What this research is about

Testosterone is a male sex hormone. It is also found in women, but in much smaller amounts. Testosterone is involved in risk-taking and behaviours related to getting rewards. Changes in testosterone levels can result from the “winner-loser effect”. This happens when winning or losing in a competition causes increases (for winners) or decreases (for losers) in testosterone levels. Slot machine gambling involves winning and losing outcomes but does not involve competition with another person. So, it is unclear if the winner-loser effect transfers to slot machine gambling.

People differ in the extent to which they think of objects as humanlike, termed anthropomorphism. Past research has shown that gamblers make comments that treat slot machines as having human characteristics (e.g., “this machine doesn’t like me”). It is possible that such a tendency creates a competitive experience, which may affect testosterone levels. Also, cortisol is a hormone produced during stress, and may affect testosterone changes. This study examined whether slot machine gambling could produce the winner-loser effect. It also examined if cortisol levels and a tendency to think about the slot machine as humanlike could affect changes in testosterone levels.

What the researchers did

Participants were 113 male university students. All participants were at least 19 years of age and were novice gamblers. They played a slot machine game for 15 minutes for the chance to win a $10 cash prize.

Before playing the slot machine game, participants completed the Problem Gambling Severity Index (PGSI), a measure of problem gambling severity. The PGSI was used to ensure that participants did not have a high risk for problem gambling. Participants also provided a saliva sample to measure testosterone and cortisol levels.

Participants then played the slot machine game alone for exactly 15 minutes. Participants were provided with money to play the slot machine, and were awarded $10 if they ended with more credits than they started with. The researchers also emphasized to those participants that they had won. For participants who ended the gambling session in loss, the researchers emphasized that they had not won the $10 reward.

Following the gambling session, participants rated their gambling session using the Game Experience Questionnaire (GEQ). They rated their mood using the Positive and Negative Affect Schedule – Expanded Form (PANAS-X). Participants also rated their tendency to think about the slot machine like another human. The researchers collected another saliva sample 15 minutes and 30 minutes after the gambling session had ended.

What you need to know

This study examined how slot machine gambling affects testosterone, a hormone that is involved in risk-taking and reward-related behaviour. Winning and losing a slot machine game did not produce differences in changes in testosterone levels. Rather, both winners and losers had a decline in testosterone during the gambling session. Cortisol levels and a tendency to think about the slot machine as humanlike did not affect this pattern.
The researchers analyzed: (a) whether winning or losing $10 during the slot machine gambling session would increase or decrease testosterone levels; (b) whether cortisol levels would affect changes in testosterone levels; and (c) whether thinking about the slot machine as more humanlike would impact the effects of wins and losses on testosterone levels.

What the researchers found

There were 50 overall “winners” and 63 overall “losers” in the slot machine gambling session. Winners and losers had similar testosterone and cortisol levels before the gambling session. Winners and losers were also similar in their tendency to treat the slot machine as humanlike. Winners reported better mood after the gambling session than losers.

There were no differences in changes in testosterone levels between winners and losers. Instead, testosterone declined during the gambling session equally for all participants. These findings suggest that slot machine gambling does not trigger the winner-loser effect.

The researchers considered the possible impact of related factors on the link between slot machine gambling and changes in testosterone levels. Cortisol levels did not impact changes in testosterone levels between winners and losers. Also, a tendency to think about the slot machine like another human did not predict changes in testosterone levels between winners and losers. However, among winners, those with lower testosterone levels before the gambling session had a greater tendency to think about the slot machine as humanlike.

Participants who reported better mood after the gambling session had steeper testosterone declines from before and after the gambling session.

How you can use this research

This study could be used to inform future research on testosterone and gambling. For example, future research could explore whether testosterone changes function differently in regular gambling or gambling disorder. This could help discover whether testosterone might affect gambling strategies or behaviours relevant to the development of gambling problems.

About the researchers

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Citation


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