Gambling and Loss Aversion

MGT 160 Group 1

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Experimental question

Research Question

- Does experiencing a gain or loss immediately before a betting decision change risk-taking compared with starting from a neutral baseline?

Conceptual idea

- Prospect Theory: losses loom larger than gains
- Recent outcomes can shift people between risk-averse and risk-seeking behavior

Why This Matters

- Real decision environments (casinos, online platforms, trading apps) involve sequences of wins and losses
- Understanding how prior outcomes affect risk-taking can help design better interfaces and incentives

Hypothesis

Participants in the **Gain frame** will bet more (more risk-seeking) than those in the Neutral frame, while participants in the **Loss frame** will bet less (more risk-averse) than the Neutral frame.

Gain (Treatment A) (H1)	• Start with **$50** • Automatic warm-up round: **win $50**	Bankroll becomes **$100**	Become more risk-seeking
Loss (Treatment B) (H2)	• Start with **$150** • Automatic warm-up round: **lose $50**	Bankroll becomes **$100**	Become more risk-averse
Control (Neutral) (H3)	• Start directly with **$100** • **No prior win or loss**	Bankroll becomes **$100**	Baseline

Experimental Approach

- Participant level randomization within Qualtrics
- Randomization: Qualtrics randomly assigned participants to one of three conditions (Control, Gain, Loss), resulting in three balanced groups.

What is common across arms

- Same goal: maximize final bankroll
- Same blackjack decision task after treatment script
- Same instructions, other than their treatment, and shared prize incentive
- Starting bankroll always $100 before the real bet

What varies across arms (intended treatment)

- Prior outcome framing of the $100 start: gain vs. loss vs. neutral
- Participants' psychological reference point just before making the real bet

Experimental Design

- Sample: UCSD MGT students
- Sample Size: ~141 Participants
- Survey tool: Qualtrics online survey
- Time Frame: Class lab week
- Goal: Implement a controlled blackjack betting experiment to measure behavioral responses to **gain/loss reference-point framing, as reflected in bet size**

Experimental Design

- Control: Start with 100 chips.
- Treatment (A) Gain: Start at 50, “win” 50 framing and start at 100.
- Treatment (B) Loss: Start at 150 “lose” 50 framing and start at 100.
- All groups had the same 3 hands of BlackJack and same potential outcomes.
- For each hand participants choose an amount to bet.
- Afterwards they were shown their hand and the dealers up card.
- They could choose to Hit or Stand.
- After each hand participants were presented with the choice to continue playing or leave with their winnings.



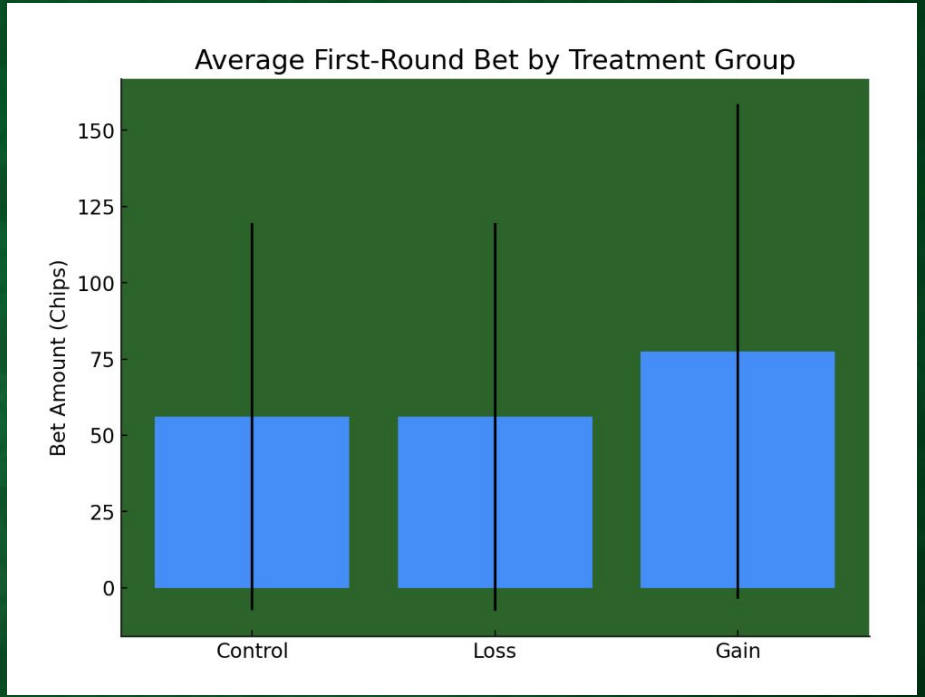
Note: These ‘win’/‘lose’ events are **hypothetical framings** that set the reference point – participants did not actually play these prior rounds.

Primary Outcome

- Amount bet directly **after the framing treatment** (chips bet on the first real blackjack hand)
- Our main behavioral measure is **how much participants choose to bet immediately after the framing script**. This captures their willingness to take risk in response to gain/loss vs neutral framing, which we used to evaluate how treatment condition influenced risk adversity.
- To keep decisions realistic, we provided a real cash prize to the participant with the highest final bankroll.

Results For Primary Outcome

Group	n	Mean 1st bet	SD 1st bet
Gain	48	~77.5	81.07
Loss	49	~56.1	63.67
Control	44	~56.2	63.53



Participants in the Gain condition bet more on average than the Loss and Control groups, but these differences were not statistically significant

Experiencing a prior loss did not significantly change betting behavior relative to control

Results For Primary Outcome

ANOVA

- First bets did not differ significantly across treatment arms
- $F(2,138) = 1.14$, $p = 0.32$
- Effect size ($\eta^2 = .02$) small, treatment explained ~2% of the variance

T - TEST

- Gain > Loss, $t(95) \approx 1.39$, $p = 0.17$, $d = 0.28$
- Gain vs. Control, $t(90) \approx 0.17$, $p=0.87$, $d = 0.04$
- Control > Loss, $t(91) \approx 1.21$, $p = 0.23$ $d = 0.25$

Power Analysis

- Interpretation: Study likely too small to detect small effects.
- Overall, Gain > Control > Loss on the first bets, but none of the differences are statistically significant

Key Takeaways

Most effective treatment group: The **Gain** group bet the most in the first round (~$77.5), compared to Loss (~$56.1) and Control (~$56.2).

Effect size meaning:

- Cohen's d ≈ **0.29** between Gain and the other groups → a **small** effect.

- Being treated with a prior gain increases betting by **~21 chips on average**, but with high variability.

- The direction of results **supports the hypothesis**:
  Prior gains → more risk-seeking
  Prior losses → no change
- However, due to large variability and limited sample size, **none of the effects were statistically significant**.
- The study's low power means we cannot rule out meaningful effects; we simply lacked enough precision.

Limitations and Concerns

The gain/loss manipulation was **purely hypothetical**, and all groups entered the real blackjack task with the **same bankroll (100 chips)**.

Because the treatment did not change participants' actual resources, some may not have **internalized** the prior gain or loss, reducing the strength of the manipulation.

This likely **reduced observable differences** between groups.

Hypothetical stakes may have reduced engagement, further dampening treatment effects.

Secondary Outcome

- **Final cash-out amount (final bankroll in chips) at the end of the game.**
- This reflects the **cumulative effect** of participants' betting decisions across all hands, given the initial framing condition.
- Because final bankroll combines both bet sizes and amount of rounds chosen to play, we treat it as a **secondary** outcome rather than our main measure of risk-taking.

Results of Secondary Outcome

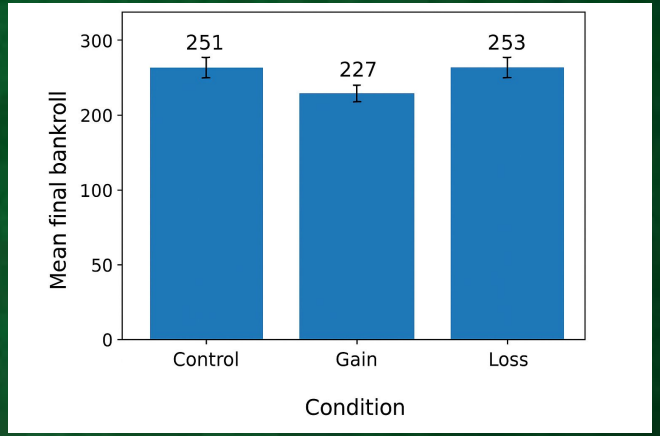
On average, participants who reached the third hand ended with similar final bankrolls in Control and Loss (≈251 and ≈253 chips), while the Gain group finished lower (≈227 chips). Relative to Control, the Gain group's ending bankroll was about 9% lower, and the Loss group's bankroll was about 1% higher. Standard deviations were large (≈120–150 chips), so the distributions overlap substantially. We therefore do not find clear evidence that a preceding gain or loss meaningfully changed participants' overall ending bankrolls, although the Gain group does tend to finish somewhat lower.

Other Results

Final Cash-Out (Secondary Outcome)

Average chip count after the third hand among participants who played all three hands

Condition	n	Mean final bankroll	SD
Control	44	251	155.83
Gain	48	227	161.29
Loss	49	253	161.86



Percent Effect Sizes (vs Control)

- **Gain:** 9% lower than Control
- **Loss:** 0.8% higher than Control

Interpretation

Participants in the Gain condition ended with the lowest average chip count. Control and Loss finished with very similar (slightly higher) ending bankrolls, and all three groups showed large variability, so the differences are modest and noisy.

Potential Applications

- Organizations can use this insight to predict decision behavior after bonuses, penalties, or performance feedback.
- Can be applied to financial advising, employee performance reviews, online gambling apps, and customer reward programs, where past outcomes influence future choices.
- Useful for designing default options and timing feedback to reduce reckless or overly cautious decisions.
- Could be implemented in training programs, A/B tests, or digital platforms to observe real behavior at larger scale.

Reproducibility

- Replicate with broader samples to confirm effects outside student populations.
- Add larger stakes to test how loss/gain framing influences decisions when outcomes could have a larger impact, (more monetary gain).
- Pilot potential in real world work settings (e.g., before investment, sales, or performance decisions).
- Scales well to large groups because the treatment requires only simple random assignment.