

Abstract & Background

Incentives motivate us. A voluminous literature has examined the effectiveness and appeal of financial rewards on improving habits and changing behavior [for review, see 2]. We know less about how monetary incentives compare with nonmonetary ones in affecting both people's choices when they trade off key reward attributes (e.g., certainty and immediacy) and their performance in real-effort settings [3].

How do monetary vs. nonmonetary rewards influence (i) **choices** involving risk and time, and (ii) **performance** on effortful tasks?

Our evidence suggests that incentivizing people with cash may lead them to think about tradeoffs in a relatively compensatory way, causing them to place greater weight on certainty and immediacy. When we infused uncertainty [delay] into a reward, those facing cash became more risk averse [less patient] than those facing hedonic rewards of equivalent retail value. However, this was only the case when incentives were contingent on effort expenditure. Finally, hedonic rewards motivated better performance and greater persistence than cash on a real-effort task featuring uncertainty in reward attainment.

Study 1: Risk

N = 357

Exercise scenario¹

Compare 2 exercise programs² offering different rewards for meeting step goal

Duration: 4 weeks

Reward: For each week you walk at least **60k steps**, receive...

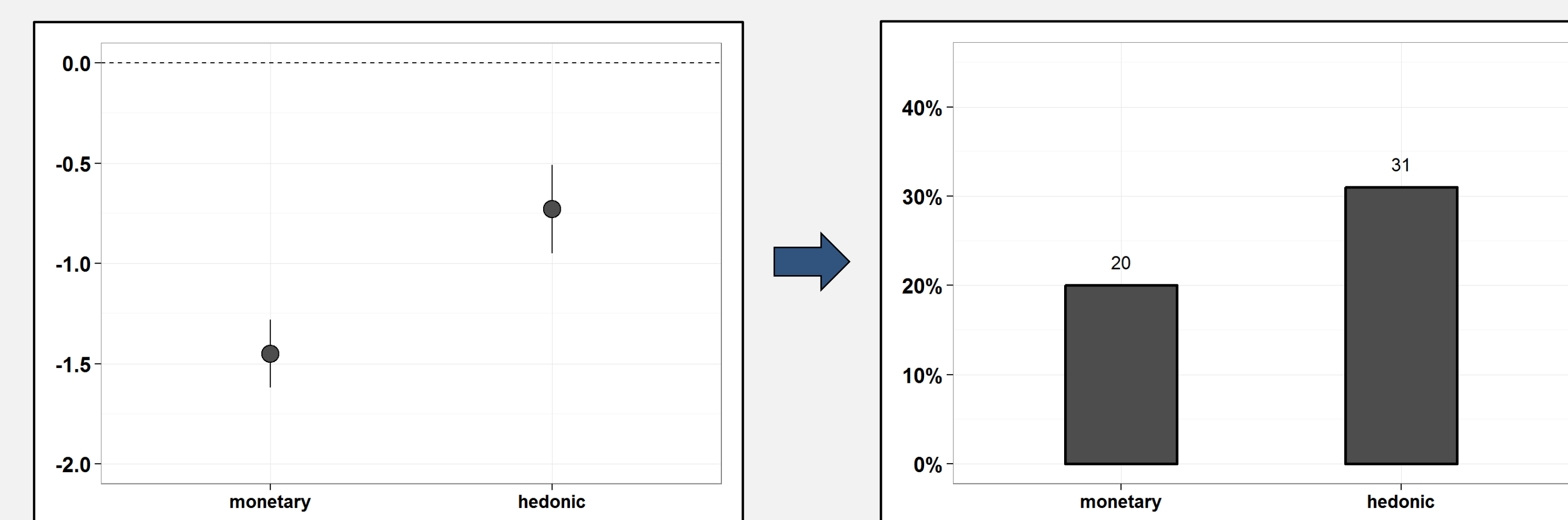
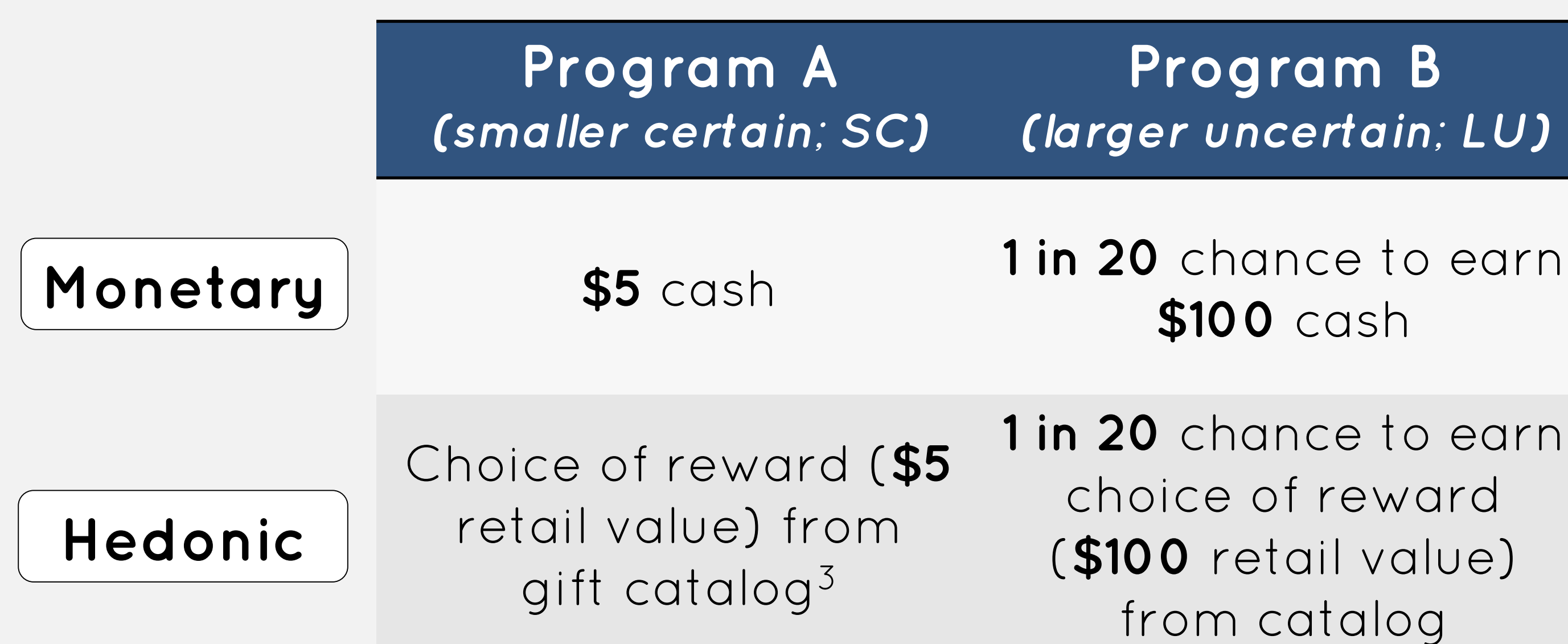


Figure 1. Within-person relative preference (left) and choice shares (right) of the LU over SC reward program. All error bars are standard errors. Left: The dotted line at y=0 denotes indifference between the two options. Negative values indicate preference for SC overall.

Pps were more likely to prefer and choose smaller, certain (over larger, uncertain) rewards when they took the form of cash (vs. hedonic prizes).

¹A study (N = 356) with a different scenario (choosing between 2 foreign language programs) found the same pattern.
²Order counterbalanced.
³The "gift catalog" in the hedonic groups consisted of 11 prizes, such as assorted chocolates, a gift card to Starbucks Coffee, and a gift card to AMC movie theaters.

Study 2: Time

N = 282

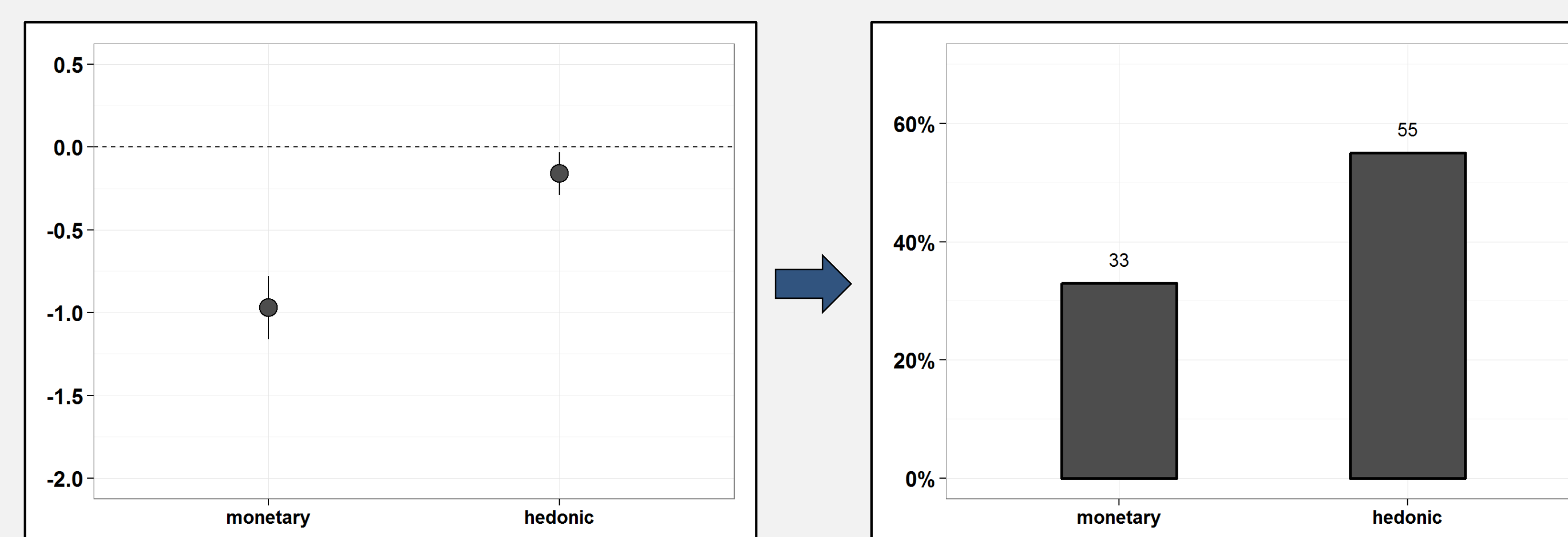
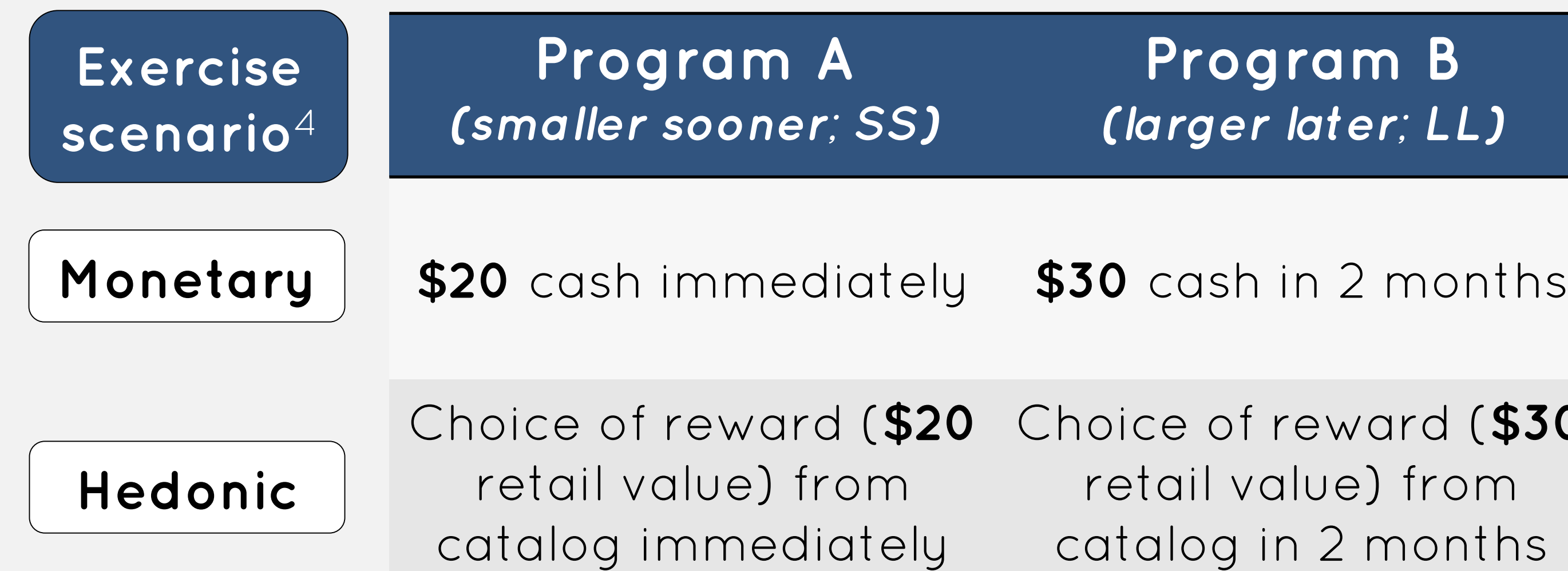


Figure 2. Within-person relative preference (left) and choice shares (right) of the LL over SS reward program.

Pps were more likely to prefer and choose smaller, sooner (over larger, later) rewards when they took the form of cash (vs. hedonic prizes).

⁴A study (N = 353) using the foreign language scenario replicated these results.

Study 3: Effort Contingency

N_a = 225
N_b = 309

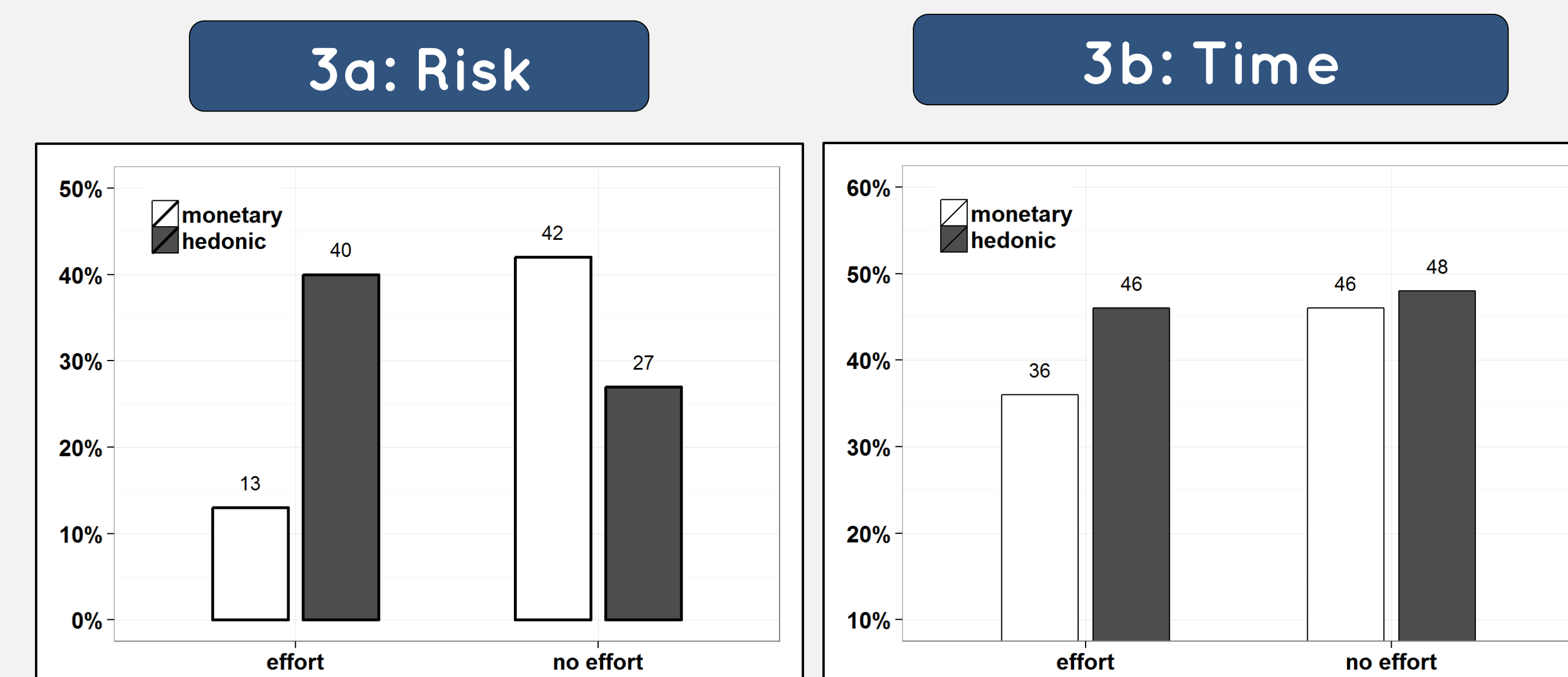
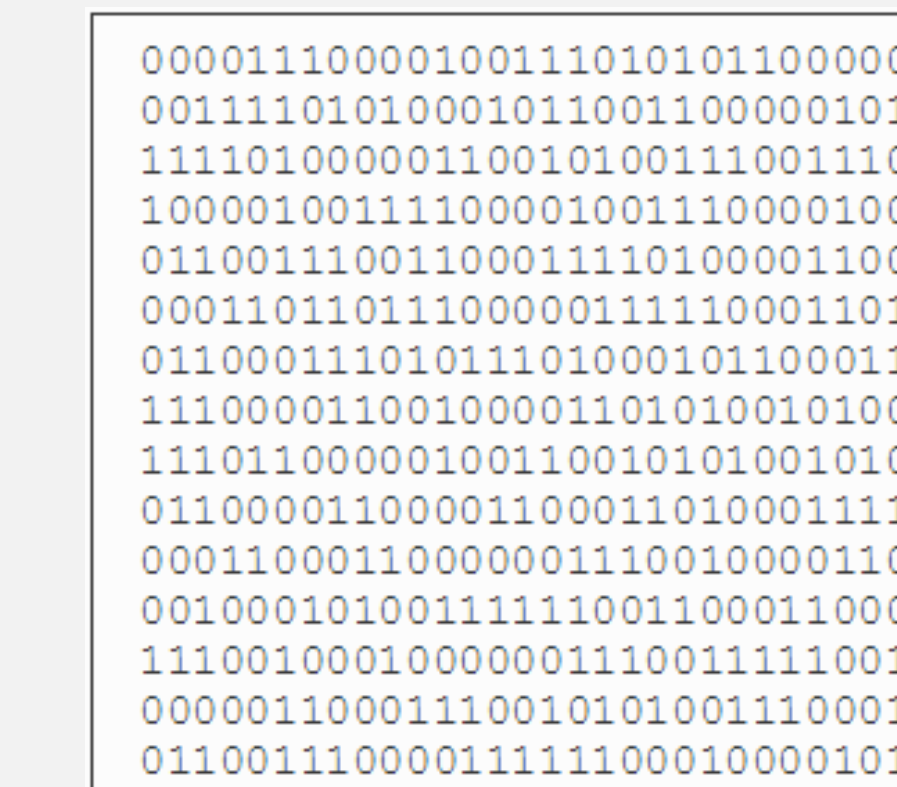


Figure 3a. Choice shares of the LU over SC exercise reward program. SC = \$5; LU = 1 in 20 chance of \$120 (analogous for hedonic rewards).
Figure 3b. Choice shares of the LL over SS exercise reward program. SS = \$20 now; LU = \$30 in 2 months (analogous for hedonic rewards).

- Pps were more likely to choose smaller, certain (over larger, uncertain) rewards and smaller, immediate (over larger, delayed) rewards when they took the form of cash (vs. hedonic prizes).
- This did not hold when the reward was not contingent on effort expenditure.

Study 4: Performance & Persistence

N = 168



Counting zeros⁵

- How many 0s are in this grid?
- After each grid, choose to stop working OR continue to next one
- **6** total grids (unrevealed)

If you perform in the **top 5%**, earn bonus of...

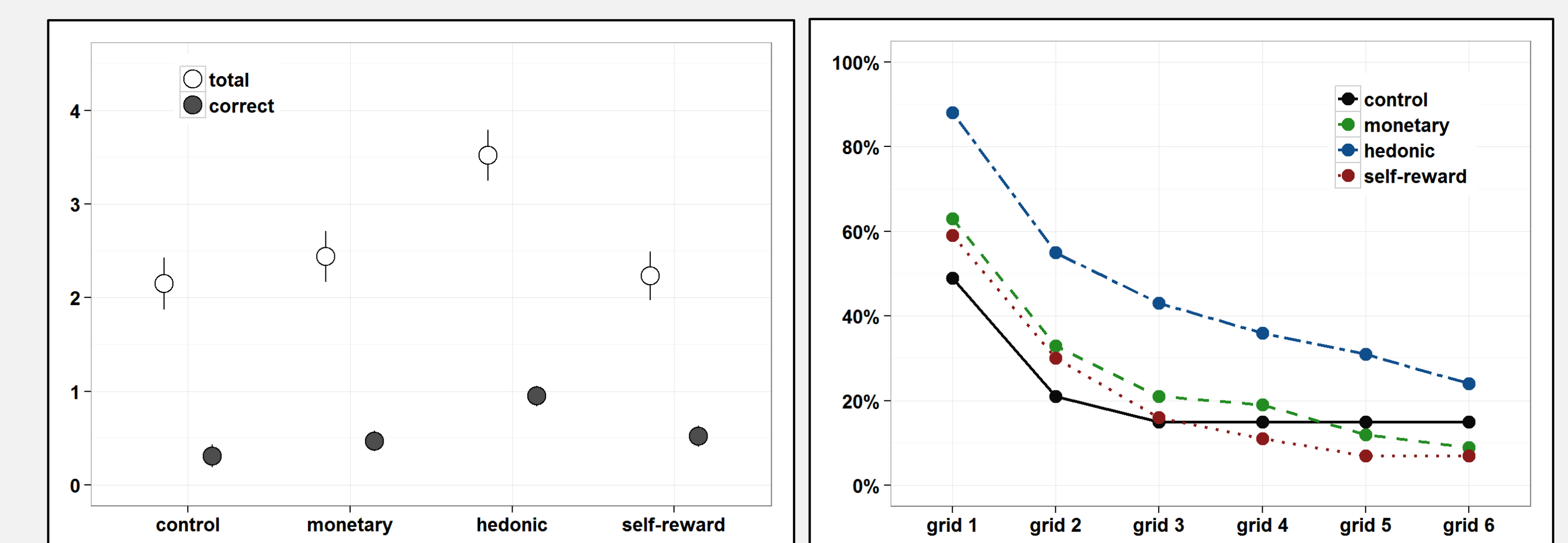
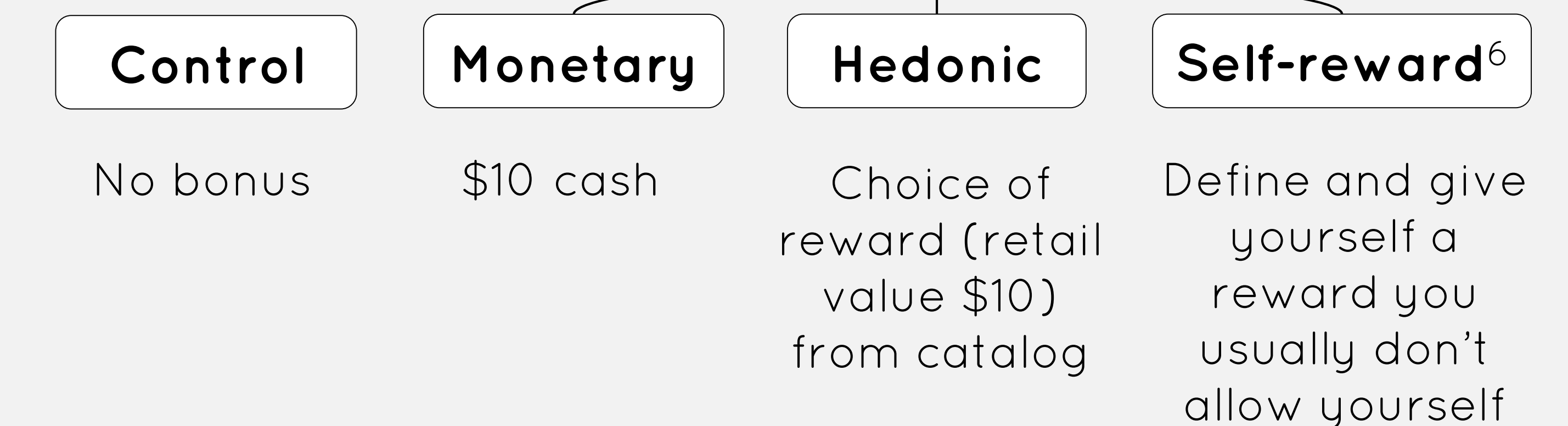


Figure 4a. Grids counted. White points indicate the total number of grids counted; black points indicate the number of grids counted correctly.

Figure 4b. Proportion (%) choosing to persist after each grid.

Pps incentivized with hedonic (vs. cash, self-defined, and no) rewards performed better and persisted more in a "counting zeros" task featuring some uncertainty in reward attainment.

⁵Task stimuli adapted from [1].
⁶Included based on ongoing research [4] suggesting that relative to cash, self-rewards may induce people to gain and maintain healthy habits in a longitudinal context (in particular, after extrinsic rewards are removed in the post-intervention period).

Conclusions

- People incentivized with monetary (vs. hedonic) rewards were more likely to prefer and choose effortful activities offering smaller, certain (over larger, uncertain) and smaller, sooner (over larger, delayed) rewards.
 - This did not hold when reward was not contingent on exerting effort.
- When a reward's attainability was less certain, hedonic rewards induced better performance and greater persistence than cash.
- Future work will test and better identify determinants of the effectiveness of monetary (vs. nonmonetary) incentives in shaping preferences and behavior.

Selected References

[1] Abeler, Johannes, Armin Falk, Lorenz Goette, and David Huffman (2011). "Reference Points and Effort Provision," *American Economic Review*, 101(2), 470-92.
[2] Gneezy, Uri, Stephan Meier, and Pedro Rey-Biel (2011). "When and Why Incentives (Don't) Work to Modify Behavior," *Journal of Economic Perspectives*, 25(4), 191-210.
[3] Jeffrey, Scott A. (2009). "Justifiability and the Motivational Power of Tangible Noncash Incentives," *Human Performance*, 22, 143-55.
[4] Kivetz, Ran and Rachel Meng (2016). "Incentives for Positive Behavior Change: Exercising Self-Control Through Self-Reward." Working Paper, Columbia University.