multiple regression predicting life satisfaction for Canadians, controlling for demographic, sociographic and gambling-related factors

|   | B             | SE   | Beta  | t      | P            | 95% CI for B |        |
|---|---------------|------|-------|--------|--------------|--------------|--------|
|   |               |      |       |        |              | Lower        | Upper  |
| Constant  | 75.79         | 2.71 |       | 27.97  | 0.000        | 70.47        | 81.10  |
| Gender (1 = male, 2 = female)                       | −0.42         | 0.66 | −0.01 | −0.64  | 0.523        | −1.71        | 0.87   |
| Age (years)   | 0.06          | 0.03 | 0.05  | 1.81   | 0.070        | −0.01        | 0.12   |
| Marital Status (reference = married)                |               |      |       |        |              |              |        |
| Never married                                       | <b>−9.98</b>  | 1.20 | −0.18 | −8.34  | <b>0.000</b> | −12.33       | −7.63  |
| Divorced  | <b>−9.64</b>  | 0.94 | −0.21 | −10.24 | <b>0.000</b> | −11.48       | −7.79  |
| Widowed   | <b>−3.87</b>  | 1.63 | −0.05 | −2.38  | <b>0.017</b> | −7.06        | −0.68  |
| Education (reference = completed further education) |               |      |       |        |              |              |        |
| Did not complete high school                        | 0.12          | 1.05 | 0.00  | 0.12   | 0.907        | −1.94        | 2.19   |
| Completed high school                               | 0.17          | 0.68 | 0.01  | 0.24   | 0.807        | −1.16        | 1.49   |
| Employment (reference = full-time employment)       |               |      |       |        |              |              |        |
| Part-time employment                                | −2.02         | 1.07 | −0.04 | −1.89  | 0.060        | −4.13        | 0.08   |
| Unemployed  | <b>−11.78</b> | 1.51 | −0.16 | −7.81  | <b>0.000</b> | −14.74       | −8.82  |
| Retired   | 1.61          | 1.05 | 0.04  | 1.53   | 0.126        | −0.45        | 3.66   |
| Other   | <b>−4.55</b>  | 1.05 | −0.09 | −4.33  | <b>0.000</b> | −6.60        | −2.49  |
| Household Income                                    | 0.00          | 0.00 | −0.01 | −0.45  | 0.654        | 0.00         | 0.00   |
| Household Debt                                      | 0.00          | 0.00 | 0.04  | 1.94   | 0.052        | 0.00         | 0.00   |
| CSO (0 = no, 1 = yes)                               | <b>−4.00</b>  | 1.91 | −0.04 | −2.09  | <b>0.037</b> | −7.75        | −0.25  |
| PG (0 = no, 1 = yes)                                | <b>−24.95</b> | 5.05 | −0.11 | −4.94  | <b>0.000</b> | −34.86       | −15.04 |
| $R^2 = 00.15$                                       |               |      |       |        |              |              |        |
| $F = 25.43, P < 0.001$                              |               |      |       |        |              |              |        |

Bold indicates significant.

impairments to their wellbeing, based on multiple measures and in two large population samples. These effects are consistent with that found by the [Centre for Social and Health Outcomes Research and Evaluations & Te Ropu Whariki \(2008\)](#). These negative wellbeing impacts for CSOs are also similar to those found for substance-use issues, such as CSOs of people attending in-person treatment for substance abuse ([Tait, 2018](#)) and heavy drinkers ([Casswell, You, & Huckle, 2011](#)). For context, the mean differences found between PGs and CSOs, and CSOs and non-CSOs (0.41–0.51) are comparable to differences found between employed and unemployed, those who do daily physical activity versus those who do not, and those with long term health conditions versus no long term health condition (0.31–0.50) ([Kubiszewski, Zakariyya, & Costanza, 2018](#)).

Our study found no significant differences between household and non-household CSOs across any measures (PWI, life satisfaction and happiness), with similar wellbeing impacts regardless of if the CSO was living in the same household with the gambler. While we would expect that people living in the same household as a person with a gambling problem would be at the greatest risk of experiencing harm (cf., [Goodwin et al., 2017](#)), our results did not find a detectable difference. However, it needs to be explored whether CSOs within and outside the household are affected in different ways. For example, it might be that household CSOs are more impacted financially, given they are more likely to share finances. Alternatively, non-household CSOs may experience more stress or worry about their family member's situation.

Congruent with existing research exploring the wellbeing of people with gambling problems ([Awaworyi Churchill &](#)

[Farrell, 2020; Blackman et al., 2019; Farrell, 2018](#)), our study found that those with first-order gambling problems reported lower mean wellbeing scores than CSOs. In Australia, these differences were significant. However, while Canadian CSOs had significantly higher happiness than the person with the gambling problem, there was no significant difference between household CSOs and the gambler in the realms of either life satisfaction or PWI, indicating that while CSOs' affective evaluation of their life (i.e., happiness) was generally more positive than those experiencing the gambling problem, their cognitive evaluation was similar. Further analysis showed that after controlling for a range of socioeconomic and demographic factors associated with SWB ([Diener, Suh, Lucas, & Smith, 1999](#)), CSO status remained a significant predictor of SWB, although the effect was smaller than that of personal gambling problems. These effect sizes in the regressions were small and should be interpreted cautiously. However, this is not unusual. Many factors, including societal characteristics, personal characteristics, genetics and demographic variables, can influence SWB, with not all individual predictors exerting large effects ([Dolan, Peasgood, & White, 2008; Geerling & Diener, 2020](#)).

CSOs tend to be younger and less well-educated than non-CSOs and more likely to have a gambling problem themselves. However, there was no significant difference in gender or marital status between these two groups. The most common household CSOs (where measured) were children under 15 years of age, although, this study could not focus on wellbeing impacts on these children as these outcomes were not measured. Most of the remaining household CSOs were partners, followed by parents and adult children. In the



Australian sample, partners of people with gambling problems were slightly more likely to be female; however, in the Canadian sample, the gender split across partners was similar. Male CSOs were more likely to live in households where the person with the gambling problem was a sibling or friend. Overall, regardless of the CSO's gender or the relationship to the person with the problem, this study found no substantial difference in impact, with all groups similarly experiencing lower wellbeing than non-CSOs.

This study found household adult CSO prevalence rates ranged between 1.1% and 2% across the two countries. The higher proportion of household CSOs in Canada may be due to two factors. Firstly, there was a slight oversampling of “at-risk” gamblers in the Canadian dataset. Gambling problems often cluster in groups of close friends and family (Mazar, Williams, Stanek, Zorn, & Volberg, 2018; Meisel et al., 2013), and indeed, a much higher percentage (13.9%) of household CSOs in this dataset were experiencing their own gambling problem compared to the Australian dataset (5.2%). Secondly, the Canadian sample comprises self-identified CSOs, rather than the other person completing a formal instrument designed to measure gambling problems, as used in the Australian sample. This means that the extent of the actual gambling problem is arguable. People may over-attribute their difficulties to gambling or be experiencing harms caused by low or moderate-risk gambling.

### Limitations and further research

The results of this study should be interpreted considering several limitations. The Australian sample only included people currently living in the same household as people with gambling problems and not those separated or divorced (possibly due to gambling-related problems) or other close family members who reside in separate homes. Directly exploring the wellbeing of CSOs is generally under-researched, with a need to examine potential differences in domains of wellbeing impacted, as impacts may be felt in different areas. The availability of appropriate publicly accessible datasets also limited the study, and future research should be extended to other countries.

It is also important to note the bidirectional relationship between many gambling-related harms and gambling. For example, as well as gambling impacting finances and mental health, gambling may also be used in an attempt to improve financial situations (Tabri, Dupuis, Kim, & Wohl, 2015) or be a coping mechanism for psychological problems (Hartmann & Blaszczynski, 2018). As such, the cause of reduced SWB may predate the gambling problem. Further, it is difficult to isolate the direct effects of gambling harms on wellbeing. People living in a household with gambling problems often have a variety of co-morbid issues (Dowling et al., 2015a, 2015b; Yakovenko & Hodgins, 2018), as well as many other significant stressors in their lives (Tulloch, Browne, Hing, & Rockloff, 2020). Future research may attempt to control for more of these elements to further isolate the impact of gambling on the wellbeing of CSOs.

## CONCLUSIONS

Overall, significantly reduced wellbeing in CSOs compared to non-CSOs was found across different countries, time periods, SWB measures, and methods of identifying CSOs. Li, Browne, Rawat, Langham, and Rockloff (2017, p. 223) described people with gambling problems as appearing to “export about half of the harms they experienced to those around them”, which, while recommending caution due to the directional nature of this statement, seems to apply to our findings. These harmful effects of excessive time and money spent gambling are associated with a decrease in wellbeing in CSOs. Although these impacts are not as severe as those experienced by the person with the gambling problem, they also do not appear to be limited to people within a PG's household. Although the individual wellbeing impact per CSO is less than that experienced by gamblers, because CSOs outnumber gamblers by a significant factor, it appears possible that the aggregate impact to CSOs is larger. As such, the broader cost of gambling harm in the population rests not only with harmed gamblers but includes a much larger group of CSOs who need to be taken into account by policymakers attempting to reduce the burden of gambling-related harms. Therefore, policy considerations and investments should focus on strategies to prevent these harms from occurring initially, such as detailed in Blank, Baxter, Woods, and Goyder (2021), alongside the provision of support and assistance to CSOs.

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