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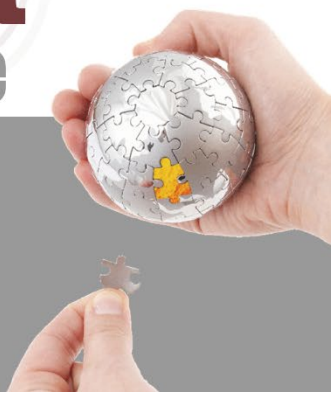
How heart rate awareness and changes are linked to gambling disorder



What this research is about

People who suffer from gambling disorder have persistent and harmful urges to gamble. They may also have impaired decision-making abilities, which could lead them to make riskier gambling decisions. The parasympathetic nervous system (PNS) controls the body's automatic responses such as digestion, breathing, and heart rate. Some research shows that impaired PNS functioning may impair decision-making abilities. So, impaired PNS functioning may also be linked to gambling disorder.

Researchers can measure PNS functioning by measuring changes in heart rate. If someone's PNS is working well, then their heart rate will change in reaction to different situations. In contrast, if their PNS functioning is impaired, they may show less of a change in heart rate in these same situations. Additionally, some people are more aware of their bodily signals than others (e.g., noticing their heart rate). A lower ability to track changes in bodily signals may be linked to gambling disorder. This study looked for links between PNS functioning, awareness of one's heart rate, and decision-making abilities in a gambling task. It also compared these measures between people with and without gambling disorder.

What the researchers did

The researchers recruited 22 treatment-seeking men with gambling disorder from a clinic in Rome, Italy. All experienced problems with slot machines or video lottery terminals. The researchers also recruited 22 men without gambling disorder to be healthy control participants. Participants in both groups had no other mental health, substance use, or unstable medical disorders.

What you need to know

People with gambling disorder often have impaired decision-making. The parasympathetic nervous system (PNS) controls one's heart rate, and PNS functioning may be linked to decision-making. This study tested if changes in heart rate and awareness of one's bodily signals were linked to gambling disorder. Participants completed the Iowa Gambling Task (IGT). The researchers measured participants' heart rates before and after the task. Changes in heart rate indicated their PNS responses to the task. Participants with gambling disorder showed worse decision-making in the IGT than those without gambling disorder. They were also less aware of their heart rate, and their heart rate changed less in response to the task. This shows that people with gambling disorder may have impaired PNS functioning and lower awareness of bodily signals.

The study took place over two days. On Day 1, participants completed the Depression Anxiety Stress Scale-21 (DASS-21). They also completed the Gambling severity Assessment Scale (G-SAS). Participants also completed a PNS activity awareness task. For this task, participants had to count their heart beats over different time intervals. During this time, the researchers also measured participants' heart rate. The researchers then compared the participants' counts to the direct measures. Participants who had more accurate counts received higher PNS awareness scores.

On Day 2, participants performed the Iowa Gambling Task (IGT) on a computer. In this task, there are 4

decks of cards on the screen (decks A, B, C, and D). The researchers told the participants that some decks are more advantageous than others, and that their goal is to win as much money as possible. Participants must choose to draw a card from one of the decks each turn. After each draw, the participant either wins or loses a virtual dollar amount. Decks A and B give large wins, but also sometimes have large losses. In contrast, decks C and D give smaller wins, but also have much smaller losses. So, decks A and B are actually less profitable than decks C and D overall.

The researcher calculated a decision-making score by comparing how often participants made advantageous decisions (i.e., drawing from decks C and D) versus disadvantageous decisions (i.e., drawing from decks A and B). The researchers also measured participants' heart rates before and after the IGT. If PNS functioning was impaired, less of a change in heart rate from before to after the IGT was expected.

What the researchers found

Participants with gambling disorder had more symptoms of anxiety, depression, and gambling problems than participants without gambling disorder. They were also less aware of their heart rate than participants without gambling disorder. As expected, participants with gambling disorder also had poorer decision-making scores on the IGT.

Finally, the researchers compared changes in heart rates of participants before and after the IGT. Participants with gambling disorder showed less of a change in heart rate from before to after the IGT. This means their PNS showed a reduced reaction to the task, compared to participants without gambling disorder. Overall, participants with gambling disorder showed impaired PNS functioning and were less aware of their heart rate. This was regardless of age, smoking status, BMI index, anxiety, and depressive symptoms.

How you can use this research

Clinicians could use this research to treat people with gambling disorder. For example, they could use heart rate-based rehabilitation programs, as these could help improve PNS functioning.

About the researchers

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Citation

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