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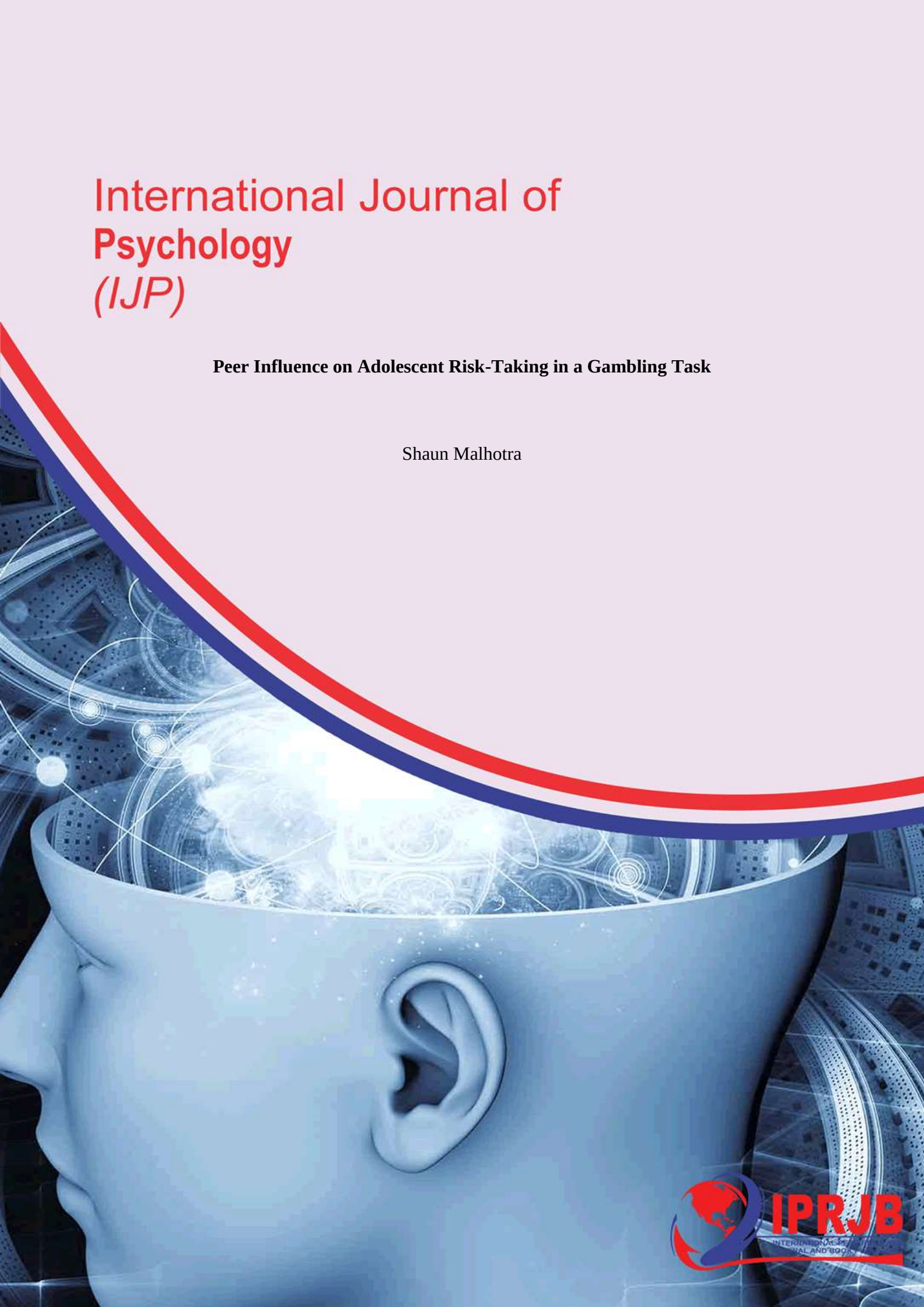
Shaun Malhotra



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Shaun Malhotra
Brentwood School, United States of America

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Abstract

Purpose: Adolescents are both more prone to peer influence and more likely to take risks than any other age group. The current study aims to build upon Bandura's Social Cognitive Theory, that found when a small group of teens was asked to participate in a risk-taking gambling task, the majority altered their response strategy to take more risks or to be more conservative to match that of a friend's. The author of the current study used a similar approach to that described above; however, he sought to determine whether the observation of a friend receiving a reward or losing would impact the risks adolescents took in the gambling task. The timing of changes in risk-taking behavior in adolescence can be attributed to the ongoing development of the prefrontal cortex and is further exaggerated by social factors such as the presence of peers.

Methodology: A between-subjects experimental design was employed with participants recruited from a high school and a summer program for talented teenagers. Three conditions were tested: observing a peer win, observing a peer lose, or no peer observation (control). Risk-taking was measured through rounds risked, dropout point, number of wins, and final outcome in a computerized gambling paradigm. Statistical analyses included one-way ANOVA, Pearson's Chi-squared, and multiple regression to assess group differences and predictors of risk-taking behavior.

Findings: Both peer-winning and peer-losing observation groups risked significantly more rounds than the control group, though there was no significant difference between observing peer success versus failure. Peer observation, regardless of outcome, led to riskier behavior, while a greater number of personal wins robustly predicted continued risk-taking. Although the study's manipulated conditions did not yield statistically significant group differences in risk-taking or wins via ANOVA, regression analyses demonstrated that both peer exposure and reinforcement histories independently contributed to adolescents' decisions, supporting a model where social and reward-driven mechanisms interact.

Unique Contribution to Theory, Practice, and Policy: The study contributes to the theoretical perspective by suggesting that observing peer behavior can potentially increase risk taking in adolescents, independently of whether peers are observed to receive positive or negative consequences for their actions. In terms of practice and policy, the study highlights the need for prevention and intervention efforts that consider the indirect and general effects of peer influence on adolescent decision making, and the importance of social context even when there are no clear incentives or disincentives present. Educators and policymakers should consider the implications of both social facilitation and reinforcement feedback mechanisms in developing strategies to reduce adolescent risk taking.

Keywords: *Adolescence, Risk-Taking, Peer Influence, Cognitive Psychology, Social Learning*

JEL Codes: *D91, D87, D81, Z13*

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INTRODUCTION

Adolescence is a developmental period marked by heightened sensitivity to social influence and an increased tendency toward risk-taking behaviors relative to adulthood (Steinberg, 2008). Risk-taking refers to behaviors that increase the likelihood of harm to oneself or others, undertaken after evaluating potential rewards against possible adverse outcomes (Sitkin & Pablo, 1992). Risk-taking must be understood in context and is not necessarily maladaptive (Humphreys et al., 2012). These tendencies are partly attributable to ongoing maturation of the prefrontal cortex, a region critical for executive function and self-regulation (Steinberg, 2008). Dual-system models of human development, particularly in adolescence, include socioemotional and cognitive control systems. Socioemotional systems peak in mid-adolescence and rely on social rewards and emotions (Strang et al., 2013). The cognitive control system matures during the transition towards adulthood and focuses on reasoning, decision-making, and self-regulation (Strang et al., 2013). The dual systems perspective proposes that risk-taking during adolescence is the result of increased reactivity of the socioemotional system that occurs while cognitive control is still maturing. When cognitive control becomes fully developed, the socioemotional system becomes less labile. This arc leads to a spike in risk-taking during adolescence that recedes during the transition to adulthood (Strang et al., 2013).

Statement of the Problem

Peer influence is one of the most powerful social-contextual factors shaping adolescent decision-making. Adolescents are especially responsive to peer behavior, and social influence can increase risk-taking by amplifying perceived rewards and a sense of belonging. This paper's guiding research question is how does peer observation in a risk-taking scenario affect an adolescent's decisions? The hypothesis is that adolescents who observe peers succeed in a gambling-related activity will be more likely to take additional risks than those who observe peers lose, and that both observation conditions will increase risk-taking relative to a no-observation control group. The secondary implication is to apply the findings to help prevent and combat substance abuse and underage gambling in teenagers.

LITERATURE REVIEW

Theoretical Framework

Bandura's Social Cognitive Theory (1986) emphasizes that individuals often model their behavior on observed actions and outcomes, particularly in socially charged or ambiguous contexts. Based on this Theory, observational learning in teens transitions from modeling parents to peers and goes through a four-stage process: Attention, Retention, Reproduction, and Motivation. The gambling task relies on the Motivation stage, in which individuals are driven to replicate a behavior in order to achieve a desired outcome. Another aspect of Social Cognitive Theory is vicarious reinforcement. Bandura states that individuals learn behaviors and consequences through observation rather than direct experience.

Conceptual Framework

Understanding how peer dynamics influence adolescent risk-taking is critical for informing prevention and intervention efforts in public health, education, and developmental psychology. Gambling provides a useful model for risky behavior because it involves physiological and neurochemical responses, like dopamine and adrenaline, which can bias decision-making toward immediate rewards rather than long-term consequences (Anselme, 2013; Potenza,

2013). Winning can trigger dopamine-driven reinforcement loops that encourage continued risk-taking despite unfavorable odds, while adrenaline can heighten arousal and can override rational decision-making. These biological processes may be especially influential during adolescence, when sensitivity to rewards is heightened and peer influence is especially strong. The gambling task presented appropriately models adolescent risk-taking by requiring the participants to jeopardize an earned reward in order to increase their potential winnings.

Empirical Review

Prior research supports the role of peer observation in modulating risk perception and behavior. For example, Knoll et al. (2015) found that adolescents adjusted their risk perceptions after seeing peer ratings of risky situations, even when those ratings contradicted their own. Similarly, Gardner and Steinberg (2005) demonstrated that adolescents engaged in significantly more risky behavior when peers were present compared to when alone, highlighting the social rewards of peer approval. Gender differences in risk-taking behavior have also been studied. Croisant et al. (2013) surveyed high school students three years after a natural disaster and found that males were more likely than females to engage in multiple risky behaviors and the types of behaviors varied by gender. Risk-taking has also been studied in different cultural contexts. Vaughn et al. in 2021 found that White adolescents were more likely than African American or Hispanic teens to engage in risky behaviors with the minority groups perceiving less “margin for error” when navigating their environments. Individual differences also play a role in determining risk-taking profiles, with overconfident, sensation-seeking, and impulsive personalities more likely to participate in risky behavior (He & Lei, 2025; Zuckerman & Kuhlman, 2000).

Research Gaps

The present study extends prior work by examining whether observing a peer’s success or failure influences subsequent risk-taking in a reward-based gambling task. In order to measure whether observing a consistent pattern of success or failure in peers affects adolescents’ willingness to take risks, I hypothesized that adolescents who observe peers succeed in a risky task will be more likely to take subsequent risks than those who observe peers fail, and that both observation conditions will increase risk-taking relative to a no-observation control.

METHODOLOGY

A between-subjects experimental design was approved by the Institutional Review Board at Brentwood School. 60 participants (20 per group) were recruited from Brentwood School's East Campus (Grades 9-12) in Los Angeles, CA and the Johns Hopkins Center for Talented Youth summer program (Grades 7-11) at Loyola Marymount University (Los Angeles, CA). Recruitment aimed to capture a diverse sample across grade levels. Demographic data were not collected. Participation was completely voluntary, and no identifying information was recorded.

The study employed a between-subjects experimental design with three peer observation conditions: (1) observing a peer win immediately prior to their own turn (peer-winning group), (2) observing a peer lose immediately prior to their own turn (peer-losing group), or (3) not observing any peer (control group).

Risk-taking behavior was measured using a computerized gambling paradigm implemented with a digital wheel (Wheel of Names) with fixed probabilities. The task consisted of five levels. At Level 1, participants had a 100% chance of winning one Starburst candy. After each

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win, they could either stop and keep their accumulated rewards or risk them by spinning again. From Level 2 onward, each spin carried a 50% chance of winning. Successful spins doubled rewards (Level 2 = 2 Starburst candies, Level 3 = 4 Starburst candies, Level 4 = 8 Starburst candies, Level 5 = 16 Starburst candies). If they lost at any point, they forfeited all accumulated rewards. Participants were informed of the probabilities before each decision. The peer observation manipulation determined whether they had watched a prior participant win, lose, or seen no participant at all before beginning their own rounds.

The primary dependent variables were the number of rounds risked, defined as the number of times participants chose to continue playing after winning; the dropout round, or the point at which participants elected to stop and keep their accumulated rewards; the number of wins, reflecting the total successful spins achieved before stopping or losing; and the final decision outcome, indicating whether participants ultimately retained any rewards or lost them all.

For each participant, experimenters documented choices, outcomes, and overall task performance. All data were entered into Google Sheets and subsequently analyzed using R-Studio.

RESULTS

Code and data available in the Appendix.

Descriptive Statistics

For the control group, participants risked an average of 1.2 rounds before stopping, with no one risking more than twice before losing. The average dropout round was 2.40 (range = 1-3) before participants either walked away or lost their winnings.

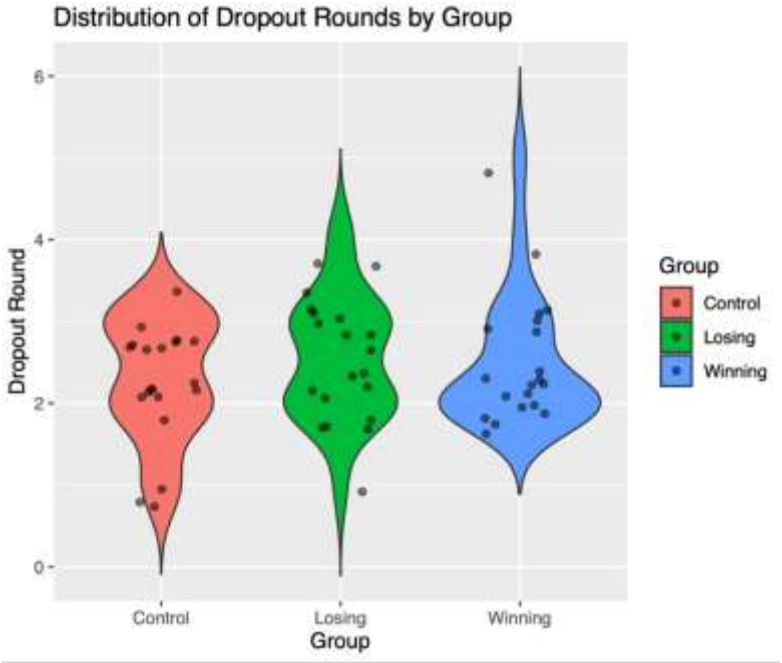

Figure 1: Distribution of Dropout Rounds by Group

Over half of participants (55%) chose to walk away before losing, while 45% continued risking and ultimately lost. On average, participants in the control group won 1.90 rounds before losing.

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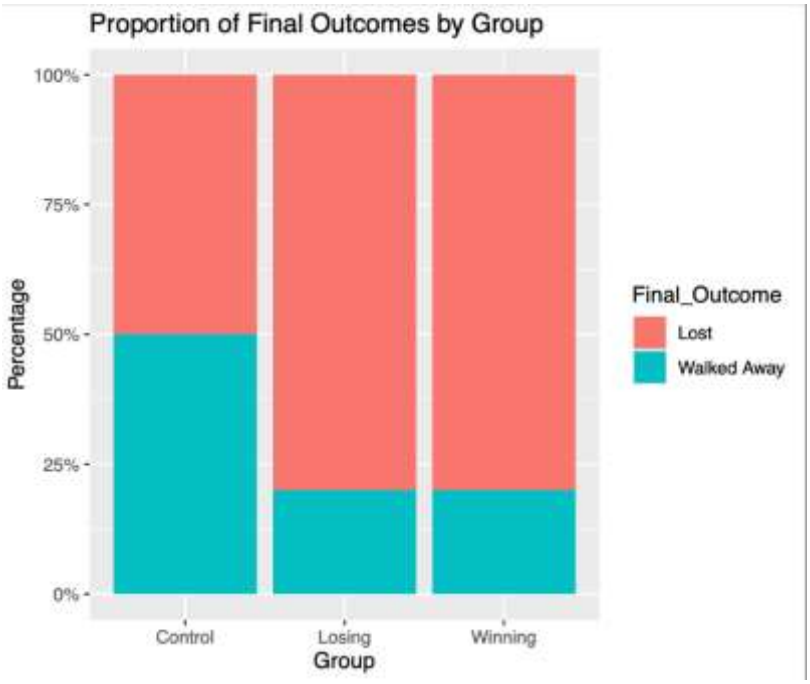

Figure 2: Proportion of Final Outcomes by Group

In the peer-winning group, the average rounds risked increased to 1.50 (range = 1-4). The average dropout round was 2.50 (range = 2-5). Only 20% of participants in this group walked away before losing, representing a steep decline from the control group. On average, participants in the winning group won 1.70 rounds before losing, slightly lower than the control group.

In the peer-losing group, participants risked an average of 1.55 rounds (range = 0-3). The average dropout round was 2.55 (range = 1-4), which was slightly higher than both the control group and winning group. Similar to the winning group, only 20% of participants walked away before losing. Participants in the losing group won an average of 1.75 rounds before losing, with a range of 1-3 wins.

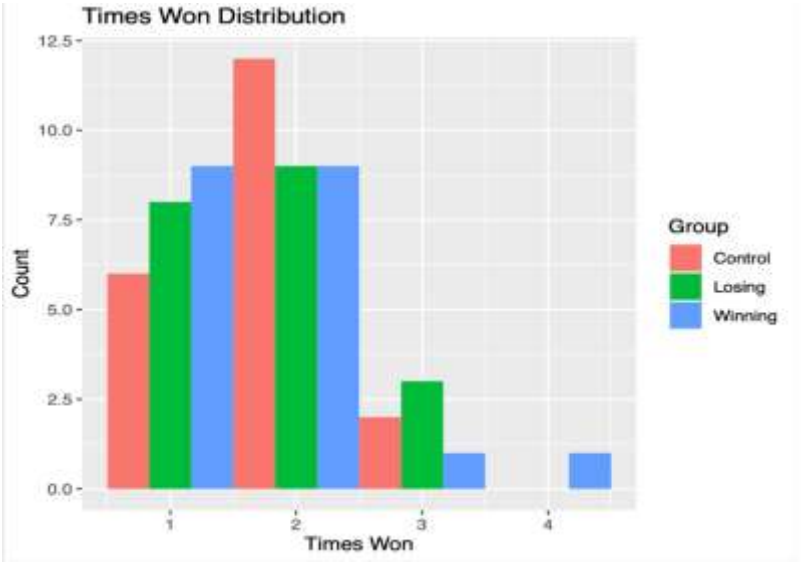

Figure 3: Times Won Distribution per Group

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Inferential Statistics

A one-way ANOVA was conducted to compare the number of rounds risked across the three groups. Results indicated that there was no statistically significant difference among groups ($F(2, 57) = 0.584$, $p = 0.561$). Between-group variance (Sum of Squares = 0.70) was small relative to the within-group variance (Residual Sum of Squares = 34.15). Similarly, another one-way ANOVA was conducted to compare the number of wins across the three groups. The analysis revealed no statistically significant difference among groups**,** ($F(2, 57) = 0.098$, $p = 0.907$). Between-group variance (Sum of Squares = 0.10) was negligible compared to the within-group variance (Residual Sum of Squares = 29.15). A Pearson's Chi-squared test examined the association between group membership (control, peer-winning, peer-losing) and outcome (walked away, lost). Results indicated an association approaching statistical significance ($\chi^2 = 5.71$, $p = 0.057$). A simple linear regression was conducted to examine whether the number of wins predicted total rounds risked. The model was statistically significant, [$F(1, 58) = 107.90$, $p < .001$], and explained approximately 65.1% of the variance in total rounds risked ($R^2 = .651$, adjusted $R^2 = .644$). In other words, number of wins significantly predicted total rounds risked, B = 0.88, SE = 0.08, t = 10.39, $p < .001$.

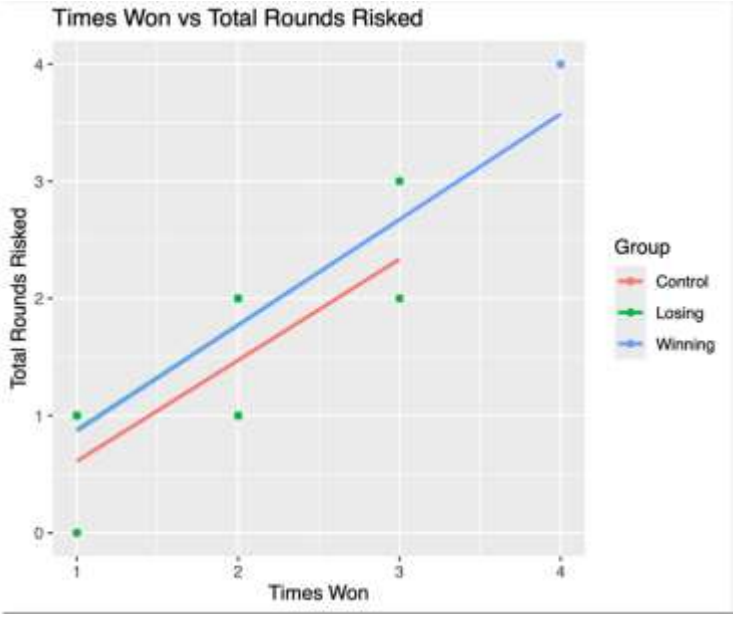

Figure 4: Linear Regression for Times won vs Total Rounds Risked by Group

A multiple linear regression was conducted to examine the effects of group membership and number of wins on total rounds risked. The overall model was statistically significant, $F(3, 56) = 40.21$, $p < .001$, and explained approximately 68.3% of the variance in rounds risked ($R^2 = .683$, adjusted $R^2 = .666$). Compared to the control group, the peer-losing group risked significantly more rounds, B = 0.29, SE = 0.14, t = 2.10, p = .041. Similarly, the peer-winning group also risked significantly more rounds, B = 0.29, SE = 0.14, t = 2.05, p = .045. Additionally, the number of times participants won significantly predicted risk-taking, with more wins associated with higher rounds risked, B = 0.89, SE = 0.08, t = 10.82, $p < .001$.

Discussion

This study examined how observing a peer's success or failure influenced adolescent risk-taking in a gambling-style task. It was hypothesized that participants who observed a peer

winning would take more risks than those who observed a peer losing, and that both groups would take more risks than a control group with no peer observation. Findings partially supported this hypothesis. Both peer observation groups (peer-winning and peer-losing) risked significantly more rounds than the control group, though there was no meaningful difference between the two peer conditions themselves. These findings suggest that simply observing a peer, regardless of whether they won or lost, encouraged adolescents to take greater risks.

Behavioral patterns also differed across groups. In the control group, 55% of participants chose to walk away before losing, compared to only 20% in both peer conditions. Although a Chi-square test indicated that this difference only approached significance ($\chi^2 = 5.71$, $p = .057$), it suggests a trend where peer observation may reduce conservative decision-making. Beyond peer influence, personal outcomes also strongly predicted risk-taking. A multiple regression analysis including both peer condition and number of wins explained substantial variance in risk-taking ($R^2 = .683$, $p < .001$), confirming that peer observation and personal reinforcement each independently contributed to greater risk. These findings suggest that success itself can serve as a powerful motivator for increased risk-taking. Adolescents appear to be influenced both by external social cues and by their own reinforcement histories: observing a peer normalizes risk-taking, while personal wins directly encourage continued gambling. This dual pathway, social modeling and reward-driven reinforcement, mirrors patterns commonly observed in real-word contexts, where peer influence and personal success often interact to escalate risky behaviors. Together, these processes align with the "social facilitation" and "reward feedback" mechanisms described in prior research (Gardner & Steinberg, 2005; Anselme, 2013; Potenza, 2013).

Several limitations were noted in this study. The sample size was relatively small and drawn from a limited population (one school and one summer program), which limits generalizability. Future research should include a larger and more diverse sample across different schools, age ranges, and communities. In addition, only one type of incentive (Starburst candies) was used, whereas offering a wider variety of rewards could reduce bias from personal candy preferences; future studies should incorporate varied incentives. The peer manipulation was also limited to a simple gambling paradigm, which may not generalize to academic or social risk-taking. Expanding the paradigm to include other contexts could provide a broader understanding of peer influence. Finally, adding post-experiment surveys would help capture participants' thought processes, motivations, and perceptions of risk, helping to provide a deeper understanding of their decision-making. Despite its limitations, this study contributes to the growing research on adolescent decision-making. The results show that observing peers encourages greater risk-taking, suggesting that the presence of peer behavior is more influential than the specific outcome observed. Additionally, the strong role of personal success highlights how easily reinforcement can push teens to continue risky behavior. These findings build off Bandura's Social Cognitive Theory by emphasizing how social observation, regardless of a positive or negative outcome, impacts decision-making in adolescents. This challenges vicarious reinforcement assumptions that performing similar behavior will lead to a similar result, as participants often mimicked behavior of those who lost with hopes of winning. Adolescents may discount peer failure due to developmental optimism, which is a belief in positive outcomes that serves as a protective factor against stress and anxiety (Rincón Uribe et al., 2020). Additionally, participants may have an elevated sense of perceived controllability in the experiment, leading to increased risk-taking behavior (Wang et al., 2024).

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CONCLUSION AND RECOMMENDATIONS

Conclusion

Although no differences emerged between observing peer success versus failure, the results highlight the importance of social influence on adolescent risk-taking. The results suggest that even subtle factors, such as the presence of peers, may shape how young people approach decisions involving risk and reward. At the same time, personal success reinforced continued engagement, demonstrating how social and reward-based processes jointly shape adolescent risk.

These findings contribute to growing evidence that peers strongly influence adolescent decision-making, with implications for real-world concerns like underage gambling and substance use. Understanding these dynamics can inform prevention and intervention efforts, providing educators, parents, and policymakers with useful information to help guide adolescents toward making healthier choices during an important stage of their lives.

Recommendations

The findings of this research underscore the significant role of peer observation and personal reinforcement history in shaping adolescent risk-taking behavior, providing actionable insights for policy, education, and intervention programs. These preliminary research findings can guide tentative and exploratory recommendations as follows. First, prevention efforts targeting risky behaviors such as gambling, substance use, and unsafe decision-making should account for the powerful influence that peer behavior exerts on adolescents, regardless of whether observed outcomes are positive or negative. Interventions could include structured peer-led discussions, mentorship programs, and group-based scenarios that explicitly address how peer norms can impact choices.

Educational curricula could incorporate social-emotional learning modules focusing on decision-making under peer influence, emphasizing the value of self-regulation and the consequences of risk-taking. Schools may benefit from implementing classroom exercises that simulate peer dynamics, offering students opportunities to practice healthy risk evaluation and resist pressures to conform to risky behaviors.

Future research could expand beyond simple gambling models to examine peer impact across various domains, including academic achievement and digital behavior. Diversifying incentives, expanding participant pools, and integrating post-intervention surveys may further improve the effectiveness and generalizability of prevention and intervention strategies addressing adolescent risk-taking.

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Appendix

Link to data, all code ran, and figures here.

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