RESEARCH QUESTIONS
What are the impacts of single and multiline betting strategies on slot machine play experience and success?

PURPOSE
Irrational and distorted beliefs play an important role in problem gambling. In particular, problem gamblers have cognitive distortions related to an illusion of control and the “gambler’s fallacy” that a win will follow a series of losses. However, problem gamblers do not necessarily misunderstand the nature of probability and random events, as compared to non-problem gamblers. Instead, misleading gambling experiences may create and maintain cognitive distortions. Slot machines that allow multiline betting provide players control over non-essential game elements, and may contribute to illusions of control over payback outcomes. Specifically, multiline slot machine players appear to be able to reduce losing streaks and volatility of outcomes and increase play-time by betting on multiple lines. Although overall wins do not increase with multiline betting, bogus “celebratory feedback” disguises net losses as wins. This research used a software simulation to investigate the effects of betting on a single line vs. multiple lines on slot machine play experience and overall success.

HYPOTHESIS
None stated.

PARTICIPANTS
None.

PROCEDURE
The researchers created a computer simulation of a popular multiline slot machine game. The game contains a 3 x 5 grid of symbols, with 9 different “paylines”, or winning combinations of symbols. The game allowed bets of 1 to 5 credits on 1 to 9 possible paylines, giving a per spin minimum wager of 1 credit and a per spin maximum wager of 45 credits. The researchers first mapped all possible outcomes for each betting choice, in order to understand the baseline frequency of each outcome. Then, the researchers ran a series of simulations where “players” begin with 100 credits and bet a small amount until no money remained. In these simulations, the researchers examined: the length of losing streaks resulting from 1-line bets and 9-line bets, total time played until all money was lost, and the frequency of big wins, small wins, and wins disguised as losses. Finally, the researchers examined the success of 5 different betting strategies, ranging in credits and paylines wagered.

MAIN OUTCOME MEASURES
Slot machine betting strategies were compared in terms of play experience, as defined by frequency of losing streaks, big wins (10X bet), small wins (2X bet), and wins disguised as losses (net loss and celebratory feedback). Total play-time was recorded for the scenario where the simulation ran until all available funds were spent. Overall success was defined as percentage payback (% wins) from each betting strategy.

KEY RESULTS
Compared to single line betting, the multiline betting strategy resulted in a less variable play experience, with fewer losing streaks and fewer big wins, but more small wins and more losses disguised as wins. It also took longer to spend all available funds with multiline bets with single line bets. Choice of betting strategy did not impact overall success – all 5 strategies were equal in payback percentage.

LIMITATIONS
This simulation study cannot provide definitive evidence about how problem gamblers understand and exert control over actual slot machine outcomes.

CONCLUSIONS
Multiline betting does impact slot machine play experience, with less variable outcomes and longer play time. Illusions of control over payback (gambling
success) may be supported and created by the very real control over these aspects of the game experience. This research shows how the design of slot machines may reinforce illusions of among problem gamblers. More research is needed to understand whether limiting player control features like payline choice would reduce cognitive distortions among problem gamblers.

**KEYWORDS:** problem gambling, electronic gaming machines, losses, irrational beliefs, slot machine, chance, payback percentage, illusion of control

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