

Impulsive decision making, executive functions, and changes in gambling disorder symptoms in people who bet on sports online

What this research is about

Previous research suggests that people experiencing gambling disorder (GD) often have deficits in specific executive functions and make impulsive decisions. The purpose of this study was to examine how changes in GD symptoms over time may be related to executive functions and decision-making processes in people who bet on sports online.

What the researchers did

This study is part of a larger project, which includes an initial online survey, a one-year follow-up survey, and an in-person assessment with a subsample. The researchers used data from the initial online survey and the in-person assessment for this study.

Participants were recruited with help from Tipico, an international gambling provider. Tipico provided anonymized player tracking data for their German customer base. Participants had to be between 18 and 55 years old and live near one of the study locations in Germany. They also had to have logged into their account within the two months before the start of the study and have had the account for at least six months.

Tipico uses an artificial intelligence (AI) algorithm to identify people at risk of GD. For this study, the classification was only used for sampling purposes. After classification, potential participants were randomly selected to take part in the study. In total, 6,568 adults who bet on sports were invited and 607 completed the initial online survey. There were 137 participants with GD and 470 without GD. The online

What you need to know

The purpose of this study was to examine how changes in gambling disorder (GD) symptoms over time were associated with executive functions and decision-making processes in people who bet on sports online. Data came from 54 German adults who completed an online survey and an in-person assessment that took place an average of 443 days later. Overall, participants with more GD symptoms showed poorer working memory and reduced loss aversion (i.e., less sensitive to potential losses). Reduced loss aversion was also linked to an increase in GD symptoms over time. However, these findings were not statistically significant after correcting for the false discovery rate and should be interpreted with caution.

survey included the German version of the Stinchfield DSM-5 criteria to measure GD symptoms.

For the in-person assessment, participants from across the spectrum of GD criteria were invited. First, people who met 3–9 DSM-5 criteria were invited. Then, invitations were extended to those who met fewer criteria. In total, 234 participants were invited, and 13 participants with GD and 41 without GD took part. The in-person assessment took place an average of 443 days after the online survey.

During the in-person assessment, the DSM-5 GD criteria were assessed using a measure based on the German WHO Composite International Diagnostic Interview (DIA-X, M-CIDI). Executive functions were

assessed using three tasks: (1) Go/No-Go task to measure response inhibition (the ability to control an action when it is no longer appropriate); (2) the Number-Letter task to measure cognitive flexibility (the ability to shift between rule sets); and (3) the two-back task to measure working memory.

Impulsive decision making was assessed using four tasks: (1) a delay discounting task to measure the extent to which participants valued immediate but smaller rewards over larger, delayed rewards; two tasks to measure probability discounting for (2) gains and (3) losses (the extent to which participants overvalued gains with a low probability or undervalued losses of a high probability); and (4) the mixed-gambles task to measure loss aversion (the extent to which participants preferred avoiding losses over pursuing equivalent gains).

What the researchers found

Of the 54 participants, the majority were male (96%). On average, participants were 33 years old. At the initial online survey, participants on average met 2.2 DSM-5 criteria for GD. At the in-person assessment, the average was 2.8 criteria. Most participants (63%) showed only a minor change in GD symptoms between the online survey and in-person assessment (between -1 and +1 criterion). One-third did not have any change.

The researchers found that the number of GD criteria at the in-person assessment was not associated with performance in most of the executive function tasks. However, participants with more GD symptoms performed worse on the two-back task, suggesting poorer working memory. In terms of decision-making processes, participants with more GD symptoms showed reduced loss aversion, suggesting less sensitivity to potential losses. However, both findings were not significant after correcting for the false discovery rate due to multiple testing.

Participants who had a positive change in GD criteria (i.e., had more GD symptoms at the in-person assessment compared to the online survey) also showed reduced loss aversion. But again, this finding did not remain significant after correcting for the false discovery rate.

How you can use this research

This study can inform researchers and practitioners regarding how decision-making processes, especially loss aversion, may relate to worsening GD symptoms. This study can help guide future longitudinal research on how executive functions and decision-making processes may influence the development and progression of GD over time.

About the researchers

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Citation

Wirkus, T., Czernecka, R., Bühringer, G., & Kräplin, A. (2026). The relationship between executive functions, decision-making, and changes in symptoms of gambling disorder in online sports bettors. *Scientific Reports*, 16, 12076. <https://doi.org/10.1038/s41598-026-48449-8>

Study Funding

Open Access funding provided by Projekt Deal. This research was supported by a research donation to the TUD Dresden University of Technology, provided by Tipico. Partial funding for manuscript writing was received from the DFG as part of the TRR 265.

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