Implementation of the GAMBL-program – A Psychoeducational Intervention with a Gender Perspective for Gambling Behavior Prevention in Higher Education

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Abstract

Gambling-related harm is a growing public health concern among young people and university students, highlighting the need for accessible and engaging prevention strategies. This paper presents the GAMBL Project, a set of digital and gamified approaches developed to prevent gambling-related harm and assess psychological variables associated with gambling behaviour. Three programs are described: GAMBL-OUT, an immersive psychoeducational intervention for adolescents and young adults; GAMBL-HER, a gender-sensitive primary prevention intervention addressing gambling-related risk factors among women; and GAMBL-HID, a gamified assessment program targeting psychological variables related to gambling. GAMBL-OUT was evaluated through a cluster randomized controlled trial assessing knowledge, gambling intention and attitudes at baseline, immediately after the intervention, and at a 1-month follow-up, together with qualitative implementation outcomes. Preliminary results from 410 college students showed that 8.8% presented moderate-to-high gambling risk. Gambling-risk perception decreased significantly following the intervention, and the program showed high acceptability, feasibility and implementability. A pilot study of GAMBL-HER involving nine expert women showed adequate adherence and positive evaluations, particularly regarding emotional regulation, self-care and identification of at-risk situations. Overall, these findings support the potential feasibility and acceptability of innovative, gamified and gender-sensitive approaches to gambling prevention in young people and women.

Keywords: *Mental Health, College Students, Gambling Disorder, Prevention Programs.*

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1. Introduction and objectives

The importance of mental health in university students is a recognized global public health concern that has received increasing attention in the last years [1]. The onset of psychiatric disorders is regarded as an origination point in adolescence and early adulthood [2]. Furthermore, university students are more prone to stress-exposure effects [3] and higher levels of anxiety, depression or distress than non-students peers [4].

Gambling disorder is a behavioural addiction in which a recurrent and persistent pattern of gambling occurs, creating a significant distress or impairment in different areas of life such as: emotional, social, financial or career. It is estimated a 1.4% global prevalence [5]. Gambling disorder is considered a public health problem [6], [7], [8] due to its association with psychiatric comorbidities, financial harm, criminal record or higher risk of suicide [9], [10]. In a southern Spain study, it was found that gambling disorder affected 4.7% of late-teenagers [11]. Furthermore, after COVID-19 there has been an increase of gambling activity in young adults and adolescents [12]. Gambling disorder is more prevalent in university students than older adults [13]

Digital intervention programs are effective to increase wellbeing and mental health in university students [14], [15]. Although, it seems more cost-effective implementing prevention programs [16]. Our research group has created prevention programs with an online-focus methodology with interactive and immersive approaches to study and prevent gambling.

For prevention programs we produced two: (I) GAMBL-OUT, aim at teenagers and young adults, with a universal purpose; and (II) GAMBL-HER, for a general female population, focuses on specific risks faced by women. Stigma, accessibility difficulties or gambling motives, development and course being different are some of the complexities women face in gambling disorder [17]. On the other hand, we created GAMBL-HID, a gamified evaluation. This work presents the clinical trial protocols and preliminary implementation outcomes for both preventive interventions.

2. Methods – GAMBL-Programs

2.1 GAMBL-OUT

GAMBL-OUT program responds to the crescent need for preventive programs aim to the youth but with an immersive methodology. The goal of the program is to approach a relatable experience of gambling, its development and harms associated in a story with a protagonist close to their age. In tackling that, the program is composed by two parts: (I) an immersive-story driven online escape-room; and (II) a gamified psychoeducational reinforcement session. Both sessions are done in-person, dividing the participants into different groups. The methodology involves both offline and online tools. For example, the escape-room was built to be done onto a computer, but the activity is performed on site.

To evaluate GAMBL-OUT, a cluster randomized controlled trial was conducted. The evaluation comprised questions about knowledge, intention to gamble and attitudes assessed at baseline, immediately post-intervention, and at a 1-month follow-up. Implementation outcomes (e.g., acceptability, feasibility, fidelity) were evaluated qualitatively.

In the escape-room, each group follows Lucas who initially appears to be successful and skilled at gambling. Nevertheless, that mask crumbles as the narrative unfollows. The participants notice rather quickly that gambling has already caused losses and other negative consequences in diverse areas of his life. To facilitate the understanding of how he ended up at that point, the participants submerge in a flashback across his journey, beginning the escape and puzzle-solving escape-room. The escape-room consists of five rooms per se. Each one catered towards a type of gambling and its associated risks; except for the last one that centres all the harms accumulated through time.

Some of the contents the escape-room shows, helps to identify and dismantle are: (I) slot-machines, with their stimuli associated, gambling-bias, the availability or low cost of entry; (II) sport-bets and tipsters, common tricks and the presence and urgency of betting in sports, with financial and social harms starting to become more accentuate; (III) online poker and solitude, exploring expectations and behaviours like lying or robbing; (IV) in-house games with common gambling-related cognitive bias; and lastly, (V) different types of harm take a central stage ending with a call to action to seek help. The second session reinforces the psycho-educational information present in the escape in a more direct way: focused on biases, warning signs and resources for help.

2.2 GAMBL-HER

In response to the lack of female-risks focused prevention programs for gambling disordered, we created GAMBL-HER. It is an online primary intervention catered around risk-factors to promote a better understanding of the course and harms gambling causes onto women and to provide tools to prevent the onset and course of gambling such as: mindfulness and emotional regulation, self-care; leisure and time management; and gambling-related psycho-educational information. Each one of them being worked through a chapter of the program.

The promotional and recruitment material were a series of situations involving women and their use of gambling in a comic-style format: as a coping mechanism, emotional regulation, to not feel alone, to avoid facing a domestic violence situation...

2.3 GAMBL-HID

A gamified evaluation of psychological variables related to gambling such as impulsivity, decision-making, risk-taking, competitiveness and cognitive bias done in an online environment. The program had the objective of validating tasks with traditional questionnaires. Some gamified instruments were already in existence: Game of Dice Task [18], Iowa Gambling Task [19], Monetary Choice Questionnaire [20], although the last one is being validated to Spanish and modified according the current currency value. The team created task for competitive behaviour (GAM-COMPET), gambling-related cognitive bias (CASS) and chase behaviour (LST).

3. Results

3.1 GAMBL-OUT

Preliminary results with a total college sample of 410 (58.8% woman, mean age of 19) had an 8.8% moderate to high risk gamblers as for PGSI with a medium to large need to gamble present in 4.8%. After the intervention the perception of gambling risk descended significantly ($p = 0.001$) as it did future bet intention ($p = 0.176$).

In regard implementation of the program, for acceptability there was a high rate of approval, enjoyment, appeal and liking. It was also rated high for viability variables as feasibility, implementability and future use intention.

Acceptability	Rated 4 or 5 out of 5 (%)
Approval	95.5
Appeal	95.5
Enjoyment	92.4
Liking	95.5
Viability	
Future use intention	81.9
Implementable	78.5
Feasible	86.1
Ease of use	84.6

Suitability	
Timely	84.6
Context-appropriate	81.5
Applicable	84.6
Enhances existing efforts	83.1

Table 1. GAMBL-OUT preliminary implementation results. The Likert scale was 1 (Totally disagree) to 5 (Totally agree). The sentence structure, using as an example "*Approval*", was: *"The program has my approval"*.

3.2 GAMBL-HER

The pilot study, which included nine women from diverse professional backgrounds, which included health, educative and social experts; showed adequate adherence and positive evaluation of its contents. More so those elements for emotional regulation, self-care and identifying at-risk situations.

The majority assessed positively the viability and utility of the program. They also appraised the use of cartoon-style advertisements depicting different gambling situations employing women of different age and background.

4. Conclusion and discussion

GAMBL-OUT program was perceived by young people as appealing, appropriate and feasible. There were signs of improvement in perceptions of the risks associated with gambling, attitudes toward gambling advertising and other key variables. This is in concordance with new prevention programs aim toward youth [21], [22].

GAMBL-HER program is a structured and transferable program that centers and caters towards a demographic often forgotten by traditional prevention programs [17]. The pilot study showed potential for a full trial where female-focus risks are taken in consideration to strengthen tools to diminish gambling as a viable tool for, for example, emotional regulation. This focus on adaptive every-day tools could help not only at-risk women but every one of them [17].

Both online prevention programs showed an initial good reception. The online methodology, and semi-online with on-site workshop for GAMBL-OUT program; were adequately and positively perceived with appraisal on the blend of technology and human touch. The GAMBL Project offers a scalable, innovative framework that combines gamification and gender-sensitive approaches to

advance behavioral addiction prevention in higher education. Our aim is to further recruitment for GAMBL-OUT program and launch a GAMBL-HER clinical trial shortly.

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References

[1] P. Fusar-Poli, C. U. Correll, C. Arango, M. Berk, V. Patel, and J. P. A. Ioannidis, "Preventive psychiatry: a blueprint for improving the mental health of young people," *World Psychiatry*, vol. 20, no. 2, pp. 200–221, 2021, doi: 10.1002/wps.20869.

[2] M. Solmi *et al.*, "Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies," *Mol Psychiatry*, vol. 27, no. 1, pp. 281–295, Jan. 2022, doi: 10.1038/s41380-021-01161-7.

[3] G. Fond, A. Bourbon, P. Auquier, J.-A. Micoulaud-Franchi, C. Lançon, and L. Boyer, "Venus and Mars on the benches of the faculty: Influence of gender on mental health and behavior of medical students. Results from the BOURBON national study," *Journal of Affective Disorders*, vol. 239, pp. 146–151, Oct. 2018, doi: 10.1016/j.jad.2018.07.011.

[4] V. Kovess-Masfety, E. Leray, L. Denis, M. Husky, I. Pitrou, and F. Bodeau-Livinec, "Mental health of college students and their non-college-attending peers: results from a large French cross-sectional survey," *BMC Psychol*, vol. 4, no. 1, p. 20, Apr. 2016, doi: 10.1186/s40359-016-0124-5.

[5] L. T. Tran *et al.*, "The prevalence of gambling and problematic gambling: a systematic review and meta-analysis," *The Lancet Public Health*, vol. 9, no. 8, pp. e594–e613, Aug. 2024, doi: 10.1016/S2468-2667(24)00126-9.

[6] L. Blank, S. Baxter, H. B. Woods, and E. Goyder, "Should screening for risk of gambling-related harm be undertaken in health, care and support settings? A systematic review of the international evidence," *Addiction Science & Clinical Practice*, vol. 16, no. 1, p. 35, May 2021, doi: 10.1186/s13722-021-00243-9.

[7] H. Wardle, G. Reith, E. Langham, and R. D. Rogers, "Gambling and public health: we need policy action to prevent harm," *BMJ*, vol. 365, p. l1807, May 2019, doi: 10.1136/bmj.l1807.

[8] World Health Organization, *International Classification of Diseases*, 11th ed. 2018. [WWW Document]. Available: https://icd.who.int/

[9] V. Marionneau, M. Egerer, and S. Raisamo, "Frameworks of gambling harms: a comparative review and synthesis," *Addiction Research & Theory*, vol. 31, no. 1, pp. 69–76, Jan. 2023, doi: 10.1080/16066359.2022.2113071.

[10] M. N. Potenza *et al.*, "Gambling disorder," *Nat Rev Dis Primers*, vol. 5, no. 1, p. 51, Jul. 2019, doi: 10.1038/s41572-019-0099-7.

[11] M. Moñino-García *et al.*, "The Adolescent Problem Gambling Prevalence Associated with Leisure-Time Activities and Risky Behaviors in Southern Spain," *Int J Ment Health Addict*, pp. 1–15, Nov. 2022, doi: 10.1007/s11469-022-00950-7.

[12] A. Barceló-Soler *et al.*, "Post-COVID gambling habits of adolescents and young adults in Aragon, Spain: a cross-sectional study," *BMC Public Health*, vol. 25, no. 1, p. 2444, Jul. 2025, doi: 10.1186/s12889-025-23591-6.

[13] S. Kapukotuwa, A. González-Alvarez, S. W. Kraus, and M. Sharma, "Betting on the Future: A Systematic Review of Modern Gambling Interventions for College Students," *J Gambl Stud*, vol. 41, no. 4, pp. 1533–1561, Dec. 2025, doi: 10.1007/s10899-025-10421-y.

[14] X. Zhan *et al.*, "Effectiveness of Digital Health Interventions on Stress, Anxiety, and Depression in University Students: A Systematic Review and Meta-Analysis," *Journal of Visualized Experiments (JoVE)*, no. 227, p. e69949, Jan. 2026, doi: 10.3791/69949.

[15] M. Jabs, M. Thompson, J. Linardon, M. Messer, and T. D. Wade, "Assessing the Effectiveness, Adherence and Attrition of Smartphone-Based Mental Health Interventions in University Students: A Systematic Review and Meta-Analysis," *Early Intervention in Psychiatry*, vol. 20, no. 8, p. e70207, 2026, doi: 10.1111/eip.70207.

[16] L. K.-D. Le *et al.*, "Cost-effectiveness evidence of mental health prevention and promotion interventions: A systematic review of economic evaluations," *PLoS Med*, vol. 18, no. 5, p. e1003606, May 2021, doi: 10.1371/journal.pmed.1003606.

[17] A. Monreal-Bartolomé *et al.*, "Gambling in women: A systematic review of interventions and prevention approaches," *Journal of Behavioral Addictions*, vol. 15, no. 1, pp. 135–156, Mar. 2026, doi: 10.1556/2006.2025.00487.

[18] M. Brand, E. Kalbe, K. Labudda, E. Fujiwara, J. Kessler, and H. J. Markowitsch, "Decision-making impairments in patients with pathological gambling," *Psychiatry Research*, vol. 133, no. 1, pp. 91–99, Jan. 2005, doi: 10.1016/j.psychres.2004.10.003.

[19] A. Bechara, *IGT: Iowa Gambling Task: Professional Manual*. PAR, 2007. [Online]. Available: https://books.google.es/books?id=s-SlAQAACAAJ

[20] K. N. Kirby and N. N. Maraković, "Delay-discounting probabilistic rewards: Rates decrease as amounts increase," *Psychonomic Bulletin & Review*, vol. 3, no. 1, pp. 100–104, Mar. 1996, doi: 10.3758/BF03210748.

[21] D. Lloret Irles and V. M. Cabrera Perona, "Prevención del juego de apuestas en adolescentes: ensayo piloto de la eficacia de un programa escolar," *Revista de Psicología Clínica con Niños y Adolescentes: Journal of Clinical Psychology in Childhood and Adolescence*, vol. 6, no. 3, pp. 55–61, 2019.

[22] M. Chóliz, M. Marcos, and F. Bueno, "Ludens: A Gambling Addiction Prevention Program Based on the Principles of Ethical Gambling," *J Gambl Stud*, vol. 38, no. 3, pp. 993–1008, Aug. 2021, doi: 10.1007/s10899-021-10066-7.

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