

## opinion

# Opportunity Cost and Gambling: Distinguishing Between Competing Activities and Harm

Paul Delfabbro,<sup>1</sup> Daniel King,<sup>2</sup> & Neophytos Georgiou<sup>1</sup>

<sup>1</sup>School of Psychology, University of Adelaide, Adelaide, Australia

<sup>2</sup>School of Psychology, Flinders University College of Education, Adelaide, Australia

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## Introduction

The term *gambling harm* refers to the negative consequences associated with excessive gambling and is central to many definitions of problem gambling. For example, in Australia, problem gambling is defined as “difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community” (Neal et al., 2005). This definition is generally consistent with modern public health approaches to gambling policy that principally focus on the consequences or harms arising from gambling, rather than on individual pathology or behaviour (Abbott et al., 2013; Korn & Shaffer, 2001, Shaffer & Korn, 2002). The dimensions of gambling harm are generally well recognized. Harm, according to the Productivity Commission (1999), falls into several principal dimensions: personal, interpersonal, financial, vocational, and legal. Similar dimensions are listed by Langham et al. (2016) in a dedicated review and taxonomy of gambling harms. They categorize harms as financial, those relating to work or study, health-related, psychological, social, and another miscellaneous category that captures deviant or dysfunctional behaviours such as dishonesty, criminal acts, and child neglect.

Questions related to gambling harm are included in most prevalence surveys around the world and often correspond to these dimensions. Similarly, most problem gambling screens or diagnostic criteria include items that capture harm. The well-known Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001), for example, includes items such as the following: “Has gambling caused you health problems such as stress or anxiety?”; “Has gambling caused you any problems for you or your household?”; and “Do you feel guilty about the way you gamble or what happens when you gamble?” Similar items appear in the South Oaks Gambling Screen (Lesieur & Blume, 1987), along with others that ask about impacts on work and study,

borrowing, credit, and arguments with others over gambling. In clinical diagnosis, the current criteria for gambling disorder in the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* refer to threats to significant relationships, jobs, or career opportunities and to “desperate financial situations caused by gambling.” (American Psychiatric Association, 2013). As Langham et al. (2017) point out, a limitation of most of these measures is that items are either very general (e.g., any type of financial harm) or focus on only a narrow range of harms, namely, those most commonly experienced by problem gamblers. Such harms are usually severe enough to encourage formal help seeking or the necessitation of an intervention (e.g., losing jobs, relationships, or major assets, or criminal behaviour; Bellringer et al., 2008; Evans & Delfabbro, 2005; Gainsbury et al., 2014; Rockloff & Schofield, 2004). Less attention is given to the potential harms that might be experienced before a crisis point is reached. This includes the gradual build-up of financial pressures, tension in relationships, declines in work performance, or gradual deteriorations in mental or physical health.

To address the problem of low base rates and to enhance the utility of harm measures as a metric for capturing changes in harm at a population level, Browne et al. (2016) developed a comprehensive checklist of 72 harm items designed to capture a continuum of harm due to gambling ranging from mild to severe. Within this taxonomy, financial harms could range from having reduced savings or recreational expenditure to bankruptcy, health conditions could range from losing sleep to suicide or being admitted to the emergency room, and work/study harms could range from mild items such as being late for work to losing a job. In a study of a large sample of gamblers, Browne et al. (2016) provided detailed summaries of the endorsement of different harms by low-risk, moderate-risk, and problem gamblers. They also conducted Rasch theory or item response theory analysis into the severity of items and the extent to which they were able to differentiate between the different PGSI classifications. An important finding from their study was that harm did not appear to be solely confined to problem gamblers. Instead, it was possible to find small (and sometimes larger) percentages of low-risk gamblers who also endorsed harm items. This observation led to the application of a range of burden of disease methodologies that calculated the amount of harm attributable to low-risk, moderate-risk, and problem gamblers based on the PGSI (Ferris & Wynne, 2001). Browne et al.’s (2016) method involved presenting people with harm scenarios on the basis of their survey results and asking them to rate them against other known diseases. They used a “time-trade off” methodology to obtain estimates of how many years of quality of life had been lost due to these harms. Low-risk gamblers generally rated their bundles of harm as being less severe than other gamblers did; they also indicated fewer years of lost quality of life due to gambling. However, because the number of low-risk gamblers was much higher than that of the other groups, the total estimated burden of harm was higher in this group than for problem gamblers or moderate-risk gamblers. In fact, further analyses showed that the vast majority of harms were attributable to lower risk gamblers (Browne & Rockloff, 2018).

Although much of the interest in Browne et al.’s (2016) work has arisen because of its description of the range of gambling harms, their checklist of harms also raises

important questions about how gambling harm might be defined. As pointed out by Delfabbro and King (2017, 2019), when one inspects many of the items that were most commonly endorsed by low-risk gamblers, they appear to relate to the direction of time or money away from other activities due to gambling. In principle, items such as this make sense conceptually because pathological or disordered gambling under the traditional addiction model involves preoccupation and a gradual narrowing of activities. Problems do indeed arise when gambling becomes the sole source of entertainment and is undertaken to the exclusion of everything else. Such views are also consistent with the so-called behavioural allocation model of addiction (see Lamb & Ginsburg, 2018), which argues that addiction occurs when habitual or dominant patterns of behaviour come to override other behavioural choices. In effect, when given a choice between two activities, people will direct most resources toward the addiction-related activity at the expense of other things (Joyner et al., 2005). However, a question arises: If the gambling is at low-risk levels and people have to make a choice between gambling and other activities, is this really demonstrating a pattern of decision making consistent with dependence or addiction, or merely an everyday consumer choice? In our view, the harms that Browne et al. (2016) developed may fall into three categories that need to be distinguished. Some items appear to be merely simple substitution effects in which a person chooses one activity over another. A second item appears to be a form of opportunity cost in that it appears to involve prioritization of gambling over other important life commitments; such items could potentially be considered indirect costs or harms. A third category appears to comprise direct costs and could be classed unambiguously as genuine forms of harm.

### **Substitution Effects and Opportunity Costs Economic Theory**

Substitution effects, as the name implies, involve a choice to engage in one activity or to consume a product or service in preference to another. This effect is usually depicted schematically in the form of a choice set based on a simple two-good economy. On the X-axis is the quantity of one good; on the Y, the quantities of the other. A budget line runs down diagonally left to right to indicate the bundles of good X and Y that the person can purchase with that budget *ceteris paribus*. A person can move up and down that line, substituting one good for another, and staying within budget. Economists then argue that people look to maximize their satisfaction or utility and this is depicted as a series of curves that extend out from the origin. Hypothetically, people try to achieve the highest curve possible within their budget and so there will be an optimal point at which the budget line meets the highest achievable indifference or utility curve. Within such contexts, a person has the opportunity to give up some resources for another. Resources can be time, money, effort, or anything else that is directed toward a good, service, or activity. For example, when a person chooses to go to a physical football game each week, they make the decision to spend time or money on that football activity rather than going to a movie with the family, walking in the park, or engaging in work around the home.

Although economic textbooks often use the term “opportunity cost” to describe these simple substitution effects, a genuine opportunity cost in health economics

contexts refers to lost opportunities in which one preferred activity is given up for one that is less preferred. In this context, an opportunity cost is seen as a form of indirect cost. For example, as Farrar et al. (2017) point out, if one has a health condition or is forced into caring for a family member who is chronically unwell, this has both a direct cost and an opportunity cost. The direct cost is the medical bills and extra household resources expended, but the indirect opportunity cost is the loss of the ability to work, which can be easily quantified. In this sense, the health condition takes away earning capacity and service, which is clearly the next best activity that would otherwise be undertaken.

Inspection of items that have been identified as indicators of gambling harm (Browne et al., 2016; Langham et al., 2016) appears to suggest that there are items that would fall into all three of the identified categories. We identify eight items that come very close to being not much more than substitution effects (e.g., reduced savings, spending less time with family, getting less sleep). In other words, when one spends money and time on gambling, this activity is undertaken instead of other potentially rewarding activities. Another group of harm items appear to have a stronger claim as examples of genuine opportunity costs because they refer to a substitution of activities and to indicate a maladaptive or unhealthy prioritization of behavioural choices (e.g., not paying bills on time). In this sense, they appear to be conceptually aligned with the “behavioural allocation disorder” described by Lamb and Ginsburg (2018). A third category of items that appear to be clearer indicators of harm are those that indicate not only a mere reallocation of time and/or money, but also that the “quality” of some other important aspect of life is diminished. Examples include the health impacts of gambling, the effects on relationships, and the effects on work/study performance. As shown in Table 1, items of this nature appear to be unequivocally indicators of harm that have both direct costs and clear indirect costs.

### **Implications**

A particular reason for differentiating between items in this way is that it may have significant implications for how much harm is attributed to lower risk gamblers in the burden of disease studies (Browne et al., 2017; Li et al., 2017). Inspection of the statistics presented by Browne et al. (2016) in a panel sample of over 2,500 gamblers, for example, shows that, of the top 10 harms most endorsed by low-risk gamblers, six were items that fell into the category of substitution effects: reduced savings, other recreational expenditure, reduced spending money, reduced physical activity, reduced non-gambling social events, and reduced time with others. All of these harms were endorsed by at least 5% of low-risk gamblers with the highest figure of 31% recorded for “reduced spending money”. Harms of particular concern were the first three, all of which were endorsed by a significant proportion of low-risk gamblers. Some of the remaining items in the top 10 most endorsed could be questioned for other reasons (Delfabbro et al., 2020). For example, experiencing regret could be because of losing, whereas endorsing the item “increased alcohol and tobacco use” could be because these are often complementary goods when people gamble. Items such as “increased credit card debt” is perhaps more ambiguous

Table 1  
*Classification of Harm Items*

Harm item	Comment	Prevalence in Browne et al. (2016) % Low risk gamblers
<i>Substitution of activities</i>		
Reduction of available spending money	Disposable income will be reduced for most regular choices, e.g., sport on weekend, weekly meal out, choosing to drive vs. public transport	16.1
Reduced savings	The same applies here	21.0
Less spending on other recreational activities	This would appear to be a form of substitution. One might visit a venue and have a less expensive meal vs. spend money on gaming machines. A person could budget for the gambling.	19.7
Increased credit card debt	This item is borderline especially given that credit cards are often used to open an online gambling account. Those who use credit to gamble are more likely to be higher risk gamblers, but using credit to gamble may not be problematic in itself.	3.8
Spent less time with people I care about	At face value, this could also refer merely to an allocation of resources. This would happen if one went to the football alone each week.	7.6
Spent less time attending social events (non-gambling related)	This could also be associated with an occasional preference to go to hotels and clubs over other venues. But gambling itself is often a social activity.	6.4
Loss of sleep due to spending time gambling	This would also apply to watching TV shows or doing work late into the night	3.2
Reduced physical activity due to gambling	This would also apply to all sedentary behaviours, including video-games, TV or sitting and watching sport	5.1
<i>Maladaptive Prioritization of Activities</i>		
Late payments on bills	The person is putting gambling expenditure ahead of essential spending. But this may be a commonly observed tendency observed in many people and not just for gambling.	1.9

Table 1 Continued.

Harm item	Comment	Prevalence in Browne et al. (2016) % Low risk gamblers
Less spending on beneficial expenses such as insurance and education	Similar to the above	1.9
Less spending on medicine, food, healthcare	Similar to the above	1.9
Neglected relationship responsibilities	Similar to the above	3.2
Didn't fully attend to needs of children	Similar to the above (assuming that they would have <i>fully</i> attended to the children if <i>not</i> gambling)	0.6
Used my work or study time to gamble	This item correctly infers that time taken away from important life commitments to gamble is probably not adaptive.	1.3
Used my work or study resources to gamble	Similar to the above	2.5
Was absent from work or study	Similar to the above	1.9
Reduced quality of important life domain		
Lost sleep due to stress or worry about gambling	Gambling is affecting the person's health.	1.3
Got less enjoyment from time spent with people I care about	The quality of the relationship has declined because of gambling.	3.8
Social isolation (felt excluded or shutoff from others)	The person has been socially affected by gambling. The implication here is that the person has lost touch with those close to them even if they are known to staff at gambling venues.	4.5
Experienced greater tension in relationship	This item could be just considered a direct cost of gambling, but could also reflect spending too much time or money (resource allocation)	3.2
Experienced greater conflict in relationship	Similar to the above	3.2
Reduced performance in work or study	The quality of work has declined due to gambling	3.2

because the use of credit to gamble is recognized as a problem gambling indicator in some measures (e.g., South Oaks Gambling Screen; Lesieur & Blume, 1987). Other items such as feeling shame (endorsed by 4.5% of low-risk gamblers) and feelings of anger, shame, or distress (3.8%) appear to be more valid indicators of harm, but some of these emotions (in particular anger) could be just short-term emotional reactions to having a losing night rather than genuine harm. A similar analysis conducted by Delfabbro et al. (2020) revealed again that the three items in Table 1 were endorsed at almost double the percentage of all the other top 10 most endorsed items among low-risk gamblers. Feelings of shame, regret, failure, or insecurity were the next most common items (as found by Browne et al., 2016). However, the findings in this new data set added weight to Browne et al.'s (2016) argument that gambling, even at lower levels, can lead to financial pressures on bills, which (in the United States) is not surprising, given recent increases in costs for rent, utilities, and many other expenses.

### Conclusions

Consistent with Browne et al. (2016), we support the view that public policy is best informed by approaches that try to capture the spectrum of gambling harms experienced by gamblers at different levels of gambling risk. However, estimates of gambling harm in lower risk groups need to be treated with caution because some items appear to be closer to behavioural substitution rather than true indicators of gambling harm. The relatively high endorsement of these items by lower risk groups (including recreational gamblers) may lead to inflated estimates of gambling harm in these groups. On the other hand, items that capture the maladaptive allocation of time and money toward gambling, that capture the over-prioritization of gambling, or that diminish the quality of other areas of life appear to be valid measures of the true indirect or opportunity costs of gambling. In our view, there is nothing wrong with conducting research that includes all three categories of items, but they should not be weighted equally. A better approach may be to use a more weighted scoring method for the substitution items; for example, “reduced savings” must be rated as at least a “moderate problem” and be clearly associated with gambling rather than using simple binary scoring without any attribution of the cause of the “problem” indicated. Other items that capture clearer harms would probably still be suitable for binary scoring. For example, even a single instance of being late to work because of gambling, or of selling assets because of gambling, could be considered a clear form of harm.

### References

Abbott, M. W., Binde, P., Hodgins, D., Korn, D., Pereira, A., Volberg, R., & Williams, R. (2013). *Conceptual framework of harmful gambling: An international collaboration*. The Ontario Problem Gambling Research Centre (OPGRC).

- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders: Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition. Arlington, VA: American Psychiatric Association.
- Bellringer, M., Pulford, J., Abbott, M., DeSouza, R., & Clarke, D. (2008). *Problem gambling: Barriers to help seeking behaviours*. Auckland University of Technology, Gambling Research Centre.
- Browne, M., Langham, E., Rawat, V., Greer, N., Li, E., Rose, J., Rockloff, M., Donaldson, P., Thorne, H., Goodwin, B., Bryden, G., & Best, T. (2016). *Assessing gambling-related harm in Victoria: A public health perspective*. Victorian Responsible Gambling Foundation.
- Browne, M., Rawat, V., Greer, N., Langham, E., Rockloff, M., & Hanley, C. (2017). What is the harm? Applying a public health methodology to measure the impact of gambling problems and harm on quality of life. *Journal of Gambling Issues*, 36, 28–50.
- Browne, M., & Rockloff, M. (2018). Prevalence of gambling-related harm provides evidence for the prevention paradox. *Journal of Behavioral Addictions*. Advance online publication. <https://doi.org/10.1556/2006.7.2018.41>
- Delfabbro, P. H., & King, D. (2017). Prevention paradox logic and problem gambling: Does low risk gambling impose a greater burden of harm than high risk gambling? *Journal of Behavioral Addictions*, 6(2), 163–167.
- Delfabbro, P. H., & King, D. (2019). Challenges in the conceptualisation and measurement of gambling-related harm. *Journal of Gambling Studies*, 35(3), 743–755.
- Delfabbro, P.H., King, D.L. (2020). Measuring gambling harm: the influence of response scaling on estimates and the distribution of harm across PGSI categories [Manuscript submitted for publication].
- Evans, L., & Delfabbro, P. H. (2005). Motivators for change and barriers to help-seeking in Australian problem gamblers. *Journal of Gambling Studies*, 21(2), 133–155.
- Farrar, M. A., Carey, K. A., Paguinto, S-G., Chambers, G., & Kasparian, N. A. (2018). Financial, opportunity and psychosocial costs of spinal muscular atrophy: An exploratory qualitative analysis of Australian carer perspectives. *BMJ Open*, 8(5), e020907.
- Ferris, J., & Wynne, H. (2001). *The Canadian Problem Gambling Index: Final report*. Canadian Centre on Substance Abuse.

Gainsbury, S., Hing, N., & Suhonen, N. (2014). Professional help-seeking for gambling problems: Awareness, barriers and motivators for treatment. *Journal of Gambling Studies*, 30(2), 503–519.

Joyner, K. J., Meshesha, L., Dennhardt, A., Borsani, B., Martens, M., & Murphy, J. G. (2019). High opportunity cost demand as an indicator of weekday drinking and distinctly severe alcohol problems: A behavioural economic analysis. *Alcoholism: Clinical and Experimental Research*, 43(12), 2607–2619.

Korn, D., & Shaffer, H. (1999). Gambling and the health of the public: Adopting a public health perspective. *Journal of Gambling Studies*, 15(4), 289–365.

Lamb, R. J., & Ginsburg, B. C. (2018). Addiction as a BAD, a behavioral allocation disorder. *Pharmacological Biochemical Review*, 164, 62–70.

Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2016). Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC Public Health*, 16(80), 1–23.

Lesieur, H., & Blume, S. (1987). The South Oaks Gambling Screen (the SOGS): A new instrument for the identification of problem gamblers. *American Journal of Psychiatry*, 144(9), 1184–1188.

Li, E., Browne, M., Rawat, V., Langham, E., & Rockloff, M. (2017). Breaking bad: Comparing gambling harms among gamblers and affected others. *Journal of Gambling Studies*, 33(1), 223–248.

Neal, P., Delfabbro, P.H., & O’Neill, M. (2005). *Problem Gambling and harm: Towards a national definition*. Melbourne, Victoria: Gambling Research Australia.

Productivity Commission. (1999). *Australia’s gambling industries*.

Rockloff, M., & Schofield, G. (2004). Factor analysis of barriers to treatment for problem gambling. *Journal of Gambling Studies*, 20(2), 121–126.

Shaffer, H. J., & Korn, D. A. (2002). Gambling and related mental disorders: A public health analysis. *Annual Review of Public Health*, 23, 171–212.

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For correspondence: Paul Delfabbro, Ph.D., School of Psychology, University of Adelaide, Nth. Tce. Adelaide, South Australia, 5005, Australia.  
E-mail: paul.delfabbro@adelaide.edu.au

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