

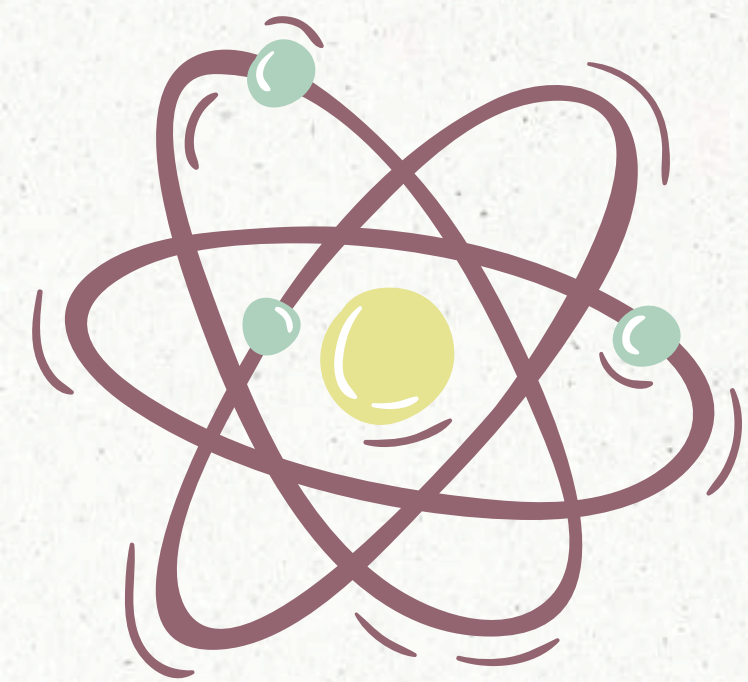


# **A/B TESTING: GATE PLACEMENT IMPACT ON ENGAGEMENT AND RETENTION**



**YENYING CHEN**

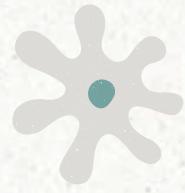




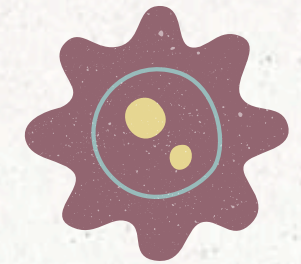
# PRODUCT & BUSINESS CONTEXT

- **Product:** Cookie Cats – tile-matching mobile game
- **Business Goal:** Optimize player retention to improve long-term engagement and monetization.
- **Experiment:** Test whether moving the first gate from level 30 → level 40 improves early user behavior.
- **Hypothesis:** Later gating may encourage extended play before encountering friction, potentially improving retention and engagement.





# EXPERIMENT SETUP



## GROUPS

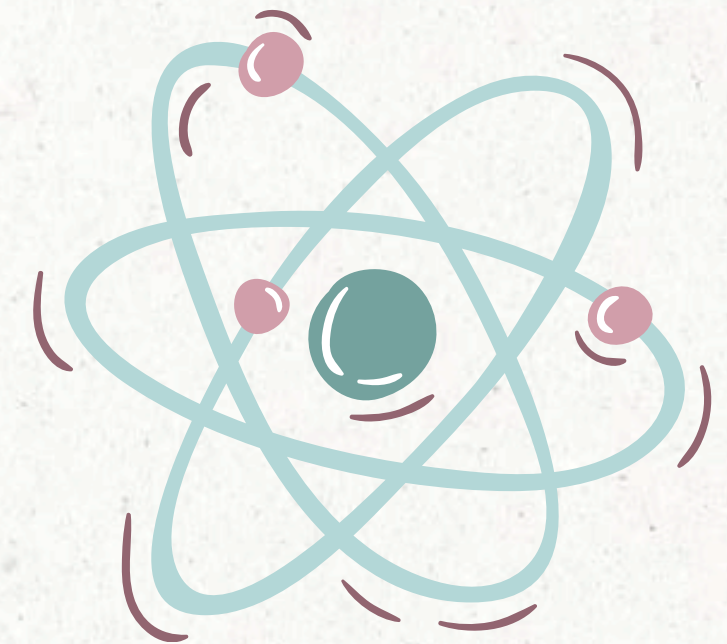
- Control (gate\_30): First gate at level 30
- Test (gate\_40): First gate at level 40

## DATASET SUMMARY

- 90K+ users, no missing values
- 5 key variables: version, game rounds, D1 & D7 retention
- Outliers (>99th percentile in rounds) removed for analysis robustness

## PRIMARY METRICS

- Total game rounds (engagement)
- Retention on Day 1 & Day 7 (behavioral stickiness)







# ENGAGEMENT RESULTS — GAME ROUNDS

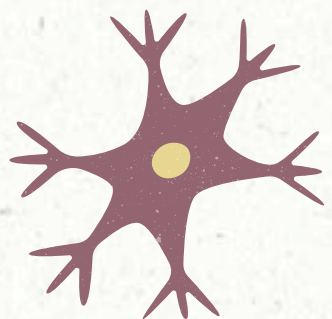


## TEST: MANN-WHITNEY U

- $p = 0.04789 \rightarrow$  Statistically significant
- Median Rounds: 16 for both groups
- Effect Size (Cliff's Delta): 0.0056  
 $\rightarrow$  Negligible

## INTERPRETATION

Despite statistical significance, the real-world difference in player activity is too small to matter.





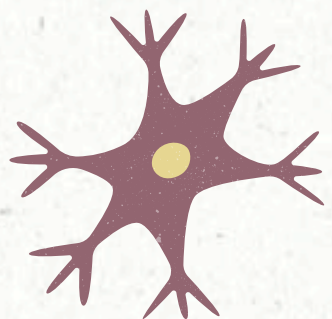


# RETENTION RESULTS

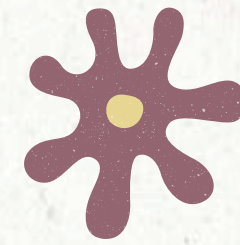
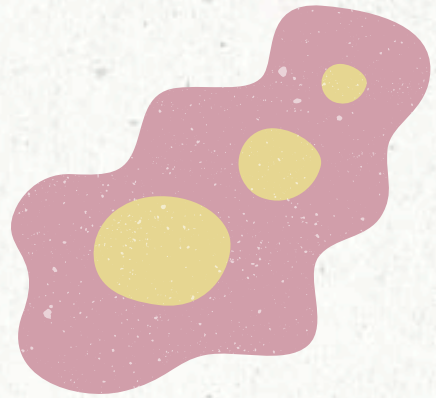
## CHI-SQUARE TEST RESULTS

- Day 1:  $p = 0.0714 \rightarrow$  Not significant
- Day 7:  $p = 0.00116 \rightarrow$  Significant drop for gate\_40
- $\Delta = 0.83\%$ , 95% CI: [0.33%, 1.34%]

METRIC	GATE_30	GATE_40
DAY 1	44.29%	43.69%
DAY 7	18.25%	17.42%

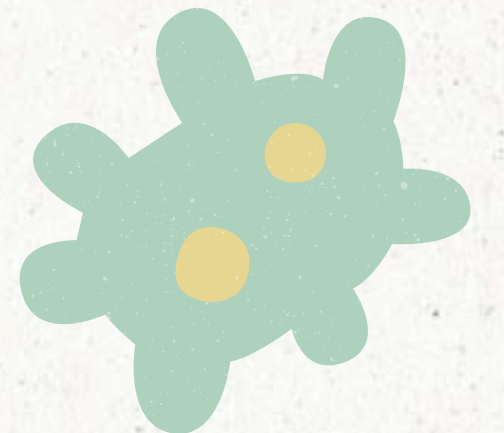




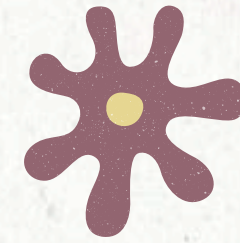
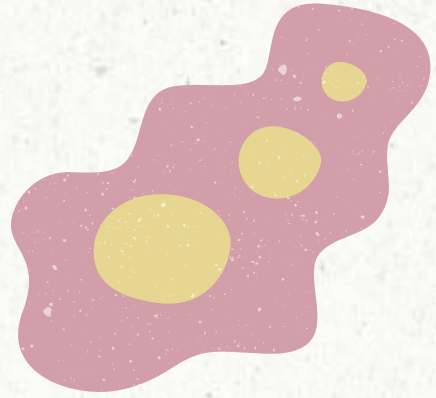


# STRATEGIC INTERPRETATION

- Engagement: No meaningful difference — same median gameplay
- Retention: Gate\_40 has a statistically significant and retention loss
- User Impact: ~741 fewer retained users by Day 7 (from ~89K users)
- Product Risk: Earlier churn → weaker funnel for future monetization, lower long-term LTV



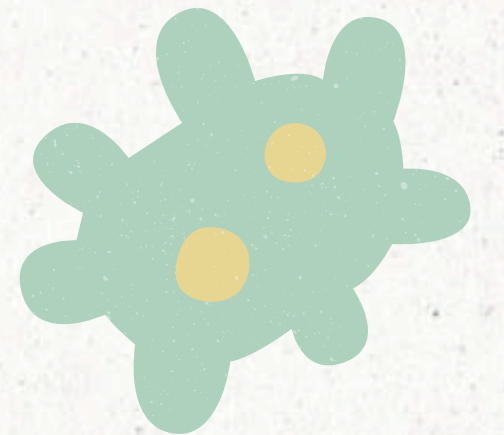




# RECOMMENDATION

Retain the current gate at level 30.

- Gate\_40 introduces measurable churn risk
- No engagement upside to justify the change
- Level 30 provides a better onboarding checkpoint without delaying core gameplay pacing







# NEXT STEPS

- Explore Intermediate Gate Levels → e.g., level 35 may offer better balance
- Segmented Retention Analysis → Geography, platform, new vs. existing installs
- Qualitative Signals → Session logs or heatmaps to assess player frustration points
- Expand Retention Metrics → Include 14-day, 30-day, and session frequency metrics





**THANK YOU!**

