HHS Public Access

Author manuscript

Aging Ment Health. Author manuscript; available in PMC 2015 June 08.

Published in final edited form as:

Aging Ment Health. 2009 March ; 13(2): 265–273. doi:10.1080/13607860802459849.

An empirical typology of lifetime and current gambling behaviors: Association with health status of older adults

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Abstract

Purpose—Despite the low prevalence of gambling problems, older adults experience poorer health status given certain vulnerabilities associated with aging. Thus, we aimed to classify lifetime (LPG) and current (CPG) problem gambling patterns, identify determinants of gambling patterns, and examine their association with current health status

Methods—Using older adult gamblers (*n* = 489) in the Gambling Impact and Behavior Study, Latent Class Analysis classified LPG and CPG subgroups based on 10 DSM-IV criteria: preoccupation, tolerance, withdrawal, loss of control, escape, chasing losses, lying, illegal acts, relationship impairment and financial bailout.

Results—A two-class solution was the best fitting for LPG and CPG groups. Except for illegal acts, the remaining criteria endorsed the distinguishing patterns. We observed 10.8% LPGs, 8.4% CPGs and 2.2% with both. Participation in religious services was protective of both groups. Gambling for excitement and to win money were related to CPG. Further, CPG was significantly related to worse self-rated health.

Implications—Although problem gambling is strongly characterized by number and type of diagnostic criteria, findings support a focus to include targeted assessment of additional clinically meaningful gambling correlates. Research on the moderator of participation in faith-based communities on problem gambling is also warranted.

Introduction

In recent decades, gambling among older adults has increased with changing societal attitudes and the growth of legal gambling opportunities (Gerstein et al., 1999; Ladd,

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Molina, Kerins, & Petry, 2003; McNeilly & Burke, 2001; Shaffer, Hall, & Vander Bilt, 1999). Between 1975 and 1998, lifetime gambling participation among older adults increased from 35 to 80% and past-year gambling increased from 23 to 50% (Gerstein et al., 1999; Kallick-Kaufmann & Melnick, 1976).

Still, compared with younger adults, older adults gamble less and spend less on gambling activities (Gosker, 1999; Grant Stitt, Giacopassi, & Nichols, 2003; Vander Bilt, Dodge, Pandav, Shaffer, & Ganguli, 2004). Nonetheless, disposable income, free time and aggressive marketing to older adults may contribute to increases in their gambling participation (Gosker, 1999). Gambling may increase among older adults in the future due to higher current gambling rates among younger adult cohorts (Vander Bilt et al., 2004), changing attitudes toward gambling (Zaranek & Chapleski, 2005) and the improved health and income necessary for leisure activity (Novak, 1997).

Many gambling activities give older adults the opportunity for leisure activity and socialization despite functional impairments (Hope & Havir, 2002; O'Brien Cousins & Witcher, 2004). According to activity theory, maintaining interests in late life promotes a sense of well-being. With the aging process, the patterns and types of activity evolve to reflect role and functional changes (Atchley, 1997).

Although gambling activity may positively affect the physical and emotional well-being of older adults as a group, increased disordered gambling rates may be an unintended consequence. Ecological factors (e.g. gambling availability) and individual level factors (e.g. personal and role losses) may foster gambling problems in vulnerable older adults (Blaszczynski & Nower, 2002). In the general population, these individual factors include marital status (i.e. living single or divorced), male gender, middle age and being African American (Petry, Stinson, & Grant, 2005; Welte, Barnes, Wieczorek, & Tidwell, 2004). Religious participation, marriage and widowhood are protective of experiencing gambling problems (Hoffmann, 2000; Welte et al., 2004). Conversely, positive attitudes about gambling are associated with participation (McNeilly & Burke, 2000; Zaranek & Chapleski, 2005), yet the relationship of beliefs/attitudes to gambling problems has not been explored among the older adult population.

Gambling problems may be associated with deficits in health and well-being. For example, one study reported that older adults with past-year gambling disorders had poor global health and higher levels of chronic illness compared with a matched sample of non-disordered individuals (Pietrzak, Molina, Ladd, Kerins, & Petry, 2005). Disordered gamblers (e.g. gamblers who have greater than 3 DSM-IV criteria) have also shown higher rates of past-year angina and arthritis than non-disordered gamblers (Pietrzak, Morasco, Blanco, Grant, & Petry, 2007). In a community sample of older adults, lifetime problem and pathological gamblers had lower self-rated general health than non-problem gamblers (Erickson, Molina, Ladd, Pietrzak, & Petry, 2005). Older adult problem gambling may also be associated with deficits in mental health. Older current problem gamblers report high rates of depression and suicidality (Pietrzak & Petry, 2006; Potenza, Steinberg, Wu, Rounsaville, & O'Malley, 2006), anxiety (Pietrzak & Petry, 2006) and decreased social functioning (Pietrzak et al., 2005).

It remains unclear whether differences in the health and mental health of problem gamblers are the result of lifetime or past year gambling patterns. Some studies have looked at current gambling status while other studies have focused on the presence of lifetime gambling behavior, but research has not compared lifetime gambling vs current gambling in terms of associations with older adult health. Evidence also suggests that earlier gambling onset is associated with greater gambling severity and psychiatric/medical comorbidity (Burge, Pietrzak, Molina, & Petry, 2004). It is possible that gambling history is associated with health and well-being in older adults due to differences in illness severity and the effects of past lifestyle choices on current behaviors.

In terms of measurement, research on the validity of DSM-IV diagnostic criteria specific to older adults is scant. In addition, debate has centered on the appropriateness of different diagnostic cutoffs for defining gambling disorder in the general population (Toce-Gerstein, Gerstein, & Volberg, 2003a, b). In this regard, to address these issues, Latent Class Analysis (LCA) offers an empirical approach to defining a diagnostic cutoff for pathology.

Therefore, this study will use LCA to analyze lifetime (LPG) and current (CPG) problem gambling subgroups, based on older problem gamblers' endorsement of DSM-IV pathological gambling disorder criteria. LCA is a 'person-centered' model, which has the advantage of identifying homogeneous subgroups that are not captured in traditional 'variable-centered' models (Muthén, 2002). LCA can describe subclasses of gamblers beyond DSM-IV diagnostic threshold, which is important as individuals might have significant gambling problems, yet fall below the DSM-IV diagnostic cut-point (i.e. below five criteria; Toce-Gerstein et al., 2003a). The current report is the first to use LCA in a randomly selected national sample of older adults to understand gambling patterns and their subsequent associations with psychosocial and health-related variables.

Method

Data and sampling structure—In the present analysis, a subset of gamblers (n = 489), aged 50 or older, who reported gambling at a casino during the past year and/or were weekly lottery gamblers, was selected from the larger sample (n = 2947) interviewed in the national Gambling Impact and Behavior Study (GIBS; Gerstein et al., 1999), using random-digit dialing (RDD; n = 2417) and face-to-face gambling patron intercept methodologies (n = 530). The gambling and related behaviors and attributes of the patron survey sample were assumed to be typical of persons with similar levels of casino and lottery gambling frequency in the U.S. general population (Gerstein et al., 1999). Thus, we used a weight variable that multiplied the weight of each RDD and patron survey case by a constant equal to the population size of the post-stratification adjustment cells divided by the sum of the weights within the cell. In this way, the patron survey cases were weighted similarly to RDD cases within each adjustment cell and that the sum of the weights equaled the estimated population size, both within each adjustment cell and in the total sample (Gerstein et al., 1999).

Measurement of variables

Assessment of lifetime and current problem gambling: We explored models for problem gambling behaviors among older adults occurring in the past year (CPG) and those occurring before the past year (LPG). It was not our aim to make the LPG and CPG groups mutually exclusive (as the CPG group could also be classified in the LPG group if they had problems that occurred during both time periods), but rather to assess the LPG group with the aim of understanding if there is a different gambling profile for older gamblers who have at some point experienced problem gambling, but may be currently (i.e. within the 12 months preceeding the interview) in remission or in recovery from gambling problems. To assess LPG, the study participants were asked whether or not they had ever experienced any one of 10 DSM-IV gambling disorder criteria, namely, preoccupation, tolerance, withdrawal, loss of control, escape, chasing losses, lying, illegal acts, relationship impairments and financial bailout. Furthermore, to assess CPG, participants were asked whether they had ever experienced any of these criteria in the year preceding the study interview (i.e. in the past year).

Health status of older adults: In this study, we also measured two separate outcomes to capture the health status of older adults: self-rated health and overall mental health. Specifically, participants described their overall self-rated health over the past 12 months with a Likert-type scale ranging from poor (1) to excellent (4). About 25% of them rated their health as fair or poor. The remaining majority reported good (48%) or excellent (28%) health status. Participants also indicated how much they were bothered by their overall mental health using a three-point scale ranging from being bothered very much (1) to not at all (3). Most of participants (81%) reported not being bothered at all by mental health problems. Less than one in five (18%) older adults reported being bothered somewhat by mental health problems, with only 1% indicating being bothered very much by such problems. In short, this older adult sample was relatively mentally and physically healthy (i.e. 75.5% reported good to excellent health).

Determinants of problem gambling patterns: To determine indicators of problem gambling, we controlled for sociodemographic characteristics and assessed the endorsement level of the following hypothesized predictors: earliest gambling age of onset across 10 gambling activities (i.e. how old the participant was the first time that he or she gambled at a certain type of gambling), lifetime gambling treatment experience (i.e. whether the participant has ever received any kind of help or treatment for gambling problem), self-perceptions as a professional gambler, beliefs about the overall effects of legalized gambling on society with a scale of (1) very good to (5) very bad, usual gambling network (i.e. whether the participant usually gambles with someone he or she knows very well), and their reasons for gambling with a response of (1) not at all important to (4) very important (i.e. socializing with friends or family, personal service from staff, to be around other people, excitement or challenge of gambling, and gambling to win money). Participants also reported potential covariates such as alcohol use frequency (i.e. drinking ≥ 12 days per month in the past 12 months), and their level of religiosity, i.e. religious service attendance frequency (1 infrequently – never, less than once a year, about once or twice a year, and several times a year; and 2, frequently – about once a month, two to three times a month,

nearly every week, every week, and several times a week), and spirituality (e.g. the importance of faith in from God is very important to God is not at all important).

Statistical analysis plan

Latent Class Analysis: As the main analysis of this study, we employed LCA to empirically classify homogenous subgroups by distinctive gambling patterns based on gambling symptom profiles underlying the latent construct of problem gambling. We used LCA to establish latent gambling class membership with 10 dichotomous indicators, offering two sets of parameters to estimate the prevalence of latent class and response probabilities within a certain class (McCutcheon, 2002). Latent class prevalence indicates the proportion of problem gamblers in each latent class. Response probabilities calculate the likelihood of reporting problem gambling symptoms within a certain gambling class.

The co-occurrence of multiple problem gambling criteria draws the structure of problem gambling class based on the independent relationships among these gambling criteria. According to the variation and association from the observable 10 criteria constituting the latent gambling construct, each homogeneous class theoretically would be different from each other and would be mutually exclusive (Reboussin, Song, Shrestha, Lohman, & Wolfson, 2006).

To obtain an optimal class-solution, we used M*plus* 3.0 for model-fitting through stepwise addition of classes along with theoretically valid visual representations. As a global fit index determined the best fitting model, the smallest scores of *Akaike Information Criterion* (AIC) and *Bayesian Information Criterion* (BIC), which represent model parsimony and goodness of fit are preferred as global fit indices (Kass & Wasserman, 1995). To calculate an overall classification probability, *entropy*, which is a measure of how well the classes can be distinguished, was calculated. The model with higher scores of entropy can be selected indicating the best model classification (McCutcheon, 2002). This study further assessed whether the right number of classes was chosen using the Vuong–Lo–Mendell–Rubin test, which examines model improvement by comparing the model with K classes to a model with (K – 1) classes. To accommodate the complex sampling structure of the GIBS data, LCA used sampling weights with a robust variance maximum likelihood ratio (MLR) estimator (McCutcheon, 2002).

Regression analyses: Using the SAS® 9.1 SurveyLogistic procedure, we incorporated the post-stratification weight variable in logistic regression (An, 2002). We then estimated the likelihood of being LPG and CPG by each of these predictors. Finally, using the SurveyRegression procedure, we examined the extent to which problem gambling are related to two health outcomes, while controlling for socio-demographics and health and mental health-related covariates (i.e. religious service attendance, importance of faith, earliest gambling age of onset and alcohol abuse).

Imputation of missing data: Overall, less than 8% of the observations had missing values, with the exception of living alone, household income, gambling with someone and mental health, where 30–35% of the observations were missing. Therefore, we used hot-deck imputation (Kotz, Johnson, & Read, 1982) to compensate for missing data by inserting the

non-missing lag value on the strongest correlates for each variable, thus yielding a complete dataset for all analyses.

Results

Sample characteristics—As shown in Table 1, this older adult subsample (n = 489) of the larger study sample, consisted of adults aged 50–64 years (61%) and aged 65 years and older (39%) who were primarily Caucasian (80%) and were nearly evenly split by gender (57% males). Despite the relatively high level of education (i.e. 50% college or higher), 27% of the sample earned an annual household income of less than $25,000 and about 54% were currently unemployed. The majority was living alone (45%) and was unmarried (i.e. due to divorce or separation at 40%; and never having been married at 8%). While about 34% frequently attended any religious services, the majority (87%) reported that their faith in God is important.

Regarding gambling history and behaviors, about half (54%) of the sample began their gambling fairly recently (i.e. at age 50 or older). Very few older adults perceived of themselves as professional gamblers (3%), often a proxy for being a problem gambler, with even fewer having been treated for gambling problems (1%). Many older adults (57%) recognized both the positive and negative societal effects of legalized gambling, yet the negative sentiments (28%) were about twice as numerous as the positive views (15%). The most prevalent reason for gambling, among the host of reasons elicited as ‘important’ or ‘very important,’ was to win money (65%).

Hierarchical structure of lifetime and current problem gambling—The theoretical fit of each model was examined for visual clarity and practical implications (McCutcheon, 2002). Along with a theoretical decision consistent with statistical model fits, we found that a two-class solution was the best fitting among the two- through four-class solutions identified by the measures of model fit. Figures 1 and 2 delineate the average proportion of endorsing gambling problems. For LPG, experiencing withdrawal and a loss of control over gambling were the most prevalent gambling criteria endorsed (20 and 24%, respectively), while the most common criterion among the CPG group was chasing losses (10%).

Using theory and statistical model fit, we found that a two-class solution was optimal (see notes for Figures 1 and 2). Figure 1 demonstrates the overall two-class pattern of LPG. Of the 10 DSM-IV criteria, the distinguishing pattern of LPG was endorsed by all but one of these criteria, namely committing illegal acts to finance gambling. The LPG class was observed as 10.8%, with the remaining majority (89.2%) being classified as a *non-problem gamblers*. For LPG, Class 1, the *non-problem gambling group*, consisted of no or low problem gamblers and was characterized by symptom profiles consistent with primarily endorsing three of the 10 criteria namely, chasing losses, withdrawal and loss of control. Specifically, 12.6% of Class 1 members reported having chased their losses by returning another day to get even if they lost money gambling on a previous day. Around 14.2% experienced gambling withdrawal in the form of restlessness or irritability when they attempted to stop/control their gambling, and 19.8% had made unsuccessful attempts to stop/control their gambling.

Class 2, the *problem gambling group*, which included moderate or high problem gamblers, was characterized by the highest number of all indicators as compared with Class 1. Specifically, among the 10 criteria, they had the highest conditional probability of gambling preoccupation (82.7%) as indicated by spending a lot of time thinking about gambling experiences or planning future gambling ventures. About three-quarters of the sample experienced withdrawal (77%), had ever lied about their gambling behavior (74%), and had chased their gambling losses (74%). More than 60% had gambled to escape uncomfortable feelings and had ever experienced a loss of control over their gambling. Between 30 and 40% had experienced tolerance symptoms, impaired relationships due to gambling, and borrowed money or required a financial bailout because of gambling. Similar to Class 1, committing illegal acts was the least endorsed criterion.

Using the same 10 DSM-IV criteria classifying LPG patterns, we then classified patterns for CPG. Similarly, for CPG, we identified two classes by indicators of good model fit (see note for Figure 2). Although the conditional probability per each CPG indicator was more varied as compared with LPG, the overall pattern of CPG was similar to that of LPG (see Figure 2). Again, all criteria except for illegal acts functioned as significant validators to demarcate CPGs from non-current gamblers. Around, 92% of the sample was captured as *Class 1*, *non-problem gambling group*, without any evident gambling criteria. However, a small percentage of even this class endorsed the chasing losses criterion.

Representing 8.4% of the sample, *Class 2*, *problem gambling group*, was identified based on consistent endorsement of multiple gambling criteria and included moderate or high problem gamblers. For each specific criterion, chasing losses was the most prevalent symptom with the highest conditional probability (71.3%) across all indicators. Also, 62.8% showed a higher probability of being preoccupied with gambling experiences and plans when they were not actually gambling. About half had lied about their gambling in the past year (56%). In general, CPGs reported lower gambling symptom probabilities than LPGs. For example, the largest disparity between the LPGs and CPGs was for experiencing gambling withdrawal in the form of restlessness/irritability when attempting to control or stop gambling (77 and 29%, respectively).

Predictors of lifetime and current and problem gambling classification— Through a tetrachoric correlation, we found a significant relationship between LPG and CPG ($r = 0.36$, $p < 0.05$). Furthermore, a SurveyLogistic regression determined which, if any, factors constituted differences in the LPG and CPG class patterns. Odds ratios and 95% confidence intervals (Table 2) show various predictors of LPG and CPG classification. Those who participated in religious services had a significantly lower likelihood of being a problem gambler at any point in their lives (LPG: OR = 0.35, 95% CI = 0.13–0.96; CPG: OR = 0.06, 95% CI = 0.01–0.40). Gambling for excitement or challenge (OR = 2.77; 95% CI = 1.58–4.85) and gambling to win money (OR = 2.56; 95% CI = 1.19–5.50) were more likely to predict CPG status. For sociodemographic characteristics, compared with their counterparts, lower educated (OR = 0.58, 95% CI = 0.40–0.85) and never married older adults (OR = 0.34, 95% CI = 0.11–1.04) had a significantly increased likelihood of being LPGs.

Effect of problem gambling on health status of older adults—Table 3 presents the effects of LPG and CPG on health outcomes of older adults. We found that CPG was associated with lower levels of self-rated health ($b = -0.30$, $t = -2.22$, $p < 0.05$). LPG was not related to any health measure. Of health- and mental health-related covariates, the effect of alcohol abuse on self-rated health was significant.

Discussion

In a national sample of older adults, LCA classified subgroups by distinctive lifetime and current gambling patterns based on gambling symptom profiles. About 8% of this older adult national sample experienced at least one DSM-IV pathological gambling disorder criterion, a rate comparable to reports of gambling pathology among community-recruited older adults (Erickson et al., 2005; Ladd et al., 2003). However, this rate is higher than reported rates from national samples of older adults over the age of 65 (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2001), potentially due to the sample's selection strategy (i.e. patron intercept and RDD) and lower threshold for both age (i.e. age 50 and older) and gambling symptoms (i.e. ≥ 1 criterion). Furthermore, findings reflect homogeneity from co-occurrence of gambling behaviors of this entire study rather than simply using a cutoff point from summed scores of multiple DSM-IV criteria. LCA can typically function as a measurement tool to test the validity of cutoff scores as well as to identify target population who are not detected using cutoff scores of standardized instrument (Young, 1982–1983). Although this study approach is innovative in identifying the problem gambling population, these results were relatively limited because our findings could not specify more heterogeneous classes of older adult gamblers separated by severity. Thus, we need to develop more valid indicators to diagnose older adults' gambling symptoms. This does limit the value added of the LCA in terms of identifying subclasses of individuals not detected by simple summed scores.

We also identified the protective effect of religious service attendance for LPG. Over the long-term, such participation may serve as an alternative outlet for socialization among older adults (Hoffmann, 2000). Yet, potentially important factors include both financial and emotional reasons for gambling. Unlike recreational gamblers, who report that entertainment and fun are the most important reasons for gambling (Hope & Havir, 2002; Korn & Shaffer, 1999; Volberg, 2003), thus increasing opportunities for socialization, it is notable that socialization was not the main reason for gambling in this study. In fact, we found that gambling for the 'excitement or challenge' and 'to win money' were significantly related to problem gambling. While these and other reasons have been commonly found for even non-problem gamblers (Hagen, Nixon, & Solowoniuk, 2005), clinical attention to these reasons may be particularly informative for targeted intervention efforts to current older adult gamblers. For example, it is plausible that these older adults may not participate in many additional activities, other than gambling, that provide a sense of excitement or challenge. Similarly, while employment level or amount of household income was not predictive of experiencing gambling problems, it may still be prudent for clinicians to assess the amount of disposable income available to older adults (McNeilly & Burke, 2002). For those older adults, it may be that gambling with the purpose of winning money is a proxy for gambling with the instrumental purpose of gaining additional resources to meet their unmet basic

needs (i.e. needs unmet by household earned income or efforts to adhere to a budgeted fixed income). For older adults, gambling to win money may be more for the purpose of generating disposable income, not necessarily because they have disposable income for gambling available to them.

Furthermore, with respect to health outcomes, we found that LPG patterns did not have any significant effect on older adults' current health status, yet CPG patterns did so for self-rated health. These findings are consistent with other research assessing appraisal of current physical and mental health functioning among older gamblers vs non- or infrequent gamblers (Pietrzak et al., 2005).

However, the significant correlations between LPG and CPG implies that clinicians need to attend to the considerable continuity of gambling problems in older gamblers' historical behaviors to prevent current gambling problems in later life. It is unclear whether gambling is the precipitant cause of these poor outcomes or is the anticipated solution for 'self-medicating' or ameliorating distress. Older adults experiencing gambling symptoms in late life may utilize maladaptive behaviors from midlife to cope with the stress of growing older (Atchley, 1989). Nevertheless, it is important to note that LPG individuals who were not in the CPG class did not have poorer outcomes than CPG individuals. Gambling symptom remission in earlier life may ameliorate the negative health effects of experiencing gambling problems in later life. These findings imply the need for longitudinal, prospective studies, as well as appropriate screening of older adults for gambling symptoms as such symptoms may indicate poor physical, emotional and financial outcomes.

Finally, we found two-class typologies for understanding LPG and CPG profiles among older adults. LPG was distinguished primarily by higher levels of endorsement of gambling withdrawal and loss of control over gambling. LPG and CPG patterns were otherwise quite similar with higher endorsement of symptoms for the problem gambling class than for the non-problem gambling class. Unlike the LPG group however, those in the CPG group may not have had many opportunities to experience withdrawal or to recognize that they had lost control over their gambling. In addition, we found that the criterion committing illegal acts to finance gambling, did not distinguish LPG and CPG patterns, potentially due to social desirability bias. Thus, diagnosticians may need to consider the appropriateness of existing gambling assessment tools to aid in our understanding of the various gambling pathways of older adults.

These results are presented in the context of a few limitations. This is a secondary analysis of a cross-sectional national study that was not designed as a study of older adults. Thus the analysis of age-specific attributes, reasons for gambling and contextual variables (e.g. retirement status, widowhood, transportation to gambling and other venues, ability to sit for long periods of time, cognitive and social skill abilities, functional independence level, and accessibility to leisure activities, etc.) was not possible. These factors would be important for understanding the protective role of religious service participation and gambling problems particularly for the experience of excitement and challenge for older adults. Also, we were unable to include in our analyses standardized mental and physical health measures

and to explore the extent of their occurrence as such assessments were not included in the primary study.

By definition, CPG is a subset of LPG, and this was a cross-sectional study, thus limiting our ability to make any conclusions about the causal mechanism of lifetime predictors on current health outcomes to meet the aim of examining the role of gambling patterns across the lifespan. Therefore, future research addressing these limitations would inform efforts to disentangle the developmental trajectory of late onset gambling and its association with the health status in later life, and further assist clinicians and gerontolo-gists in their efforts to promote healthy and productive aging.

In conclusion, the lives of older adult gamblers, particularly those experiencing gambling symptoms in this sample, were characterized by multiple poor outcomes. Longitudinal research is needed to delineate the progression of problematic gambling into late life and to map the co-occurring chronic conditions of physical and mental health problems across the life span. Because gambling symptoms may indicate poor health or subsequent primary gambling pathology, clinicians are urged to include gambling in comprehensive assessment of older adults.

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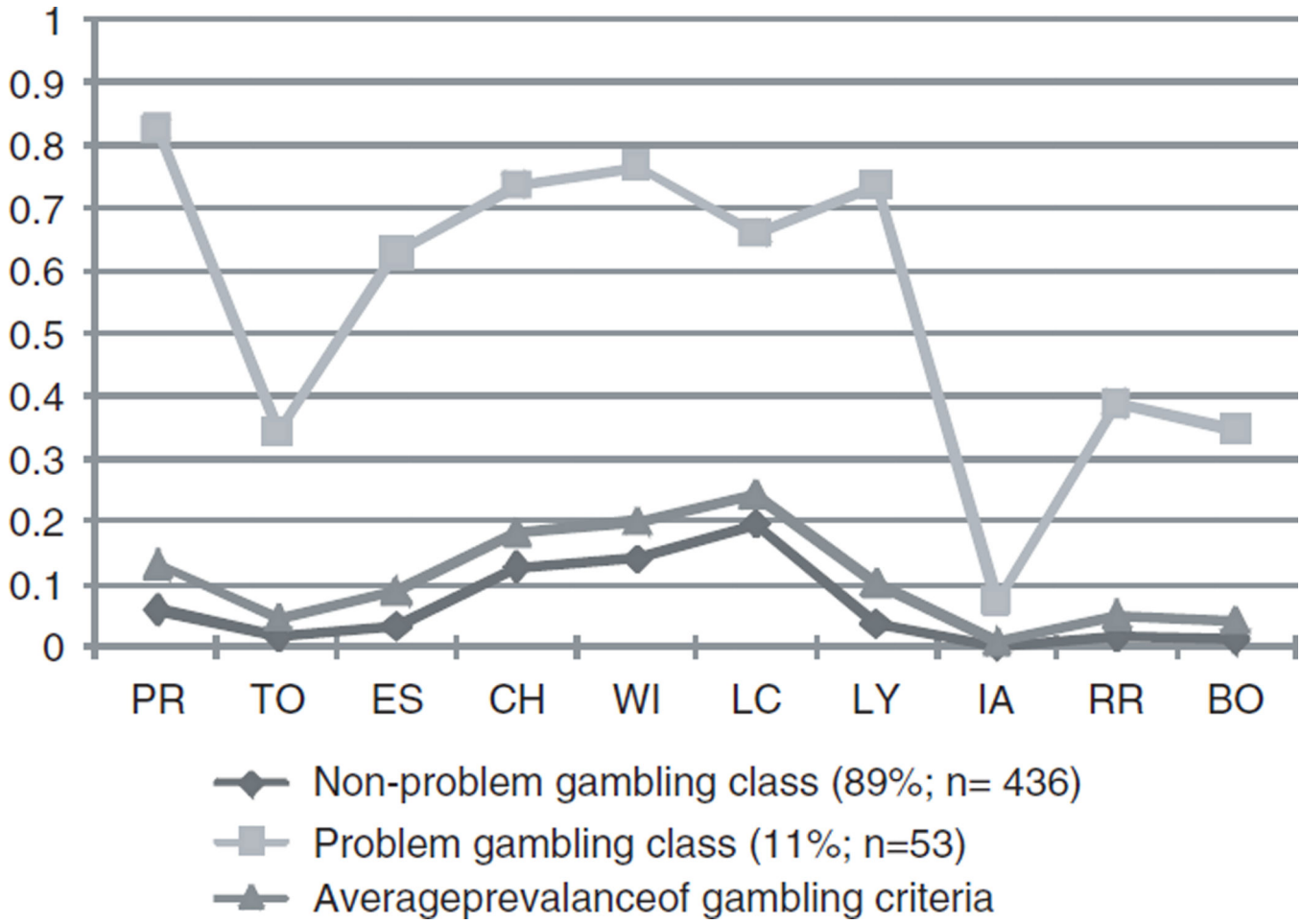

Figure 1.
Lifetime problem gambling patterns.
Notes: PR, preoccupation; TO, tolerance; ES, escape; CH, chasing; WD, withdrawal; LC, loss of control; LY, lying; IA, illegal acts; RR, risked relationship; BO, bail out. Model fits – Bayesian information criteria (BIC) = 2723.710; Akaike information criteria (AIC) = 2615.670; entropy = 0.957; Vuong–Lo–Mendell–Rubin test (VLMRT) = 482.475 ($p < 0.001$).

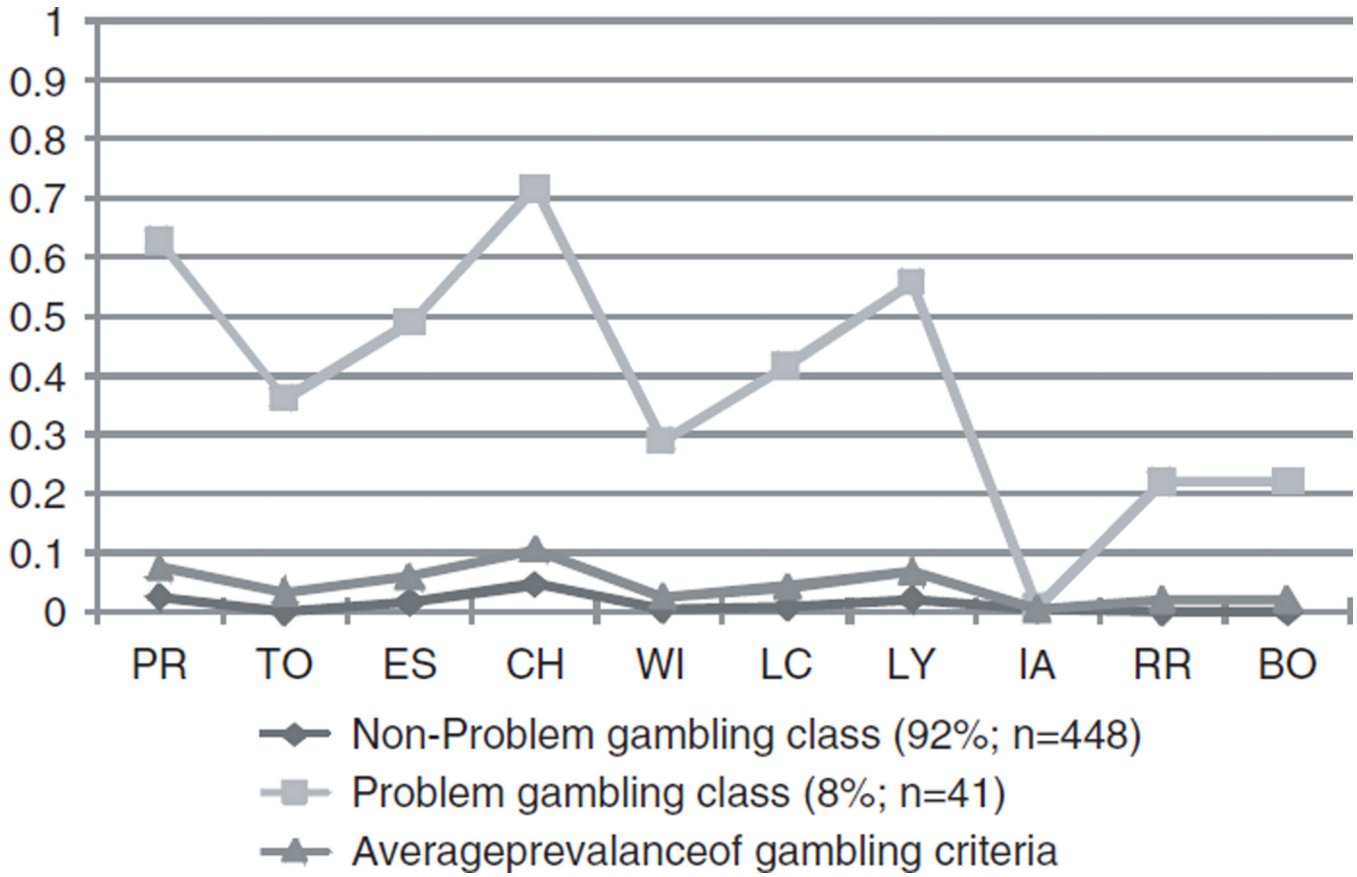

Figure 2.

Current problem gambling patterns.

Notes: PR, preoccupation; TO, tolerance; ES, escape; CH, chasing; WD, withdrawal; LC, loss of control; LY, lying; IA, illegal acts; RR, risked relationship; BO, bail out. Model fits – BIC = 1350.991; AIC = 1251.780; entropy = 0.963; VLMRT = 441.57 ($p < 0.001$).

Table 1

Sample descriptive statistics (n = 489).

Variables	Operationalization	*n* (%)
Sociodemographic characteristics		
Age	50–64 years old	299 (61.15)
	65 and older	190 (38.85)
Gender	Male	280 (57.26)
Race	White	390 (79.75)
Education	1: Less than high school	81 (16.56)
	2: High school graduate	161 (32.92)
	3: College	194 (39.67)
	4: Post college and more	53 (10.84)
Employment status	Employed	227 (46.42)
Household income	1: Less than $10,000	20 (4.09)
	2: $10,000–24,000	112 (22.90)
	3: $25,000–49,000	149 (30.47)
	4: $50,000–99,000	143 (29.24)
	5: $100,000–200,000	58 (11.86)
	6: More than $200,000	7 (1.43)
Current marital status	Currently married	303 (61.96)
Marital history	Never married	40 (8.18)
Divorced/separated	Currently divorced or separated	193 (39.47)
Living arrangement	Live alone	221 (45.19)
Religious effect		
Religious service attendance	Had frequently attended (yes/no)	164 (33.54)
Importance of faith	1: Not at all important	14 (2.86)
	2: Not so important	50 (10.22)
	3: Important	139 (28.43)
	4: Very important	286 (58.49)
Gambling-related history or attitudes		
Earliest gambling age of onset	1: Under 18	2 (0.41)
	2: 18–29	28 (5.73)
	3: 30–39	58 (11.86)
	4: 40–49	134 (27.40)
	5: 50–64	210 (42.94)
	6: 65 and older	57 (11.66)
Treatment experience for gambling	Whether or not ever received treatment	6 (1.23)
Self-perception	Self-perceived as a professional gambler (yes)	14 (2.86)
Effects of legal gambling on society	1: Very good	15 (3.07)
	2: Good	58 (11.86)
	3: About equally good and bad	280 (57.26)
	4: Bad	109 (22.29)

Variables	Operationalization	*n* (%)
	5: Very bad	27 (5.52)
Gambled with someone	Yes	44 (9.00)
Alcohol use	Yes	183 (37.42)
Reasons for gambling		
Socializing with friends or family	1: Not at all important	159 (32.52)
	2: Not so important	133 (27.20)
	3: Important	120 (24.54)
	4: Very important	77 (15.75)
Personal service from staff	1: Not at all important	214 (43.76)
	2: Not so important	144 (29.45)
	3: Important	91 (18.61)
	4: Very important	40 (8.85)
To be around other people	1: Not at all important	186 (38.04)
	2: Not so important	134 (27.40)
	3: Important	127 (25.97)
	4: Very important	42 (8.59)
Excitement or challenge of gambling	1: Not at all important	107 (21.88)
	2: Not so important	168 (34.36)
	3: Important	145 (29.65)
	4: Very important	69 (14.11)
To win money	1: Not at all important	44 (9.00)
	2: Not so important	127 (25.97)
	3: Important	139 (28.43)
	4: Very important	179 (36.61)

Table 2

Logistic regression of life-time and current problem gambling patterns (n = 489).

	LPG Patterns by LCA		CPG Patterns by LCA	
Variables	**OR**	**95% CI**	**OR**	**95% CI**
Demographics				
Age (65 and older)	0.90	0.34–2.39	0.90	0.26–3.19
Male	1.48	0.70–3.15	0.64	0.25–1.64
Race (white)	0.93	0.42–2.03	0.48	0.19–1.25
Education	0.58	0.40–0.85**	1.12	0.67–1.87
Unemployment	0.92	0.39–2.17	1.07	0.35–3.27
Household income	1.24	0.91–1.69	0.59	0.31–1.12
Currently married	1.34	0.55–3.29	1.39	0.26–8.56
Marital history (never married)	0.34	0.11–1.04*	1.50	0.26–8.55
Divorced/separated	1.29	0.59–2.82	2.33	0.77–7.08
Living arrangement (live alone)	1.05	0.50–2.21	0.83	0.23–2.97
Religious effect				
Religious service attendance (yes)	0.35	0.13–0.96*	0.06	0.01–0.40**
Importance of faith	0.94	0.64–1.38	1.05	0.63–1.75
Gambling history/attitudes				
Earliest gambling age of onset	0.91	0.63–1.33	0.79	0.55–1.14
Treatment experience	1.41	0.11–8.47	55.62	0.38–999
Self-perception (yes)	1.41	0.28–7.07	38.81	4.09–368***
Effects of legal gambling	0.89	0.58–1.35	1.26	0.68–2.33
Gambled with someone (yes)	0.39	0.09–1.68	0.14	0.02–1.36
Alcohol use (yes)	0.77	0.37–1.61	1.40	0.54–3.62
Reasons for gambling				
Socializing with friends or family	0.84	0.56–1.24	1.09	0.68–1.75
Personal service from staff	0.95	0.67–1.33	0.92	0.59–1.43
To be around other people	1.36	0.92–2.01	1.03	0.60–1.76
Excitement or challenge	1.02	0.68–1.52	2.77	1.58–4.85***
To win money	1.06	0.71–1.57	2.56	1.19–5.50**
Model fit: Wald χ^2		37.67***		86.77***

Notes: LPG, Lifetime Problem Gambling; CPG, Current Problem Gambling.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.

Table 3

The effects of lifetime and current problem gambling patterns on health status of older adults (n = 489).

Characteristics	Self-rated health coefficient	Mental health coefficient
Sociodemographics		
Age (65 and older)	−0.11	−0.01
Male	−0.05	−0.02
White	−0.03	0.09
Education	−0.13**	0.03
Unemployment	−0.38***	−0.17
Household income	−0.10*	−0.03
Currently married	0.08	−0.11*
Marital history (never married)	−0.28	0.06
Divorce/separated	0.02	−0.10*
Giving arrangement (live alone)	−0.02	−0.03
Health-related covariates		
Religious service attendance (yes)	0.03	−0.01
Importance of faith	−0.01	0.03
Earliest gambling age of onset	−0.03	−0.02
Alcohol abuse (yes)	−0.17*	−0.04
Problem gambling typology		
LPG patterns by LCA	0.02	−0.06
CPG patterns by LCA	−0.31*	0.14
Model fits (F/Wald χ^2)	5.47***	2.91**

Notes: LPG, Lifetime Problem Gambling; CPG, Current Problem Gambling.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.