



## **Research Summary**

### **The Leisure, Lifestyle and Lifecycle Project (LLLP)**

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### **Research Question and Goals**

1. What are the normal patterns of continuity and discontinuity in gambling and problem gambling behaviour?
2. What biopsychosocial variables and behaviour patterns are most predictive of current and future problem gambling?
3. What etiological model of problem gambling is best supported by the longitudinal findings?

### **Research Design & Methods**

The Leisure, Lifestyle, and Lifecycle Project (LLLP) is a five-year prospective longitudinal study designed to collect data on the factors influencing change in gambling and problem gambling behaviour over time. A sample of 1808 participants from four locations representing the diversity of the province of Alberta (Edmonton, Calgary, Lethbridge area, and Grand Prairie area) were recruited primarily through random digit dialing. In order to assess the development of gambling problems over the lifespan, five critical age ranges were targeted: 13-15, 18-20, 23-25, 43-45 and 63-65 year-olds. Individuals with relatively heavy involvement with gambling were over-sampled. A broad array of psychosocial variables was assessed at baseline via telephone, face-to-face, and computerized self-administration. The sample was weighted to match the population of Alberta according to age, gender, geographic location and the over-sampling procedure. The three follow-up data collection waves of the cohort were completed by paper- or Internet-based surveys. Retention in the fourth and final assessment was 76.2% for the adult cohorts, 71.8% for the adolescent cohort, and 75.1% for the combined cohort.

The report provides analyses of the *adult sample* (n = 1372) and focuses primarily on the first primary research questions above - specifically, on identifying variables that are robust predictors of future problem gambling onset, the stability of gambling problems over time, and the development of a multivariate model that illustrates the interaction of gambling behaviour and problem gambling over time.

A similar longitudinal study was conducted in the same time period in the Quinte region of Ontario, namely the Quinte Longitudinal Study (QLS). A set of parallel analyses was conducted on the QLS dataset in order to identify findings that were robustly supported in both studies. This summary describes these robust findings.

## **Key Findings and Implications**

### **Etiology of Gambling and Problem Gambling**

Generally, variables indicating frequent and more intensive involvement in gambling were the strongest predictors of future onset of gambling-related problems. Gambling to escape, dissociating while gambling, endorsing gambling cognitive fallacies and reporting stressful life events were also robust predictors. These predictors are modifiable risk factors. Efforts to reduce the amount that people gamble may be the most effective way of preventing problem gambling.

Multivariate modeling revealed that the risk factors associated with relatively higher gambling involvement differ from risk factors that directly affected gambling disorders. Generally, the size of relationships between predictive variables and gambling behaviour and problems was small, which suggests that no one variable was overwhelmingly predictive. Rather, many variables contribute a small but significant amount.

Being less intelligent and less religious, having greater excitement-seeking tendencies (essentially greater sensation-seeking), and having grown up gambling with parents and friends who gamble were factors associated with more gambling involvement, but not directly related with a greater likelihood of gambling problems. Being male was also predictive of greater gambling in both samples; however, males were only more likely to have gambling problems in the LLLP and not the QLS. Gambling to escape and experiencing an early “big win or big loss” were directly associated with both increased gambling and increased problem gambling in both samples.

One of the strongest predictors of problem gambling was greater impulsivity. Impulsivity is emerging as a particularly consistent factor in gambling disorders. Understanding which facets of impulsivity are etiologically linked to gambling involvement and gambling problems is an important future direction for the field.

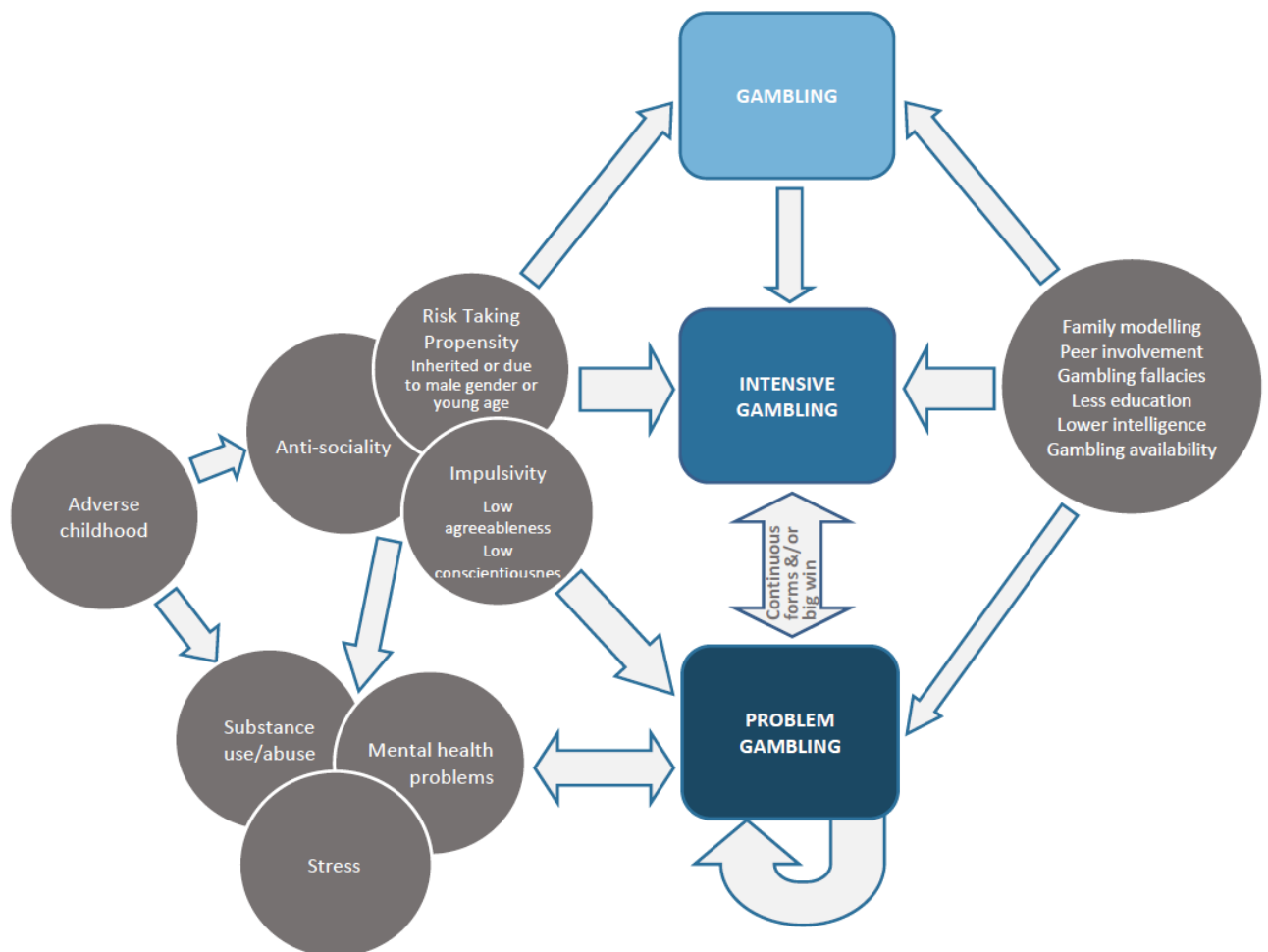
An additional important finding of the modeling analysis is that a variety of mental health indicators predict problem gambling: a mental health composite, largely comprised of internalizing disorders (e.g., depression, anxiety, obsessive compulsive traits), did not influence gambling involvement, but did influence gambling problems. In other words, although individuals with mental health problems were not more likely to gamble, they were more likely to develop gambling problems.

The pattern of results for externalizing disorders, such as antisocial personality disorder and substance abuse was more variable. Antisocial personality disorder traits were associated with greater gambling involvement in both samples but greater gambling problems in only the LLLP.

Drug abuse was associated with greater gambling problems in both samples, but not gambling involvement. Alcohol use disorder was unrelated to gambling involvement in either sample but negatively related to problem gambling in the QLS. The QLS revealed an association between tobacco use and gambling involvement (not problems) and the LLLP found the opposite relationship.

The negative impact of childhood trauma on the development of gambling problems was confirmed in this longitudinal analysis, which is consistent with other research that shows childhood trauma influencing the development of a range of adult mental and physical health outcomes.

The results of the multivariate analyses conducted for this report complements the analysis reported in the QLS report. Together, these results are summarized in the following exploratory etiological model:



## **Stability of Gambling and Problem Gambling Over Time**

The stability of gambling and problem gambling symptomatology over time was strongly related to current level of gambling involvement and problematic gambling. From a broad population perspective, gambling and problem gambling are relatively stable over time. Stability is found not only for overall gambling involvement, but also for specific aspects of gambling such as amount spent, number of types of gambling engaged in, and frequency of gambling.

However, focusing on individuals who showed signs of gambling problems sometime during the five years of the study, there was significant variability over time. About half of these individuals were problem gamblers in only a single time period. One year thus represents the modal duration of problem gambling, with two years being the second most common duration. Chronic problem gambling is an uncommon pattern. Only a minority of problem gamblers were problem gamblers in three, four, or five consecutive time periods. Risk of chronic problem gambling increased with each consecutive year of problem gambling status.

Approximately 80% of problem gamblers had at least one year of remission (i.e., did not meet criteria for problem gambling) in a five-year period.

Of those who did recover, only about one-third relapsed in the remaining study time period (a maximum of three subsequent years). The longer term relapse may be much higher. It is worth noting that the relapse rate observed in these general population samples is lower than the rate seen in treatment samples where the majority of treatment participants relapse at some point early in the post-treatment period.

## **Limitations**

All research findings are somewhat time (2005-2011) and geographically specific (Alberta). It is expected that most, but not all, of the present results would apply to other jurisdictions in other time periods. Although the research design included over sampling of individuals with greater gambling involvement, the number of individuals experiencing problems over the course of the study is small, and some results may, as a result, be less reliable.

## **Conclusions**

The LLLP and QLS provide the most comprehensive longitudinal analysis of gambling and problem gambling currently available. The report provides analyses focusing on the stability of gambling and problem gambling and variables etiologically related to change in gambling and problem gambling. The opportunity to conduct parallel analyses across two large data sets is invaluable and the consistency of the findings across studies conducted in two provinces as well as the consistency with previous cross-sectional and longitudinal research is remarkable.

In summary, the results identified a number of robust predictors of gambling and problem gambling including both fixed and modifiable factors. Fixed factors include gender, ethnicity, intelligence and arguably income and impulsivity. Modifiable factors include mental and substance use disorders, gambling involvement, and proximity. Although some factors predicted

both gambling involvement and gambling problems (e.g., gender), some factors were more predictive of only gambling (e.g., excitement-seeking) and others more predictive of only gambling problems (e.g., mental health problems). Taken together these findings provide a solid basis for designing prevention and intervention programs.

The results also shed light on the question of stability of gambling problems. At a broad population level, there is considerable stability in people's overall involvement in gambling and problems they experience. However, at the individual level, there is a considerable amount of transition. These findings underscore the importance of looking at gambling problems at both the population and individual levels. Investigations at the population level inform the creation of focused interventions aimed at reducing overall gambling problems. Investigations concerning how individuals experience change in their gambling habits over time, and the characteristics that lead to such change, can inform interventions targeted at helping people make smooth and long term transitions away from problematic gambling.

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Views expressed in this research summary are those of the authors and not necessarily those of the Alberta Gambling Research Institute.

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