

The WAGER, Vol. 19(9) - Changing the game: Rethinking the effects of internet gambling

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Some [observational research](#) (e.g., Wood and Williams, 2011) has shown that online gambling is a strong predictor of gambling-related problems. However, these research methods cannot determine whether online gambling causes gambling-related problems, or the other way around. These methods also cannot address the problem of omitted variables^[1]. In this case, the relationship between online gambling and the experience of problems might be due to engaging in online gambling *and/or* other aspects of online behavior tendencies that are omitted from analysis. To compensate for the possibility of such biases in predictive models, researchers sometimes use “instrumental variables models.” Instrumental variable models uniquely reduce bias by isolating the part of the predictive relationship that solely represents that causal effect of one predictor (e.g., online gambling) on an outcome (e.g., gambling-related problems)^[2]. This week, the WAGER reviews a study that uses two instrumental variables, online shopping and online browsing, as part of a model that used past-year involvement in online gambling to predict risk for problem gambling (Philander & Mackay, 2014).

Methods

- Philander and Mackay used data from 7,674 adults (age 16+) who participated in the 2010 British Gambling Prevalence Study (Wardle et al., 2011).
 - The data included demographics (e.g., age and gender) as well as risk behavior information (e.g., Gambling Disorder status and alcohol use).
 - Participants also reported if, during a typical month, they usually shopped online and/or browsed the Internet.
- The researchers used an instrumental variables model approach to assess the relationship between past-year online gambling participation and experience of gambling-related problems.

- Researchers first determined the statistical appropriateness of two instrumental variables: shopping online and browsing the Internet.
 - Researchers then used the instrumental variables to generate estimates of individuals' likelihood of online gambling.
 - Finally, researchers used these instrumental-adjusted estimates of online gambling participation, and other key variables, to predict the experience of gambling-related problems.

Results

- Shopping online and browsing the Internet satisfied the two criteria for instrumental variables.
 - There was no association between either of these variables and risk levels for problem gambling (Sargan test statistic, $\chi^2 = 0.98$, $p = 0.32$).
 - Those who shopped online ($\beta = 0.313$, $p < 0.001$) and those who browsed the internet ($\beta = 0.295$, $p < 0.001$) were more likely to use online gambling products.
- Online shopping, Internet browsing, and number of gambling activities were predictors of online gambling participation.
 - Those who participated in larger numbers of different gambling activities were more likely to use online gambling products ($\beta = 0.319$, $p < 0.001$).
- As the Figure shows, the instrumental model suggested that number of gambling activities and non-use of online gambling products were predictors of higher risk for gambling-related problems.
 - Those who participated in larger numbers of different gambling activities were more likely to fall into the higher-risk categories ($\beta = 0.311$, $p < 0.001$).^[3]
 - Those who used online gambling products were less likely to be in the higher-risk categories ($\beta = -0.833$, $p < 0.001$).

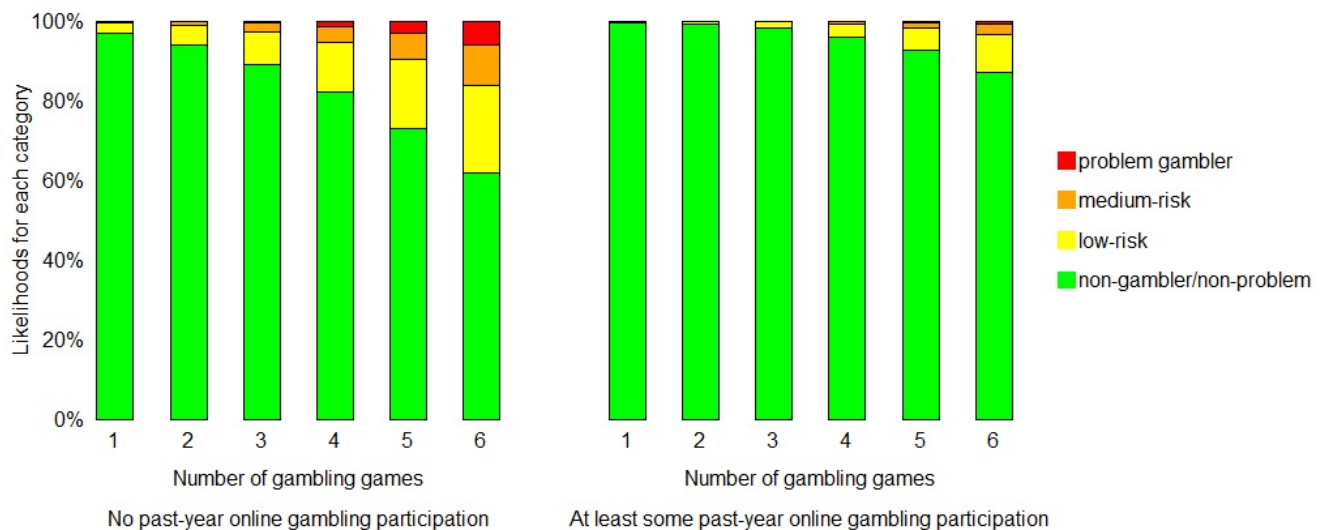


Figure. Stacked bar chart showing the percent likelihoods for each problem gambling risk category given the number of gambling games played in the previous year and participation or non-participation in online gambling, based on the following demographic profile: white, married, male, age 45-54, from east of England, employed in paid work, non-smoker, drank 5-9 units on heaviest drinking day in the past week, fair self-reported health. Adapted from Philander & Mackay (2014). Click image to enlarge.

Limitations

- It is not clear if or whether the availability of online gambling is a moderating and similar influence for all gamblers, or if the effects are different for different kinds of gamblers (e.g., low-risk versus high-risk, poker players versus sports bettors).
- This study does not imply that online gambling participation will protect all players. For some, especially those already at a higher risk for gambling-related problems, online gambling might still serve as a contributing factor. The statistical models estimates average effects that are not the same as the individual impacts experienced by single players, either in the present or future.

Conclusion

Philander and Mackay observed that the relationship between internet gambling and gambling-related problems is more complex than many people assume. This complexity was especially evident for models that took into consideration individuals' other Internet habits. It sounds counterintuitive that gamblers who

used online gambling services were less likely to have higher risk levels for gambling problems than similar gamblers who did not use online gambling services. However, online gamblers might be, on average, better informed gamblers than their offline counterparts. As the paper mentions, it is very easy to find informational resources on the web (e.g., odds comparison charts, probability calculators, community forums). Such a knowledge gap might account for at least some of the negative association found in the results. If so, then an emphasis on gambler education should be part of any effort to mitigate problem gambling.

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What do you think? Please use the comment link below to provide feedback on this article.

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^[1]The problem of omitted variables refers to researchers' inability to include all possible causal variables in a predictive model. A strong correlation between a predictor (e.g., whether someone gambles online) and a model's error term can be evidence of omitted variables (e.g., propensity for engaging in online activities).

^[2]For more information on instrumental variable methods, see Rose & Stone (2011).

^[3]While it is not the focus of this article, it should be noted that this result - that participating in many different gambling games is a risk factor for pathological gambling - supports findings reported in a growing number of other papers, such as LaPlante et al. (2012) and Phillips et al. (2012).