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# Nighttime Ethics: Do Moral Choices Differ by Time-of-Day/Night?

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## Abstract

We examine time-of-day (TOD) effects on moral choice by comparing afternoon (DAY: 3pm-5pm) and nighttime (NIGHT: 3am-5am) decisions across three incentivized tasks. While the NIGHT treatment successfully induced sleepiness, we report no evidence that circadian suboptimality shifts decisions towards one's default ethical tendencies. Rather, the NIGHT treatment increased dishonesty in a victimless Die-Roll task but not when dishonesty harms another participant (modified Coin-Flip task) or in consequential moral dilemmas affecting only others' outcomes (Payoff-Trolley task). Exploratory evidence from response times suggests immorality results from deliberative processes. Overall, these results indicate that moral choice exhibits task-dependent stability during circadian fatigue.

## JEL classification

C90, D01, D91

## Keywords

behavioral economics, honesty, trolley problem, moral choice, sleep, time-of-day

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## INTRODUCTION

Sleepiness is commonplace in modern societies and has significant effects on decision-making (Harrison and Horne, 2000; Dickinson, 2021). Sleepiness results both from homeostatic sleep pressure that builds with cumulative wake time and also from circadian rhythms that vary sleepiness/alertness across the day/night independent of sleep pressure (Borbély et al., 1982l; 2016). This implies that both insufficient sleep (e.g., Hafner et al., 2017; Chattu, 2018) and circadian timing (Roenneberg et al., 2016) are relevant to decision-making.

This paper focuses on how the time-of-day (TOD) influences moral choice. Much of the current literature on sleep and moral choice has focused on sleep restriction or (e.g., see Dickinson and Masclet, 2023, and references therein). Research on TOD or circadian effects on moral choice has been more limited. Kouchaki and Smith (2014) highlight a "morning morality effect" whereby self-control is required to resist the temptation to be immoral and self-control resources are more depleted later in the day. Gunia et al. (2014a) qualify this by noting the importance of one's diurnal preference: morning-types were more moral in the morning, but evening-types were more moral in the evening. The topic of circadian influences on morality fits with the general multidisciplinary interest in the study of cognitive load and honesty (e.g., Shalvi et al., 2012; Capraro, 2017).

The present study examines moral choice within a preregistered within-subjects TOD decision protocol in conjunction with 3 incentivized moral choice tasks that also add to the literature (Dickinson, 2025).[1] Specifically, participants made incentivized choices both during the afternoon (DAY treatment: the 3pm-5pm window) and in the middle of the night/early morning (NIGHT treatment: the 3am-5am window). These time-windows were chosen precisely because they assign participants to both a more (DAY) and less (NIGHT) optimal decision time that is somewhat independent of one's diurnal preference type, which allows for a simpler study of TOD effects.

The decision tasks included a standard Die-Roll task (Fischbacher and Föllmi-Heusi, 2013), a *modified* Coin-Flip task (Houser et al., 2012), and consequential Payoff-Trolley Dilemma task (Dickinson, 2026). In the modified Coin-Flip task, participants were asked to flip a coin 10 times and report the number of HEADS flipped, with a $1 payoff received for each HEADS reported. However, participants were informed that a randomly and

[1] The preregistration is at https://doi.org/10.17605/OSF.IO/5DPTG.

anonymously selected counterpart's payoff would be $10-HEADS, such that a dishonest report would take payoff away from another study participant.[2]

We incentivized the novel *Payoff-Trolley* task by informing participants that the payoffs of other randomly-selected study participants would be placed on the Main track and Sidetracks in Trolley dilemma scenarios (see Dickinson, 2026). Scenarios varied the number of participant payoffs on the Main track (X) and the Sidetrack (Y), such that (X:Y) included X>Y, Y>X, X=Y, and X or Y = 0 scenario. As such, a more unambiguously immoral choice can be classified as one where one chooses to *Pull Lever* to divert the Trolley to the Sidetrack, even though X<Y (an immoral act of commission, or "weak" act of immoral commission if X=Y, given documented aversion to active over passive responsibility for similar harm—see DeScioli et al., 2011). An immoral act of omission would be a choice to *Do Nothing* when X>Y=0 (note: *Do Nothing* where X>Y>0 cannot be labeled immoral because one may hold deontological ethics to "do no harm").

Notably, in the Die-Roll task one's dishonesty benefits oneself without harming any others (save the experimenter budget), while one's dishonesty imposes a direct payoff cost on another anonymous participant in the modified Coin-Flip task. In the Payoff-Trolley task, one's choices *only* impact the payoffs of other anonymous participants (i.e., immoral choice does not materially benefit the decision-maker).

## EXPERIMENTAL METHODS

### *Participants and sample size*

A pre-screening sleep survey was administered at a mid-sized regional University. The pre-screen included validated measures of diurnal preference to assess morningness-eveningness preferences (Adan and Almirall, 1991), and primary care screeners for major depressive disorder (Kroenke et al., 2003) and generalized anxiety disorder (Spitzer et al., 2006). Eligible participants were within the 18-40 young adult age range, did not self-report a diagnosed or suspected sleep disorder, did not have extreme diurnal preferences and were not at significant risk or depression or anxiety (determined by standardized cutoffs for the validated instruments).

The participants enrolled in a 1-week study involving two in-lab sessions and two online decision task surveys. Lab Session 1 took place on a Thursday and included collection of

[2] All participants made decisions as if they would receive the $1 per HEADS payoff, bit it was common knowledge that a random participant-pairing and random selection of decision-maker versus passive participant for each pair would occur after all decisions had been made (see Experiment Instructions in the Appendix).

baseline measures, random assignment of one's treatment order (DAY-NIGHT or NIGHT-DAY), and assignment of wrist-worn sleep trackers to collect objective control data on nightly sleep levels as a proxy for homeostatic sleep pressure differences across participants. Participants were informed that survey links would be sent to complete a set of incentivized decision tasks online on Monday and Wednesday of the following week during their treatment-assigned TOD for each specific day. Participants returned to the lab for Session 2 the following Thursday to return sleep trackers and receive their incentive payments from task outcomes.

The target sample size was 100 participants for this within-subjects study. Ex ante power analysis determined this sample size to have sufficient power (power = .80) to identify medium-small sized effects (Cohen's d = .30) for 2-tailed matched-pairs tests of means with error probability $\alpha$ = .05 , though we opted for multi-variate regression analysis and errors clustered on the participant for panel data analysis. Our final sample for analysis was n=105 participants (107 completed the protocol, but actigraphy data was corrupted for 2 participants)—see Appendix A, Table A1 for summary statistics for our sample. Compensation included a fixed $40 for participation and sleep-tracking data, and decision tasks provided additional variable compensation averaging $10-$15 per survey (for all tasks within the survey), which implied an additional $20-$30 study earnings. In addition to the tasks reported herein, participants also completed an unrelated information-updating task not described here.

***Key Variables***

Primary outcome measures for the Die-Roll, modified Coin-Flip, and Payoff-Trolley tasks were, respectively, *Die Roll Payoff* $\in$ [0,5]*, HEADS reported* $\in$ [0,10]*,* and binary indicators for *Immoral Act Omission*, *Immoral Act Commission,* and *Utilitarian* trolley choices. Exploratory analysis also considered a binary indicator for a *Max Die Roll Payoff* ($5) in the Die-Roll task, an indicator for *Likely Cheater* =1 in the modified Coin-Flip task (for statistically unlikely *HEADS* reports of 8, 9, or 10), and scenario-level response times in the Payoff-Trolley task.

Binary indicators captured repeat administration effects, *2nd Admin*, and treatment order effects, *Night First*. Participant-specific measures included basic demographic controls (*Age, Sex, Minority*), as well as actigraphy-measured (sleep tracker) average nightly sleep during the protocol week. Other measures collected at baseline included: future orientation (*Future Orientation*: Ersner-Hershfield et al., 2009), cognitive reflection (*CRT score*: Primi et al., 2016), default ethical risk-taking tendencies (*DOSPERT Ethical Risk*

where higher values indicate *Bad Ethics*: Blais and Weber, 2006), and cognitive thinking disposition (*CTDS* score: Sosu, 2013). Primary independent variables of interest were the binary treatment indicator, *NIGHT,* which identified suboptimal circadian timing, default ethics (*Ethical Risk*), and their interaction *Bad Ethics * Night,* where *Bad Ethics* was a binary indicator for above-median *Ethical Risk*.

### *Preregistered hypotheses*

We hypothesized statistical evidence of dishonesty in the Die-Roll and Coin-Flip tasks, that such dishonesty would be lower for those higher in default ethics (i.e., a *lower* score of *Ethical Risk*). Default ethics was also hypothesized to more strongly predict Die-Roll outcomes than Coin-Flip outcomes, because dishonesty in the modified *Coin-Flip* task victimizes another study participant. For the Payoff-Trolley task, we hypothesized evidence of immoral choices (acts of omission and commission), and we hypothesized that higher default ethics would predict more utilitarian choices.

Rather than a general TOD hypothesis, we hypothesized that unethical behavior during the *NIGHT* condition would be moderated by one's default ethics. Specifically, those lower in default ethics will be more unethical in the *NIGHT* condition compared to *DAY*, while those with higher default ethics would be more unethical in the *DAY* condition. This default-ethics moderation hypothesis is based on a dual-systems framework whereby the *NIGHT* condition, which should reduce one's deliberative thought processes, will promote one's more automatic (i.e., default) ethical tendencies (see Speer et al., 2022). This default-ethics moderation hypothesis will be tested via an interaction term, *Bad Ethics * NIGHT*, where a positive and statistically significant coefficient would support the moderation hypotheses.

## RESULTS

The time-of-day protocol was valid in generating an exogenous increase in sleepiness during the *NIGHT* compared to *DAY* treatment, based on validated Karolinska subjective sleepiness reports—mean sleepiness of 7.39 versus 4.02 on a 9-point scale, respectively: $p < .001$ for the 2-sample t-test with unequal variance—see Appendix Figure A1). Figure 1 summarizes the data outcomes in the Die-Roll and Coin-Flip task by treatment condition—Appendix Figure A2 shows these sample task outcomes by one's default *Ethical Risk* tendency (based on a median split of the sample). The data confirm statistical evidence of cheating in the Die-Roll and Coin-Flip tasks ($p < .05$ or better in all tests of proportions (Die-Roll tasks) or means (Coin-Flip task) both for the pooled data as well as separate

subsample of those higher and lower in default ethics. And, while immoral Trolley choices were rare (<10% of all choices), we observed a significantly greater than zero proportion of immoral choice for both immoral acts of omission and commission (in both *NIGHT* and *DAY* conditions, $p < .05$ or better in each instance). Only for those higher in default ethics was the proportion of unethical acts of commission (strictly defined as *Pull Lever* = 1 for X<Y scenarios) statistically no different from zero ($p > .05$). Also, the data showed no statistical difference in proportion of utilitarian choices by higher or lower default ethics (75.6% versus 76.1%, respectively: $p > .10$ for the two-sample proportions test).

Other preregistered hypotheses were tested and summarized in Table 1, where the highlighted *NIGHT* and *BAD ETHICS * NIGHT* terms are the focus. The data failed to support the hypotheses that *NIGHT* condition decisions will differ from *DAY* decisions in the direction of one's default ethical risk tendencies (i.e., statistically insignificant coefficient estimates on *Bad Ethics * NIGHT*). This is an important null finding, because it suggests that moral choice behavior is stable and resilient to circadian fatigue. The *NIGHT* treatment had a main effect of increasing the likelihood of dishonesty/immorality only in the *victimless* Die-Roll task—here *NIGHT* treatment significantly increased reports of the maximum $5 payoff die-roll outcome. And, one's trait-level disposition towards critical thinking (*CTDS score*) predicted both a lower likelihood of an immoral choice and a higher likelihood of a utilitarian choice.

### *Exploratory Analysis of Trolley Response Times*

Trial-level response-time (RT) data in the Payoff-Trolley task allowed for an exploratory analysis to highlight systematic patterns of interest in one's choice process. Figure 3 separates RT for immoral choices (of any type) and non-immoral choices (Panel A) and then by sacrificial versus non-sacrificial (where X or Y = 0) trolley choices (Panel B) in both treatment conditions. Choices display uniformly longer RT during *NIGHT* compared to *DAY*, but in both treatment conditions RTs are longer for choices in sacrificial dilemmas, and when an immoral choice is made. This pattern is consistent with a hypothesis that additional deliberative thought is required when decision conflict is greater (i.e., harm *cannot* be avoided or a choice crosses a moral boundary), and that time-consuming deliberative processes are recruited during decision conflict.

## CONCLUSIONS

We document evidence of immoral choice behavior in three incentivized tasks that varied who is harmed by one's immoral choice. The finding that circadian suboptimality did not

shift behavior in the direction of one's default ethical tendencies suggest that moral choice is stable to this type of circadian fatigue. A general increase in dishonesty during the *NIGHT* condition was limited to the Die-Roll task. This highlights that moral choice is also task dependent and that an important feature of morality is how one's choice affects others—a seemingly victimless immoral choice is sensibly perceived to be less costly. Payoff-Trolley choice RTs suggest choices that are immoral or where harm is unavoidable involve more decision conflict notwithstanding evidence of generally slower cognitive processing in the *NIGHT* condition. This choice process data support the existence of a stable and deliberative moral choice architecture that merits further study.

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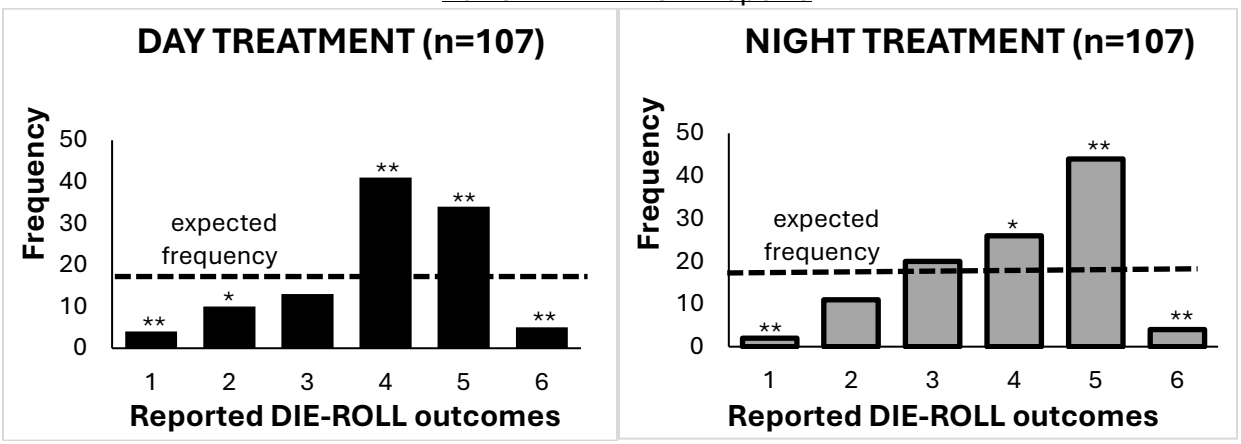
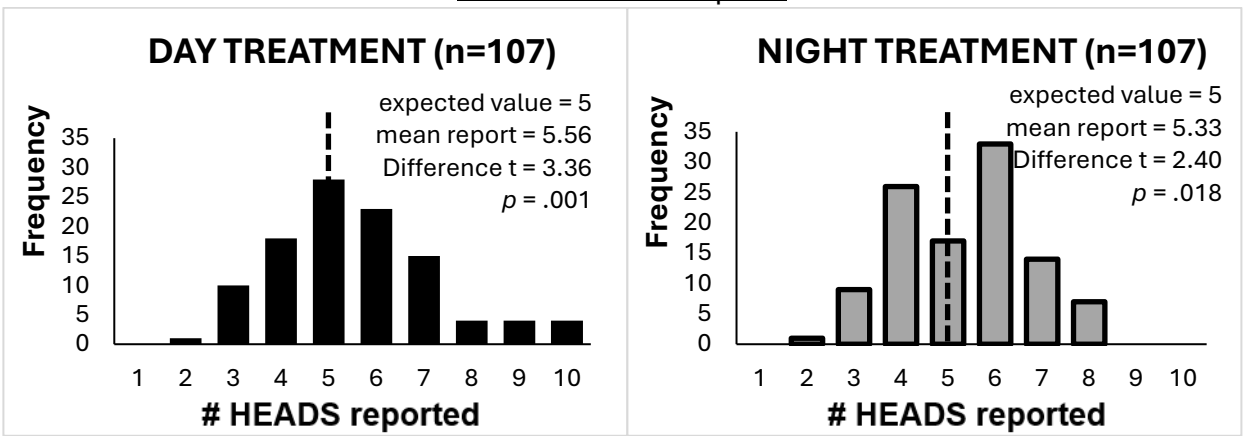
**FIGURE 1**: COIN-FLIP & DIE-ROLL TASK OUTCOMES—by TREATMENT CONDITION

**Panel A**: DIE-ROLL reports



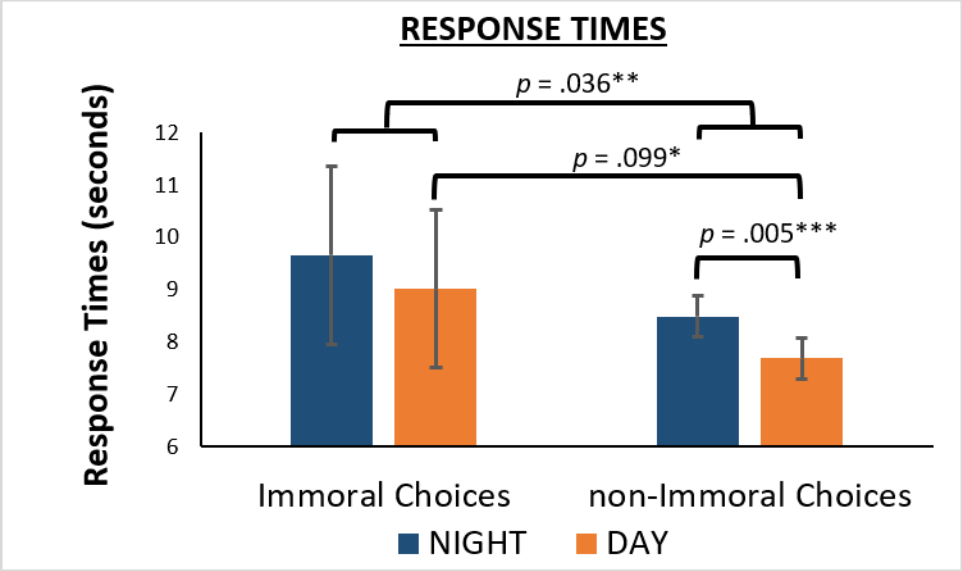

**Panel B:** HEADS reports



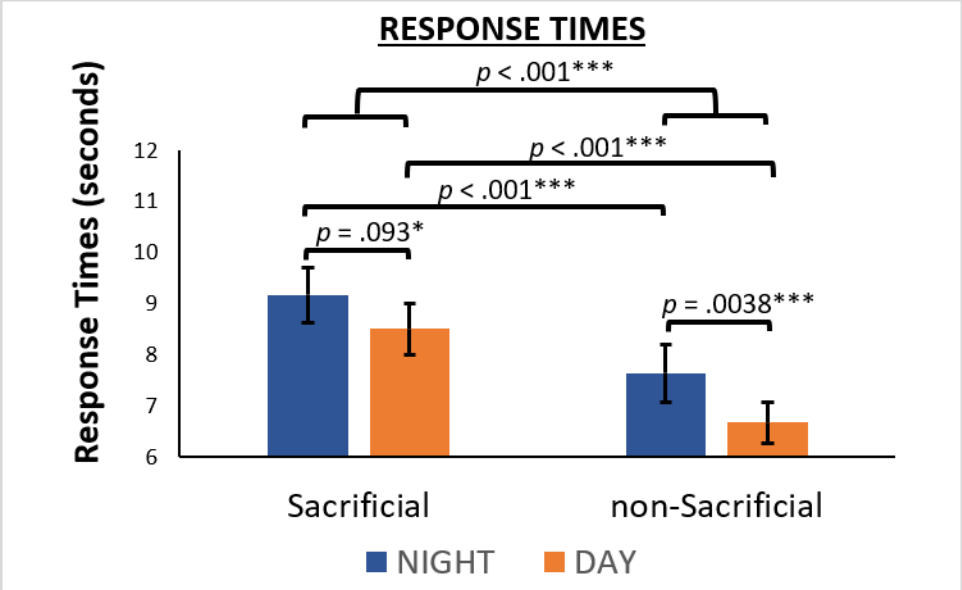

**Notes:** **p*<.05, ***p*<.01 for the one-sample proportions test against the expected frequency for each possible DIE-ROLL outcome. Reports of 4 and 5 represent the outcome providing the 2nd highest and the maximum payoffs, respectively, from the DIE-ROLL task. COIN-FLIP task outcomes were evaluated based on HEADS reports and testing mean HEADS reports against the expected mean HEADS report (as preregistered). These tests are reported within the Panel B graph.

**FIGURE 2:** Payoff-Trolley Response Time Patterns

**Panel A:** Immoral versus non-Immoral Choices




**Panel B:** Sacrificial versus non-Sacrificial Dilemmas




**Notes:** Significance levels reported are from 2-sample t-test with unequal variances.

**TABLE 1: NIGHT treatment effects on key outcome measures**

| | *1 observation per task* | | | | *15 trials per task* | | |
|---|---|---|---|---|---|---|---|
| | *(1)* | *(2)* | *(3)* | *(4)* | *(5)* | *(6)* | *(7)* |
| *VARIABLES* | *Die Pay Outcome* | *Max Die Pay (=1)* | *HEADS reported* | *Cheater (=1)* | *Act Omis. (=1)* | *Act Comm. (=1)* | *Utilitar. (=1)* |
| *Trial #* | | | | | 0.03** | 0.01 | 0.004* |
| | | | | | (0.01) | (0.01) | (0.00) |
| *NIGHT (=1)* | 0.20 | 0.42* | -0.17 | -0.18 | -0.11 | -0.04 | -0.00 |
| | (0.22) | (0.21) | (0.25) | (0.32) | (0.20) | (0.19) | (0.03) |
| *Night First (=1)* | -0.02 | 0.27 | 0.07 | 0.16 | -0.23 | -0.06 | 0.06 |
| | (0.19) | (0.22) | (0.28) | (0.30) | (0.31) | (0.15) | (0.09) |
| *2nd Admin (=1)* | 0.13 | 0.44** | 0.11 | 0.30 | 0.08 | -0.12 | 0.02 |
| | (0.18) | (0.16) | (0.19) | (0.21) | (0.11) | (0.07) | (0.02) |
| *Nightly Sleep* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| *Age (years)* | -0.06 | -0.03 | 0.02 | -0.00 | 0.06 | -0.00 | -0.02 |
| | (0.05) | (0.05) | (0.04) | (0.05) | (0.04) | (0.03) | (0.01) |
| *Female (=1)* | 0.21 | 0.03 | 0.06 | 0.12 | -0.05 | 0.07 | 0.05 |
| | (0.20) | (0.22) | (0.30) | (0.27) | (0.27) | (0.14) | (0.07) |
| *Minority (=1)* | 0.39* | 0.21 | 0.51 | 0.30 | 0.04 | 0.17 | -0.13 |
| | (0.19) | (0.24) | (0.31) | (0.30) | (0.34) | (0.17) | (0.11) |
| *Future Orientation* | -0.02 | 0.03 | -0.09 | -0.08 | 0.13 | -0.09 | -0.02 |
| | (0.07) | (0.08) | (0.11) | (0.10) | (0.11) | (0.06) | (0.03) |
| *CRT score* | -0.07 | -0.08 | -0.08 | -0.05 | -0.11 | 0.01 | 0.02 |
| | (0.05) | (0.06) | (0.07) | (0.08) | (0.07) | (0.04) | (0.02) |
| *Ethical Risk* | 0.02 | 0.02 | 0.06 | 0.04 | -0.00 | 0.02 | -0.00 |
| | (0.03) | (0.03) | (0.04) | (0.04) | (0.04) | (0.02) | (0.01) |
| *CTDS score* | 0.00 | 0.00 | 0.02 | -0.00 | -0.06* | -0.03* | 0.02* |
| | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) | (0.02) | (0.01) |
| *Bad Ethics*NIGHT* | -0.13 | -0.29 | -0.14 | -0.22 | 0.01 | 0.01 | -0.00 |
| | (0.29) | (0.29) | (0.33) | (0.38) | (0.01) | (0.01) | (0.00) |
| *Constant* | 3.52* | -1.22 | 3.35 | -1.61 | -2.20 | -0.77 | 0.56 |
| | (1.77) | (2.02) | (2.22) | (2.11) | (2.31) | (1.15) | (0.57) |
| *Observations* | *210* | *210* | *210* | *210* | 3,150 | 3,150 | 3,150 |
| *# subjects* | *105* | *105* | *105* | *105* | *105* | *105* | *105* |
| $R^2$ *(overall or pseudo)* | *0.0711* | *0.0667* | *0.0607* | *0.0562* | *0.0951* | *0.0354* | *0.0063* |

***Notes:*** *$p < .05$, **$p < .01$ for the 2-tailed test. Preregistered hypotheses merit consideration using a one-tailed test. Models (1) and (3) are linear regressions, while models (2), (4), (5)-(7) are Probit estimations with coefficient estimates reported. All models included robust standard errors (in parentheses above) clustered on the participant. Shaded rows are of particular interest for preregistered hypotheses. *Bad Ethics* is the binary indicator for above-median level of *Ethical Risk.*

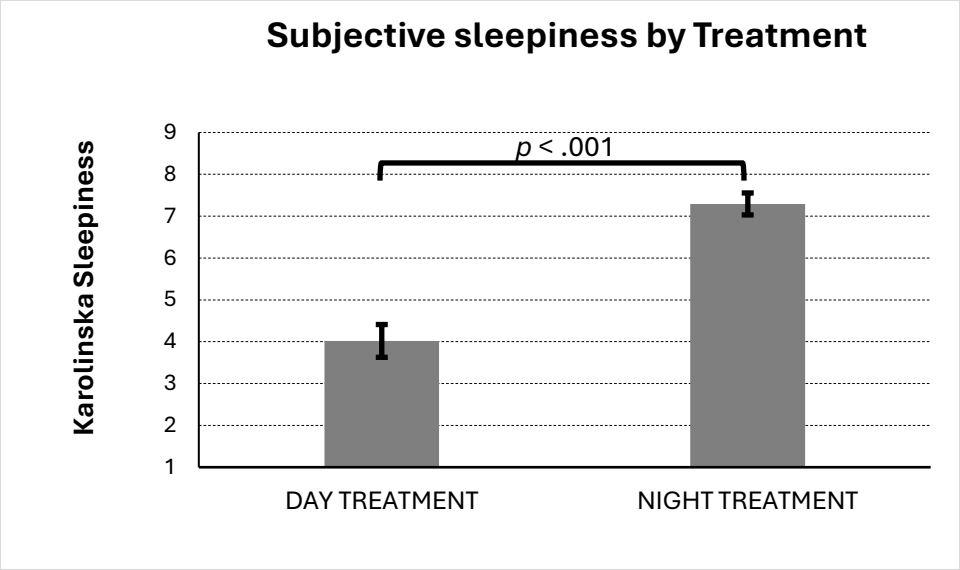
**APPENDIX A:** Additional results

**TABLE A1:** Summary Statistics and Balance test

| | **Pooled** (n=107) | **DAY-NIGHT** order (n=53) | **NIGHT-DAY** order (n=54) | **Difference test** (t-stat or z-stat) |
|---|---|---|---|---|
| Age (years) | 19.93 | 20.06 | 19.81 | .79 ($p > .10$) |
| Female (proportion) | .69 | .72 | .66 | .89 ($p > .10$) |
| Minority (proportion) | .21 | .19 | .24 | -.93 ($p > .10$) |
| Future Orientation ∈ [1,7] | 3.83 | 3.91 | 3.75 | .85 ($p > .10$) |
| CRT score ∈ [0,6] | 2.45 | 2.47 | 2.43 | .15 ($p > .10$) |
| Ethical Risk ∈ [6,42] | 11.17 | 11.77 | 10.57 | 2.27** ($p < .05$) |
| CTDS total ∈ [11,55] | 44.03 | 43.13 | 44.92 | -2.86*** ($p < .01$) |
| Actigraphy-measured sleep (minutes/night) | 444.56 | 434.37 | 454.55 | -3.01*** ($p < .001$) |

**Notes:** Difference tests are two-sample t-test (unequal variance) or two-sample tests of proportions that compare means/proportions of those characteristics across participants assigned the different treatment orders. CTDS is the Critical Thinking Disposition Scale, and Ethical Risk is a subscale of the Domain Specific Risk Taking (DOSPERT) scale focused on one's self-reported tendency to take risk in ethical domains. Actigraphy-measured nightly sleep is the average across all 7 nights of the study.

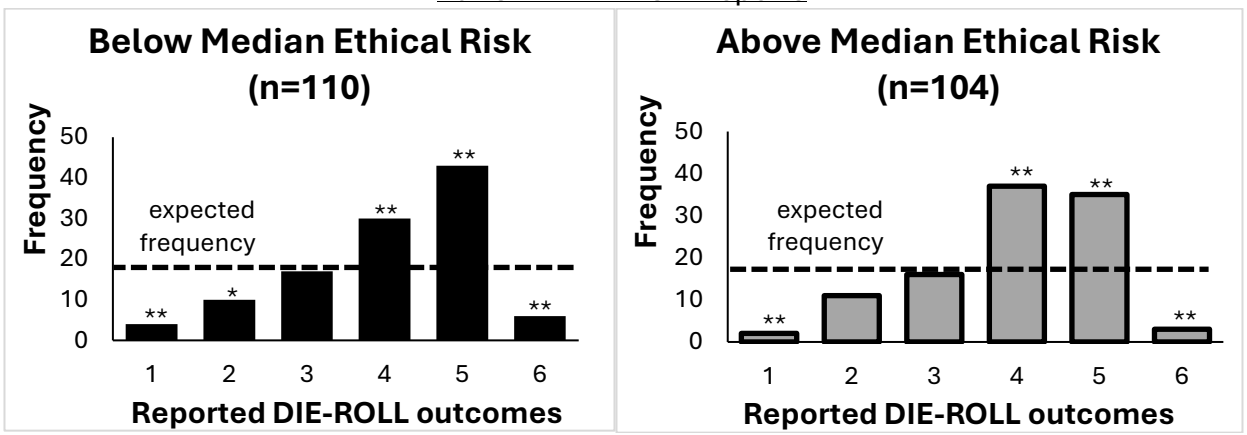
**FIGURE A1:** Treatment validation



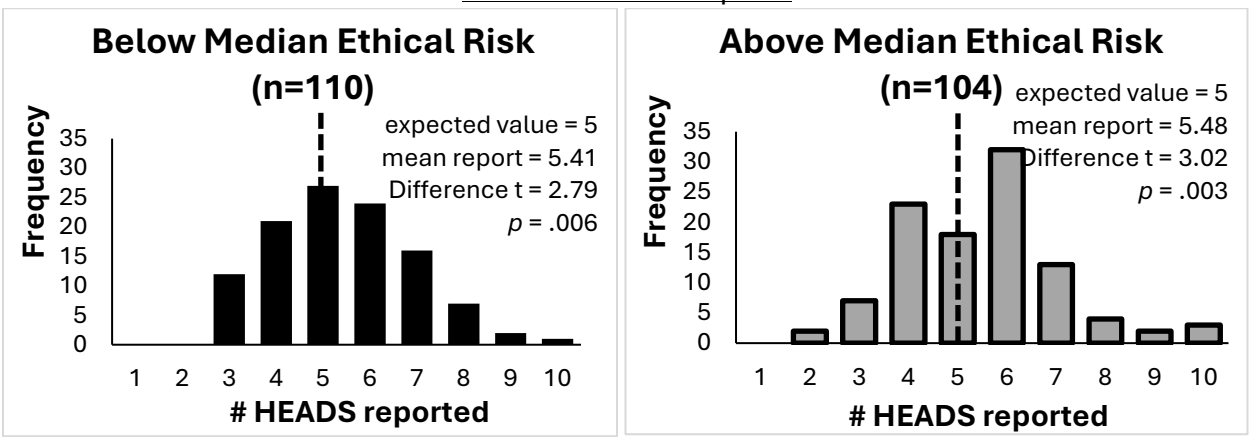

**Notes:** At baseline (i.e., during recruitment when treatment order for main decision study was assigned), participant self-reported sleepiness was a mean of 5.12 on the same scale as above, and did not significantly differ based on random treatment assignment (DAY-NIGHT assigned participants had mean baseline sleepiness = 5.23 (±.21) while NIGHT-DAY assigned participants had mean baseline sleepiness = 5.23 (±.19) ($p > .01$, 2-sample t-test with unequal variance)

**FIGURE A2**: COIN-FLIP & DIE-ROLL TASK OUTCOMES—by DEFAULT ETHICS

**Panel A**: DIE-ROLL reports




**Panel B:** HEADS reports




**Notes:** *$p$<.05, **$p$<.01 for the one-sample proportions test against the expected frequency for each possible DIE-ROLL outcome. Reports of 4 and 5 represent the outcome providing the 2nd highest and the maximum payoffs, respectively, from the DIE-ROLL task. COIN-FLIP task outcomes were evaluated based on HEADS reports and testing mean HEADS reports against the expected mean HEADS report (as preregistered). These tests are reported within the Panel B graph.

## APPENDIX B

### Experiment Instructions

What follows is the Session 1 Baseline measures (with random assignment) survey and the online decision tasks survey. *DAY* and *NIGHT* condition task surveys differed only in their assigned completion time, which was based on one's randomly assigned treatment order (*DAY-NIGHT* or *NIGHT-DAY*)

These surveys are pdf exports of the Qualtrics surveys, which may affect formatting relative to what participants saw.

**Start Block**

# SESSION 1 (baseline measures)

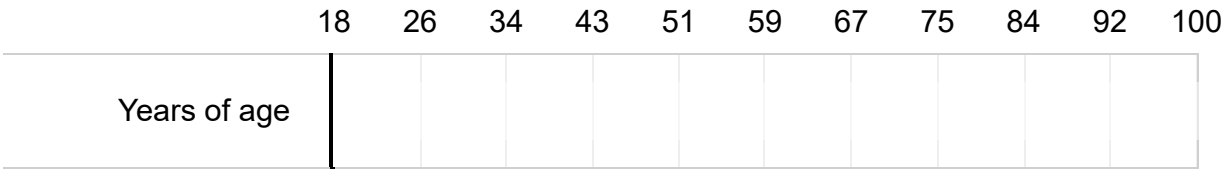
**Please input your experiment subject code** (e.g., 7d23, 9f41, etc), ***not*** *your name,* in the space below.

(should be a number, followed by a letter, followed by 1-2 numbers.....no dashes or spaces)

**Now, please enter your name**
(I'll delete it afterwards, but this will allow me to double check against your participant ID in case there is a typo)

**Demographics Deluxe Block**

What is **your current age** (in years)?



**What is your sex?**
(i.e., what sex were you assigned at birth, such as on an original birth certificate)?

- ○ Female
- ○ Male

What is **your ethnicity**?

- ○ Hispanic or Latino
- ○ Not Hispanic or Latino

What is **your racial category**?

- ○ American Indian/Alaska Native
- ○ Asian
- ○ Native Hawaiian or Other Pacific Islander
- ○ Black or African American
- ○ White (Caucasian)
- ○ Mixed

What is your **total household income per year**, including **all earners** in your household (after tax) in USD?

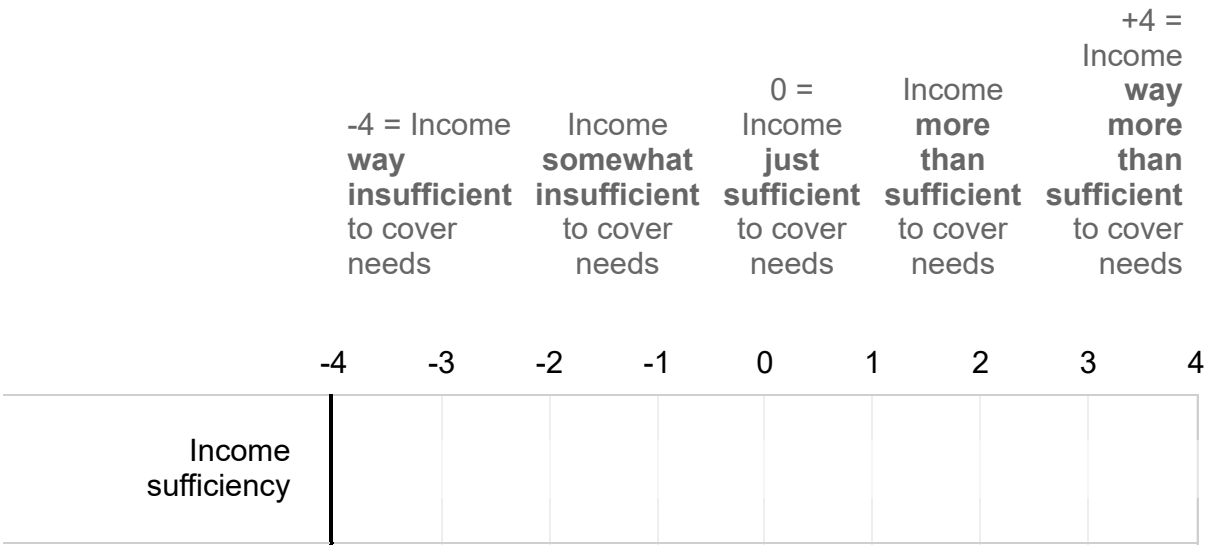
- ○ < $10,000 per year
- ○ $10,000-$15,999
- ○ $16,000-$19,999
- ○ $20,000-$29,999
- ○ $30,000-$39,999
- ○ $40,000-$49,999
- ○ $50,000-$59,999
- ○ $60,000-$69,999
- ○ $70,000-$79,999
- ○ $80,000-$89,999

- ○ $90,000-$99,999
- ○ $100,000-$149,999
- ○ More than $150,000 per year

The previous question asked about total "household" income. **How many individuals are in your "household" (including yourself)?**

- ○ One individual (just me)
- ○ 2 individuals
- ○ 3 Individuals
- ○ 4 Individuals
- ○ 5 Individuals
- ○ 6 Individuals
- ○ 7 Individuals
- ○ 8 Individuals
- ○ 9 Individuals
- ○ 10 Individuals
- ○ > 10 Individuals in my household

On the following scale, please indicate **how much you feel your current household income is or is not adequate** to cover your household financial needs.
(-4 = way insufficient, 0 = Just sufficient, +4 = way more than sufficient)



What is the highest level of education you have completed?

- ○ Some high school or less
- ○ High school diploma or GED
- ○ Some college, but no degree
- ○ Associates or technical degree
- ○ Bachelor's degree
- ○ Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)

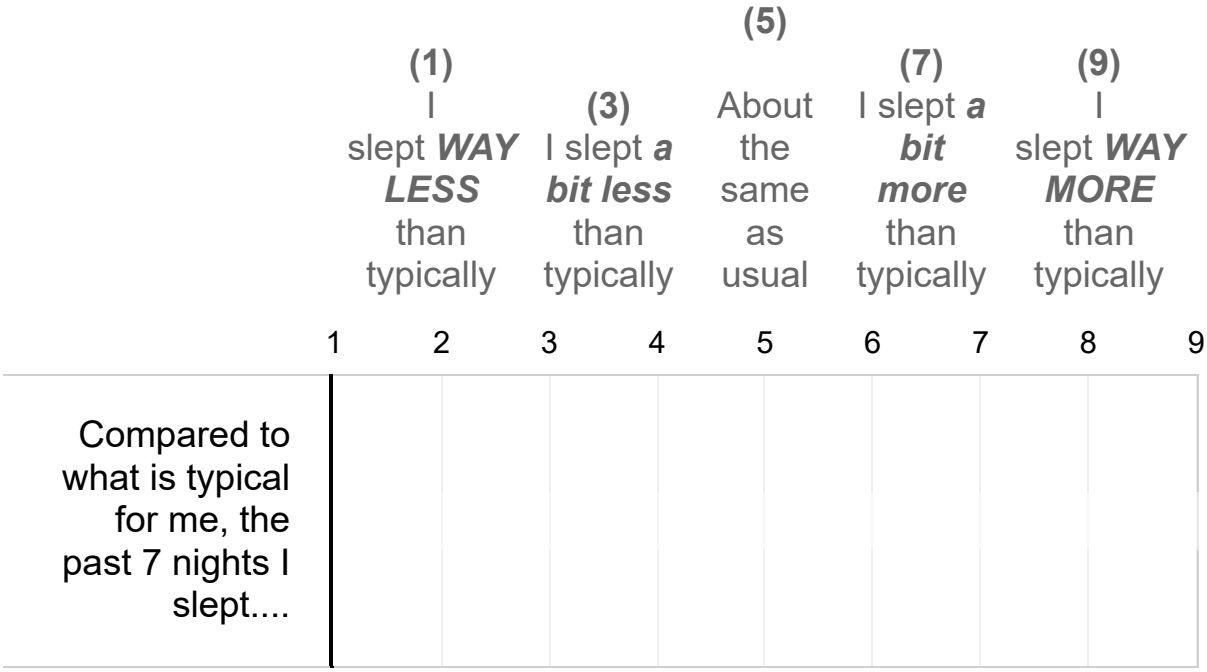
**Self Report Sleep Mood Block NEW 3 questions**

**Karolinska Sleepiness Scale**

Please mark the number that best corresponds to how sleepy you feel **right now**. You may mark any number, but mark only one number.

- ○ 1. Extremely alert
- ○ 2.
- ○ 3. Alert
- ○ 4.
- ○ 5. Neither alert nor sleepy
- ○ 6.
- ○ 7. Sleepy--but no difficulty remaining awake
- ○ 8.
- ○ 9. Extremely sleepy--fighting sleep

Using the scale below, please indicate **how much less or more you slept**, on average, **over the previous week compared to what is typical for you**.




**Now, we'd like to get your baseline ratings on some mood/emotion states**.

Please rate how strongly you feel each of these emotions ***right now***.

**Right now I feel.....**

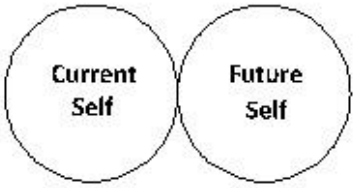
| | Zero level of this emotion **(1)** | **(2)** | **(3)** | Mid-Range level of this emotion **(4)** | **(5)** | **(6)** | Maximum level of this emotion **(7)** |
|---|---|---|---|---|---|---|---|
| Happy | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Excited | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Surprised | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Satisfied | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Angry | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Irritated | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Confused | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Regret | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Disgust | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

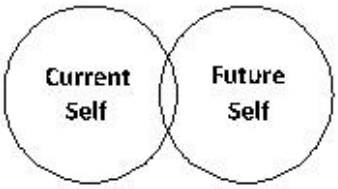
| | Zero level of this emotion (1) | (2) | (3) | Mid-Range level of this emotion (4) | (5) | (6) | Maximum level of this emotion (7) |
|---|---|---|---|---|---|---|---|
| Alert | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

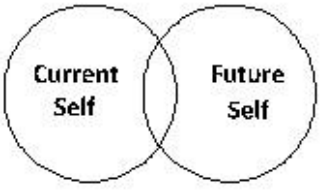
**Current Future Self**

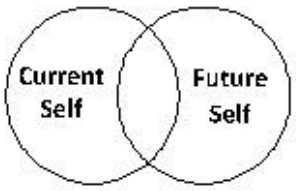
Please select the picture below that best describes how similar you feel with your future self (you in 10 years).

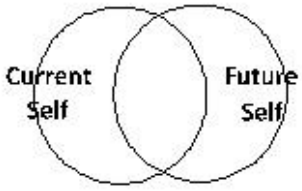
**Current self = you now** **Future self = you in 10 years**

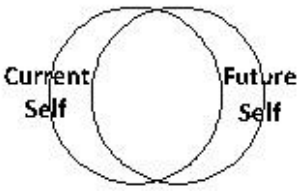
○ 

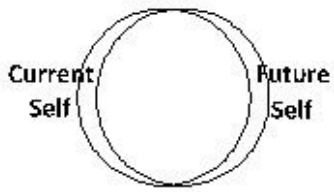

○ 


○ 

○ 


○ 


○ 


○ 


**DOSPERT RT (5 pages) scale**

For each of the statements below (each row is its own statement) and continued on the next several pages, **please indicate the likelihood that you would engage in the described activity or behavior** if you were to find yourself in that situation. Provide a rating from Extremely Unlikely to Extremely Likely for each statement below:

## How likely am I to engage in each activity or behavior listed below if I were to find myself in that situation?

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| Admitting that your tastes are different from those of a friend. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Going camping in the wilderness. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Betting a day's income at the horse races. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Investing 10% of your annual income in a moderate growth mutual fund. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Drinking heavily at a social function. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Taking some questionable deductions on your income tax return. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## How likely am I to engage in each activity or behavior listed below if I were to find myself in that situation?

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| Disagreeing with an authority figure on a major issue. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Betting a day's income at a high-stake poker game. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Having an affair with a married man/woman. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Passing off somebody else's work as a your own. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Going down a ski run that is a | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| beyond your ability. | | | | | | | |
| Investing 5% of your annual income in a very speculative stock. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## How likely am I to engage in each activity or behavior listed below if I were to find myself in that situation?

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| Going whitewater rafting at high water in the spring. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Betting a day's income on the outcome of a sporting event. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Engaging in unprotected sex. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Revealing a friend's secret to someone else. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Driving a car without wearing a seat belt. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Investing 10% of your annual income in a new business venture. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## How likely am I to engage in each activity or behavior listed below if I were to find myself in that situation?

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| Taking a skydiving class. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Riding a motorcycle without a helmet. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| Choosing a career that you truly enjoy over a more secure one. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Speaking your mind about an unpopular issue in a meeting at work. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Sunbathing without sunscreen. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Bungee jumping off a tall bridge. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## How likely am I to engage in each activity or behavior listed below if I were to find myself in that situation?

| | **Extremely Unlikely** | Moderately Unlikely | Somewhat Unlikely | **Not Sure** | Somewhat Likely | Moderately Likely | **Extremely Likely** |
|---|---|---|---|---|---|---|---|
| Piloting a small plane. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Walking home alone at night in an unsafe area of town. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Moving to a city far away from your extended family. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Starting a new career in your mid-thirties. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Leaving your young children alone at home while running an errand. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Not returning a wallet you found that contains $200. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**CRT-6**

Now, please answer the questions on the next set of pages for us.

A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?
(please indicate your numeric answer **in cents**)

If it takes 5 minutes for 5 machines to make 5 widgets, how long would it take for 100 machines to make 100 widgets?
(please indicate your numeric answer **in minutes)**

If 3 elves can wrap 3 toys in 1 hour, how many elves are needed to wrap 6 toys in 2 hours?
(please give your numeric answer in **# of elves**)

Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are there in the class?
(please give your numeric answer in **# of students)**

In an athletics team, tall members are **three** times more likely to win a medal than short members. This year the team has won 60 medals so far. How many of these have been won by short athletes?
(please give your numeric answer in **# of medals**)

In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover **half** of the lake?
(please indicate your numeric answer **in days**)

**CTDS block**

Please **carefully consider and answer each of the following questions** on the 5-point scale given.

(1=Strongly disagree, 5=Strongly agree)

I usually try to think about the bigger picture during a discussion.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

I often use new ideas to shape (modify) the way I do things.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

I use more than one source to find out information for myself.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

I am often on the lookout for new ideas.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

I sometimes find a good argument that challenges some of my firmly held beliefs.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

It's important to understand other people's viewpoint on an issue.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

It's important to justify the choices I make.

- ○ **1--Strongly DISAGREE**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly AGREE**

I often re-evaluate my experiences so that I can learn from them.

- ○ **1--Strongly DISAGREE**

- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly <u>AGREE</u>**

I usually check the credibility of the source of information before making judgments.

- ○ **1--Strongly <u>DISAGREE</u>**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly <u>AGREE</u>**

I usually think about the wider implications of a decision before taking action.

- ○ **1--Strongly <u>DISAGREE</u>**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly <u>AGREE</u>**

I often think about my actions to see whether I could improve them.

- ○ **1--Strongly <u>DISAGREE</u>**
- ○ **2**
- ○ **3--Neither agree nor disagree**
- ○ **4**
- ○ **5--Strongly <u>AGREE</u>**

**Random treatment order assignment**

Remember, a required part of this study is that you must complete the Part 1 and Part 2 decision task surveys. **One of them will have to be completed** ***<u>between 3pm and 5pm in the afternoon</u>*** (we'll call this the DAY treatment), and **the other will have to**

**be completed *between the very early morning hours of 3am and 5am*** (we'll call this as the NIGHT treatment).

You will complete these Parts 1 & 2 decision task surveys 2-3 days apart during this following week. If your first (Part 1) survey is assigned to be completed between 3pm-5pm, the the second (Part 2) survey will be assigned to be completed between 3am-5am: the **DAY-NIGHT** order. Or, you may be assigned to complete the Part 1 survey between 3am-5am and the Part survey between 3pm-5pm: the **NIGHT-DAY** order. You will be randomly assigned the DAY-NIGHT or NIGHT-DAY order for the two decision task surveys on the next page. The specific possibilities for your random treatment order are:

- **IF ASSIGNED THE DAY-NIGHT** order
  - the Part 1 decision task survey must be completed **between 3pm-5pm (during the day) on Monday.**
  - the Part 2 decision task survey must be completed between **3am-5am (during the night/early morning) on Wednesday**.
- **IF ASSIGNED THE NIGHT-DAY** order
  - the Part 1 decision task survey must be completed **between 3am-5am (during the night/early morning) on Monday.**
  - the Part 2 decision task survey must be completed between **3pm-5pm (during the day) on Wednesday**.

Please **advance to the next page to see the randomly assigned order you have been given** to complete the Part 1 and Part 2 studies.

# WAIT!

# PLEASE DO **NOT** ADVANCE TO THE NEXT PAGE UNTIL

# DIRECTED BY THE EXPERIMENTER

# (we want to make sure everyone is at the same point when random treatment order assignments are made)

**DAY NIGHT order**
**[ONLY ONE OF THESE RANDOM ORDER MESSAGES APPEARS TO PARTICIPANT]**

Y***ou have been randomly assigned the DAY-NIGHT treatment order*** (you may want to take a picture of this screen):

- **For the DAY-NIGHT** order:
  - the Part 1 decision task survey must be completed **between 3pm-5pm (during the day) on Monday.**
  - the Part 2 decision task survey must be completed between **3am-5am (during the early morning) on Wednesday**.

The survey link for each decision task survey will be sent to you within 24 hours of when you must complete the study, but you must not complete the study (do not even start it) until the designated time window as assigned above. **The time stamps on your survey will be used to verify whether you comply with this study requirement.**

**Please make a note and reminder for yourself** so that you will not forget that you will have these two decision task surveys coming up to complete this week, and

please make sure that you do no block my email (I'll be sending the survey links and any reminders to you).

**NIGHT DAY order**

## *You have been randomly assigned the NIGHT-DAY treatment order* (you may want to take a picture of this screen):

- **For the NIGHT-DAY** order:
-
    - the Part 1 decision task survey must be completed **between 3am-5am (during the early morning) on Monday.**
    - the Part 2 decision task survey must be completed between **3pm-5pm (during the day) on Wednesday**.

The survey link for each decision task survey will be sent to you within 24 hours of when you must complete the study, but you must not complete the study (do not even start it) until the designated time window as assigned above. **The time stamps on your survey will be used to verify whether you comply with this study requirement.**

**Please make a note and reminder for yourself** so that you will not forget that you will have these two decision task surveys coming up to complete this week, and please make sure that you do no block my email (I'll be sending the survey links and any reminders to you)..

**Commitment Device (text box)**

To help ensure that you will complete our study (both parts), please briefly **tell us your specific plan in the text box below** of how you will make sure to complete each part of the study (both the NIGHT and DAY condition) without forgetting. As noted, I will send you reminders via email, but I would like for you to put some thought into a specific plan so that you will complete each decision task survey as intended (this helps establish your commitment to the study conditions also). Thank you.

**SLEEP WATCH AND SLEEP DIARIES**

# TIME TO BRIEFLY GO OVER THE SLEEP WATCH AND SLEEP DIARIES AT YOUR STATION

**Final Items**

Thank you for your enrollment in this study. This is the end of the Session 1 lab visit, but please remember the following items since you will not return to the lab again until next week (same day/time as today).

- **Wear your sleep watch every day/night 24/7** (except for the few exceptional instances the experimenter mentioned to you). Remember to hit your "Event Marker" button on the sleep watch when you go to bed (intending to sleep) and when you wake up.
- **Remember to complete your simple sleep diary each day/night** (should only take a few minutes)
- **Do not forget that you will be completing two online surveys over the next week (at days/times randomly assigned as above)** and these must be completed during a specific 2-hour window of time (depending on the condition, either 3am-5am or 3pm-5pm). There will be payoffs you earn based on decisions

made in the tasks within those surveys that will be given to you next week when you return to the lab for our final session.

- **Remember that we will meet again in this lab next week**.  Please bring your completed sleep diary and come wearing your sleep watch (we'll remove during the session to turn those in).

# THIS IS THE MAIN ONLINE DECISION TASK SURVEY

**Start Block**

**Please input your experiment subject code** (e.g., ND64, DN9, etc), ***not*** *your name,* in the space below.

(should be 2 letters followed by 1-3 numbers.....no dashes or spaces)

**Self Report Sleep and Mood Block (3 questions)**

**Karolinska Sleepiness Scale**
Please mark the number that best corresponds to how sleepy you feel **right now**. You may mark any number, but mark only one number.

- ○ 1. Extremely alert
- ○ 2.
- ○ 3. Alert
- ○ 4.
- ○ 5. Neither alert nor sleepy
- ○ 6.
- ○ 7. Sleepy--but no difficulty remaining awake
- ○ 8.
- ○ 9. Extremely sleepy--fighting sleep

Please indicate the extent to which you feel each emotion ***right now.***

| | Very Slightly or Not at All | A Little | Moderately | Quite a Bit | Extremely |
|---|---|---|---|---|---|
| Attentive | ○ | ○ | ○ | ○ | ○ |
| Upset | ○ | ○ | ○ | ○ | ○ |
| Alert | ○ | ○ | ○ | ○ | ○ |
| Irritable | ○ | ○ | ○ | ○ | ○ |
| Determined | ○ | ○ | ○ | ○ | ○ |
| Nervous | ○ | ○ | ○ | ○ | ○ |

**Subject Code**

Before you start, please switch off phone/ e-mail/ music so that you can focus on this study.  Thank you!

Please double check your subject code below

${e://Field/PROLIFIC_PID}

**Self Report Sleep Block (1 question)**

Please mark the number that best corresponds to how sleepy you feel **right now**. You may mark any number, but mark only one number.

- ○ 1. Extremely alert
- ○ 2.
- ○ 3. Alert
- ○ 4.
- ○ 5. Neither alert nor sleepy
- ○ 6.
- ○ 7. Sleepy--but no difficulty remaining awake
- ○ 8.
- ○ 9. Extremely sleepy--fighting sleep

**Die Roll Coin Flip pay either/or**

You are about to complete two tasks: the **Coin Flip Task** and the **Die Roll Task,** which will each be described separately in the next pages.
For your payoffs, we will randomly select *either* the Coin Flip Task or the Die Roll task for your payoff today.  There is an equally likely chance that either task will count for payoff today, so please take each decision seriously.

You will not be paid or informed of your payoff from today's tasks until the end of the study when you receive all your study compensation.

Please advance to the next page for the first of these two initial tasks

**Die Roll**

**DIE ROLL TASK**

Please imagine (in your head) that you roll a 6-sided die, with sides numbered as usual (1,2,3,4,5,6). **Now think of the outcome of the die roll that you just imagined.** The next page will describe how payoffs are determined in this task.

Your payoff in this task will depend on the outcome of the die roll that you report. The payoffs are as follows, so please review these carefully:

- Die roll of "1" = payoff of $1
- Die roll of "2" = payoff of $2
- Die roll of "3" = payoff of $3
- Die roll of "4" = payoff of $4
- Die roll of "5" = payoff of $5
- Die roll of "6" = payoff of $0 (zero)

**Please report the outcome of your imagined die roll below.**

- ○ **1**
- ○ **2**
- ○ **3**
- ○ **4**
- ○ **5**
- ○ **6**

**Coin Flip 10**

**COIN FLIP TASK**

In this task, you are randomly matched with another participant in this experiment. This participant will remain anonymous to you (and you to them) and you will never be told of this other participant's identity. The two matched participants for this task will be referred to as Participant A and Participant B.

There are a total of $10 payoffs to be given out in this task between Participant A and B, but only Participant A does anything in the task.
Specifically, Participant A will be asked to report on a series of coin flips that will determine Participant A's payoff (from $0-$10) from this task. Participant B will receive whatever is left from the $10 amount after Participant A's payoff is determined. Thus, Participant B may also receive anywhere from $0 to $10 from this task.

**You will complete this task in the role of Player A**, although only after the experiment we will randomly match participants, randomly assign which player in each pair is Player A and which is Player B, and then assign payoffs based on the Player A outcome reported on the next screen. So, in the end you may end up being randomly assigned as the Player B in this task (matched with another participant as Player A). Either way, neither you nor the other participant you are randomly matched to will ever know each others' identity. There is an equally likely chance that you may end up as the Player A or Player B in your pairing for determining payoffs, so please take your role as Player A in this task seriously.

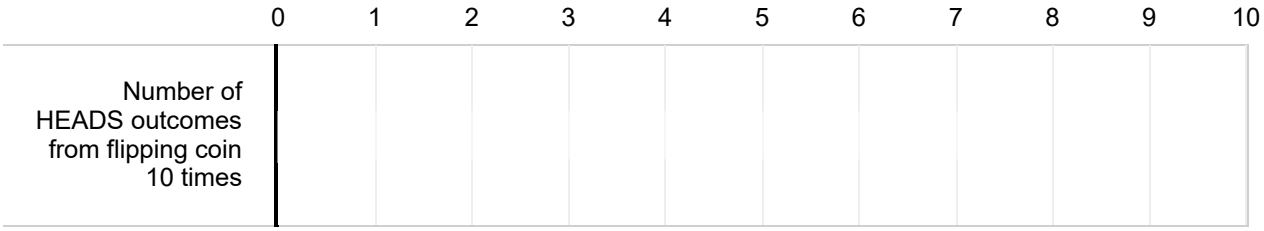
As Player A, *before advancing to the next page*, first please get/find a coin that has a heads and tails sides so that you can flip the coin once you advance to the next page. Once you have your coin, then click below to advance to the page that describes specifically how the outcome of your coin flips will determine your payoff as Player A (and this also determines Player B's payoff) but ***please do not flip the coin before advancing to the next page***.

○ I have read the instructions above, I have a quarter/coin, and I am ready to start flipping once I click this button

***Now, please take your coin and Flip the coin 10 times and record the total number of HEADS you flip. Please only perform the 10 coin flips once. Your payoff for this task will be $1.00 for each HEADS outcome you report from these coin flips. Your randomly assigned counterpart, Player B, will receive $10 minus each HEADS outcome that you report.***

***For example, if you flip HEADS 3 times, your payoff as Player A will be $3.00 and Player B's payoff will be $7.00. Similarly, if you flip HEADS 8 times your payoff as Player A will be $8.00 and Player B's payoff will be $2.00, etc.***

***Please tell us below how many times you flipped HEADS out of your 10 total coin flips.***




**Trolley Block (with graphics)**

The next set of pages asks about the choice you would make in a dilemma. There are no correct or incorrect answers, but we want you to please tell us what your preferred choice is in each situation. You cannot avoid this dilemma, and so you have to make a choice in each instance.

In this task, **every participant in the experiment is given a $5 payoff.** The payoffs of some of the other participants in today's experiment are placed on a train track. This is represented by the "$$" above an individual in the graphic for each scenario.

In each scenario of the dilemma, **imagine a trolley or train car that is out of control and heading down the main train track where it will run over and destroy the $5 payoffs of however many individuals' whose payoffs are on that track**. In this case, these participants will lose their $5 payoff for this task.

**The decision maker has the option to take action and save the payoff of those participants** by pulling a lever that will divert the train to a side track. **Unfortunately, the payoffs of any participant that happens to be on the side track will then be destroyed.**

**The decision maker's $5 payoff is not affected at all by the choice he/she makes this task.** You will make a choice as the decision maker in this task.

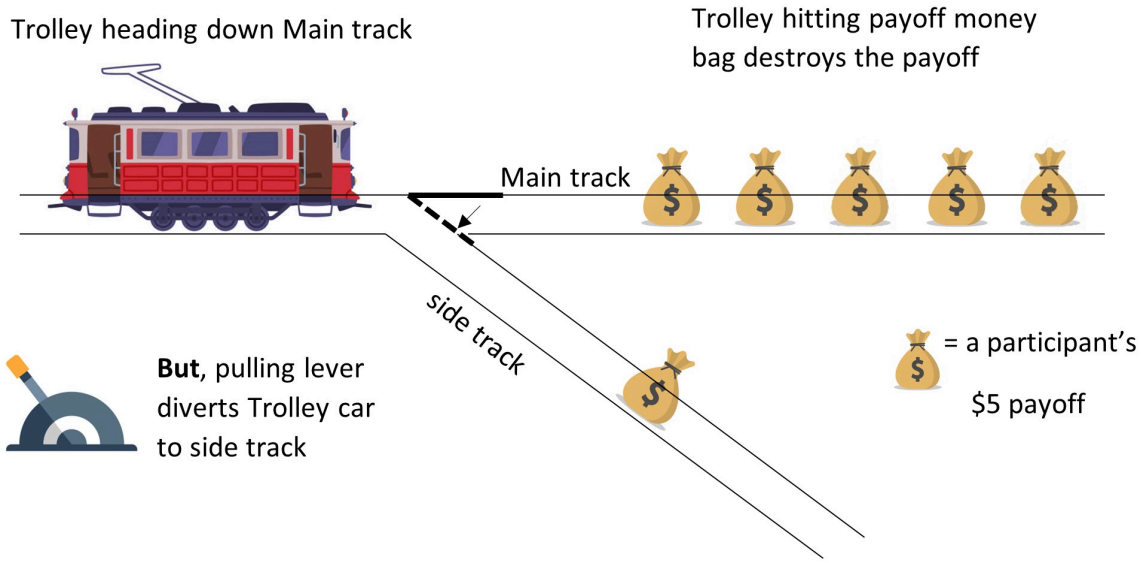
After all decisions have been made by all participants, we will then **randomly select one participant from the current cohort to be the decision maker** and **others (however many needed) will be randomly selected to have their $5 payoffs placed on the main track or side track** of **one randomly-chosen scenario** from this task the scenario that **will count for determining payoffs**. Of course, there may be more participants in the current cohort than are needed for the randomly chosen

scenario to fill the role of decision maker and "others" with payoff at stake, but anyone in the current cohort has an equally likely chance to have his/her decision-maker choice count (and, if *not* chosen as the decision maker, an equally likely chance that his/her payoff will be placed on a track in the chosen scenario). The decision maker's payoff is not at risk, nor are the payoffs of other participants not randomly drawn to have their payoff placed on the track of the decision scenario.

Based on the choice made by the randomly chosen decision maker, any payoffs that would be destroyed in the dilemma based on that choice will be destroyed--that is, that participant will not receive a $5 payoff from this task. All other participants in the current cohort will receive their $5 payoff from this task (to be revealed and given at the end of Session 2).

The different scenarios vary the number of individuals' payoffs on the main track versus the side track, and the assumption is that you know exactly how many are on each track (as shown in the image for that scenario) when you must make your decision.

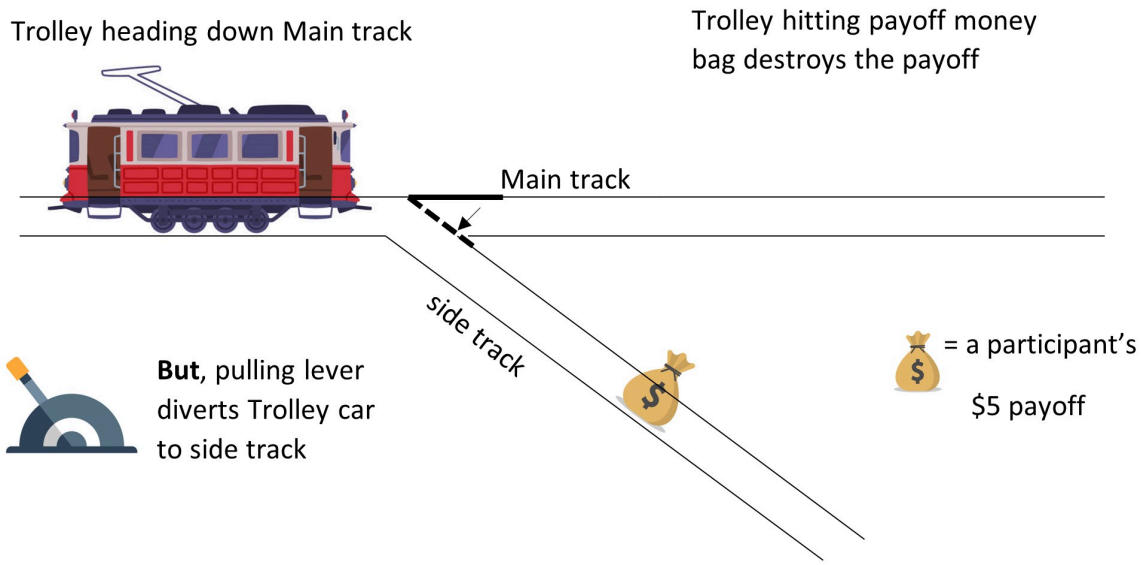
Suppose **the payoffs of 5 participants are on the main train track**. These payoffs will be run over and destroyed by the train *if you do nothing* (i.e., these participants will not receive a payoff from this task). **The payoff of 1 (different) participant is on the side track**, and his/her payoff will be run over and destroyed if you if you pull the lever to divert the train.




***What do you choose to do?***

- ○ **Do nothing** (train continues on main track)
- ○ **Pull the lever** (train is diverted to the side track)

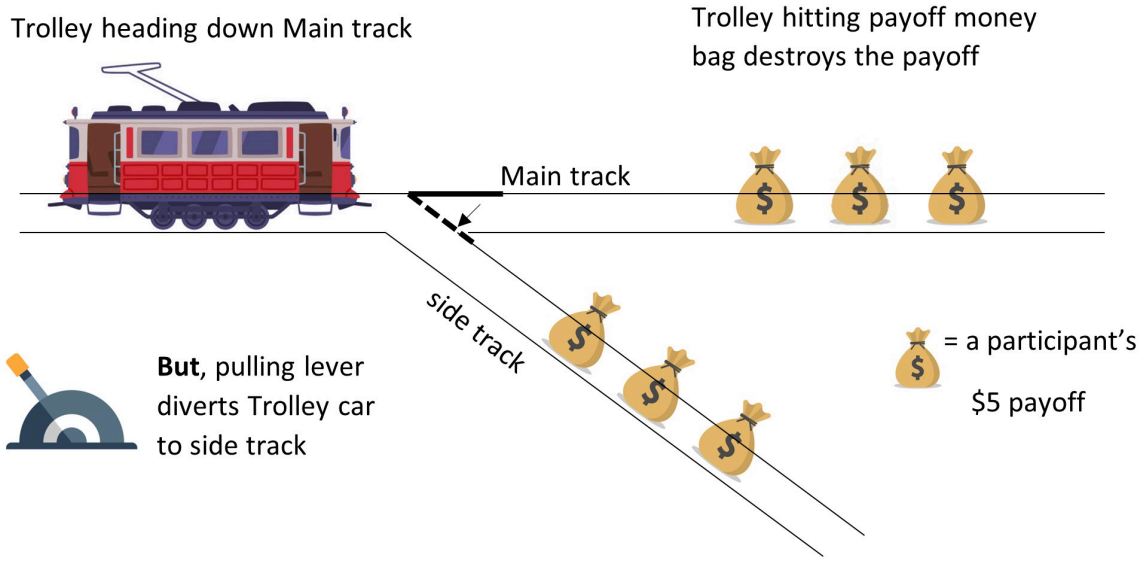
Suppose **nobody's payoff is on the main train track**. Therefore, nobody's payoffs will be run over and destroyed by the train *if you do nothing*. **The payoff of 1 participant is on the side track**, and his/her payoff will be run over and destroyed if you if you pull the lever to divert the train.




***What do you choose to do?***

- ○ **Do nothing** (train continues on main track)
- ○ **Pull the lever** (train is diverted to the side track)

Suppose **the payoffs of 3 participants are on the main train track**. These payoffs will be run over and destroyed by the train *if you do nothing* (i.e., these participants will not receive a payoff from this task). **The payoffs of 3 (different) participants are on the side track**, and their payoffs will be run over and destroyed if you if you pull the lever to divert the train.

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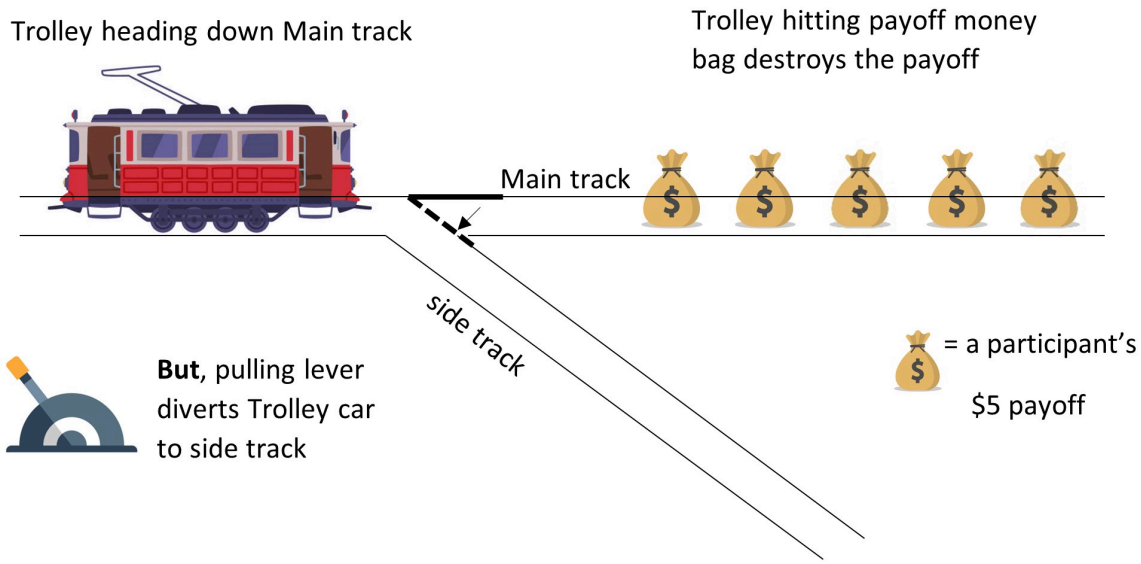


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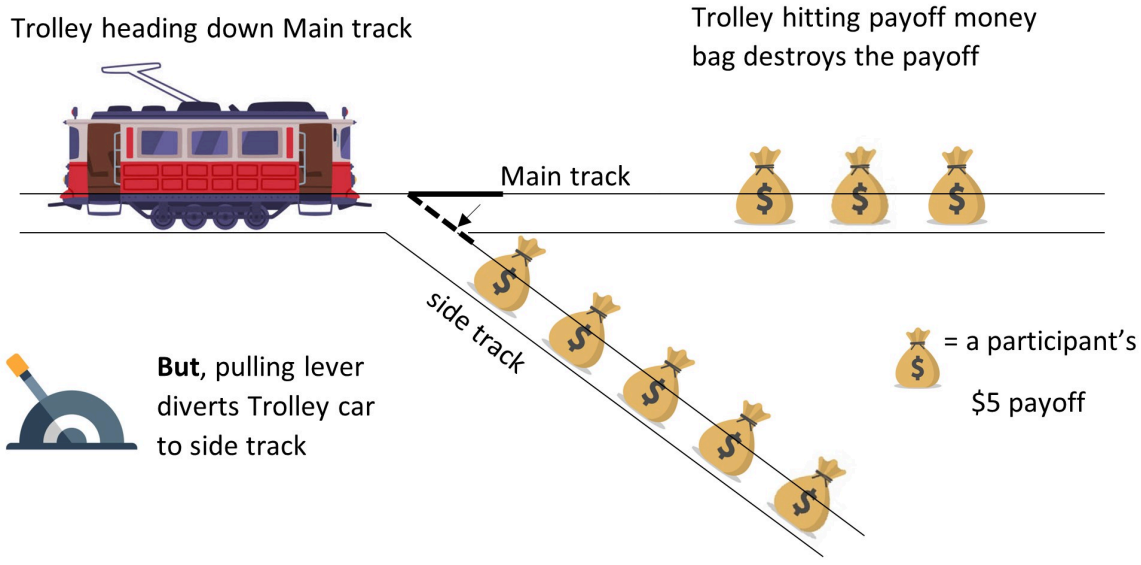


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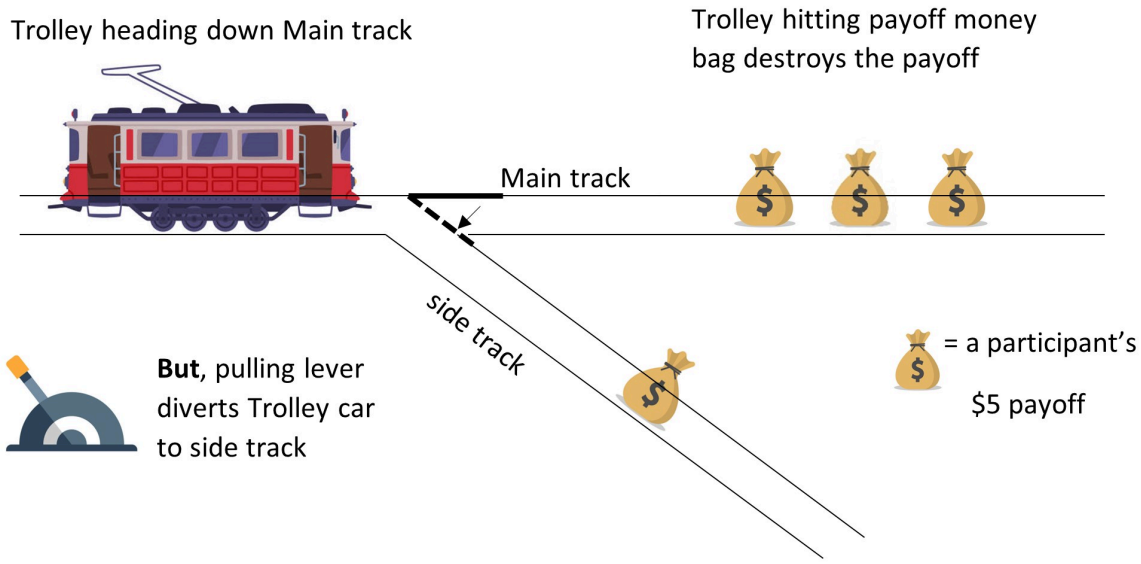


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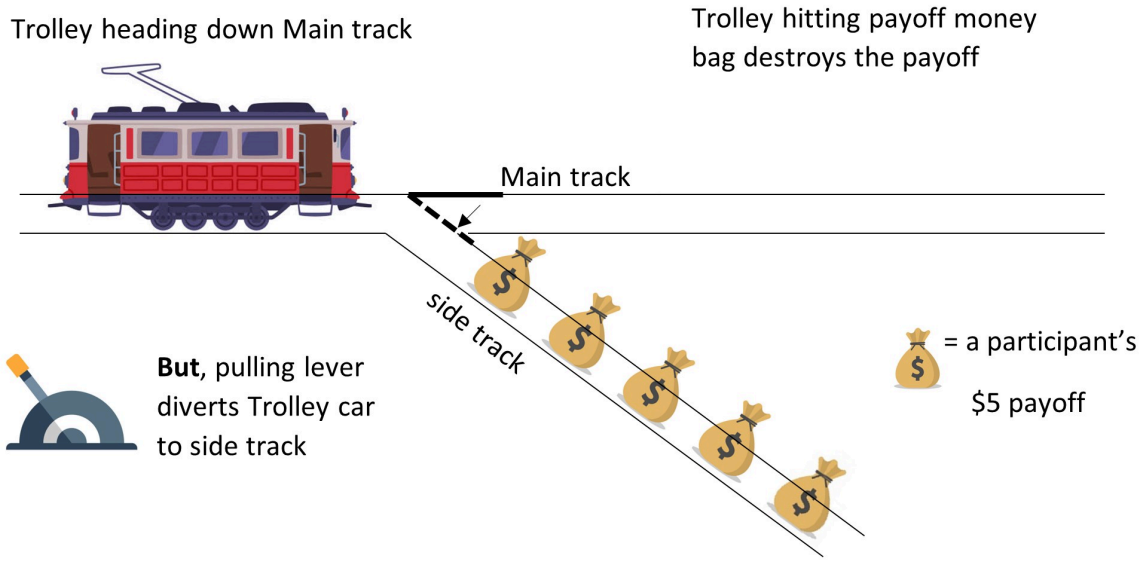


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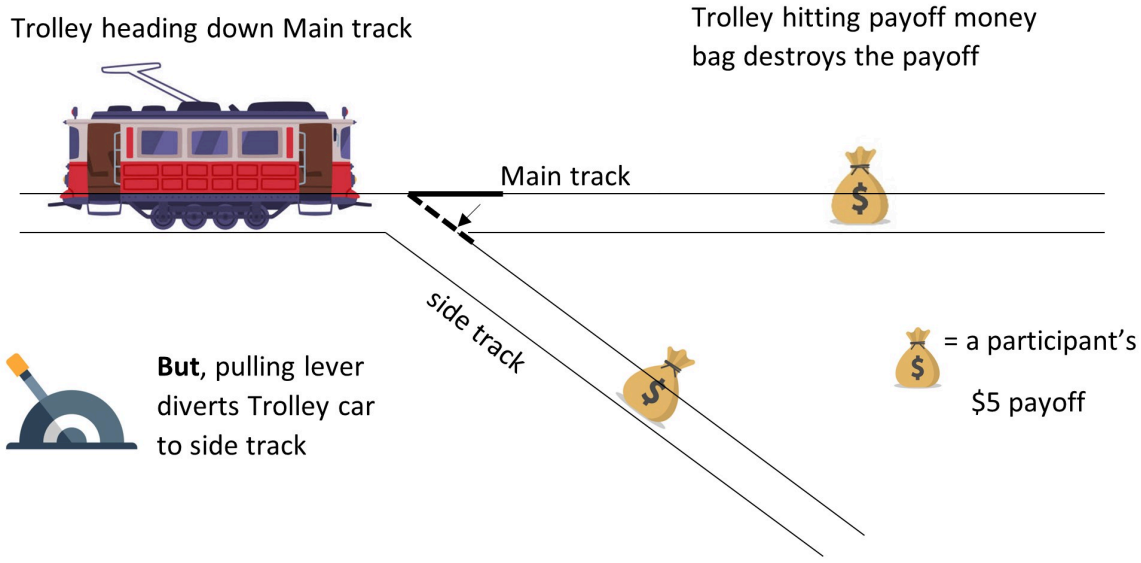


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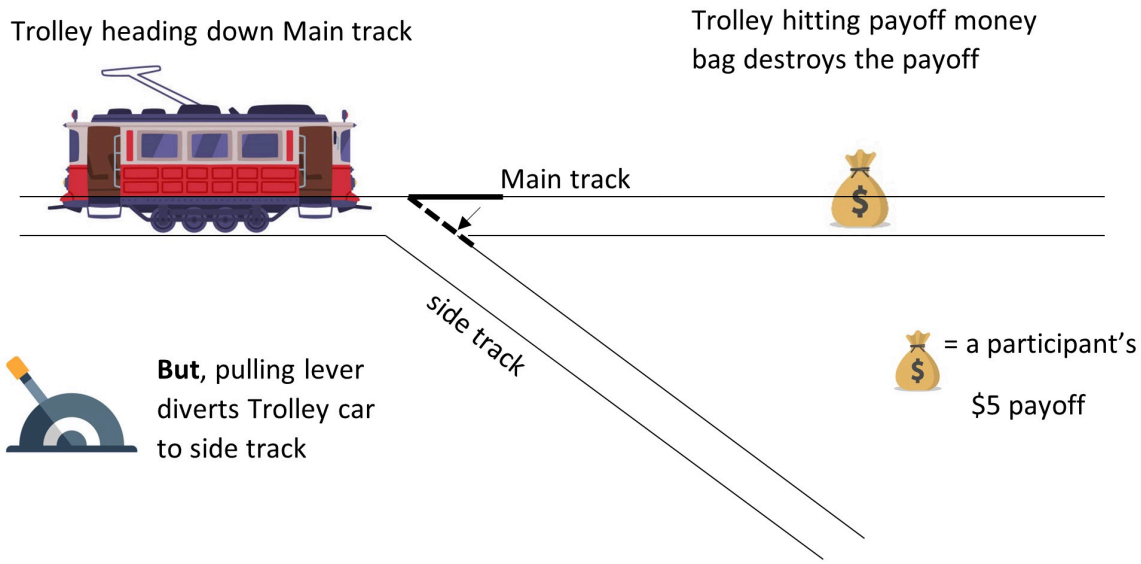


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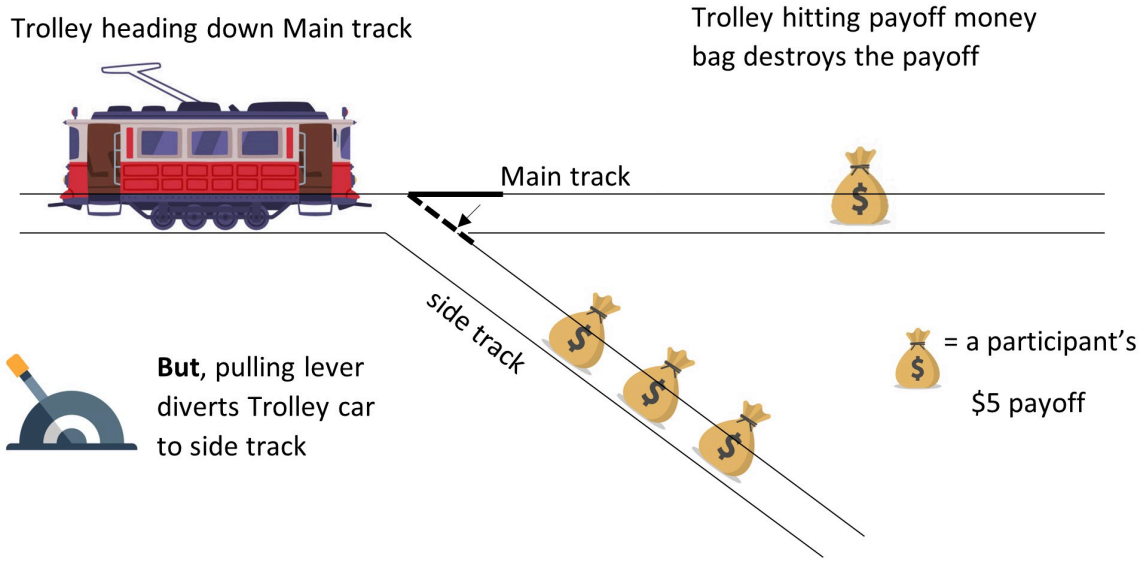


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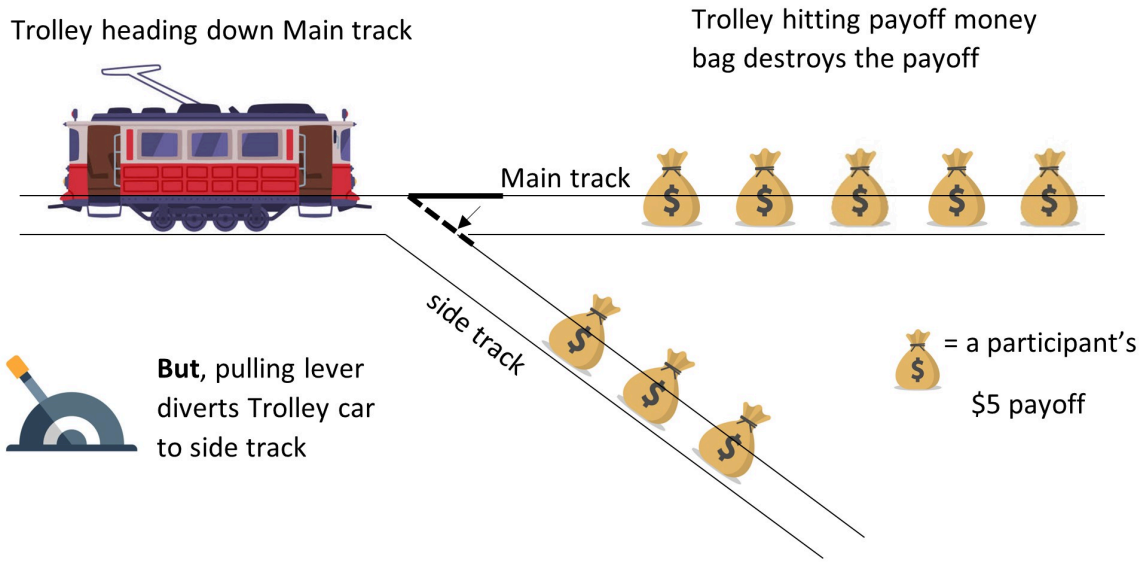


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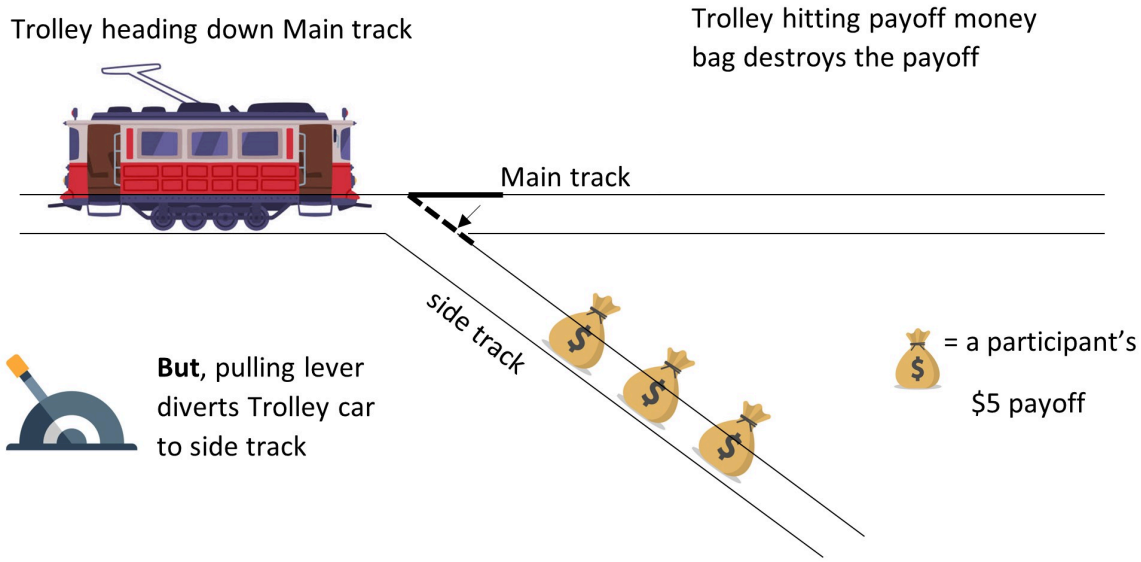


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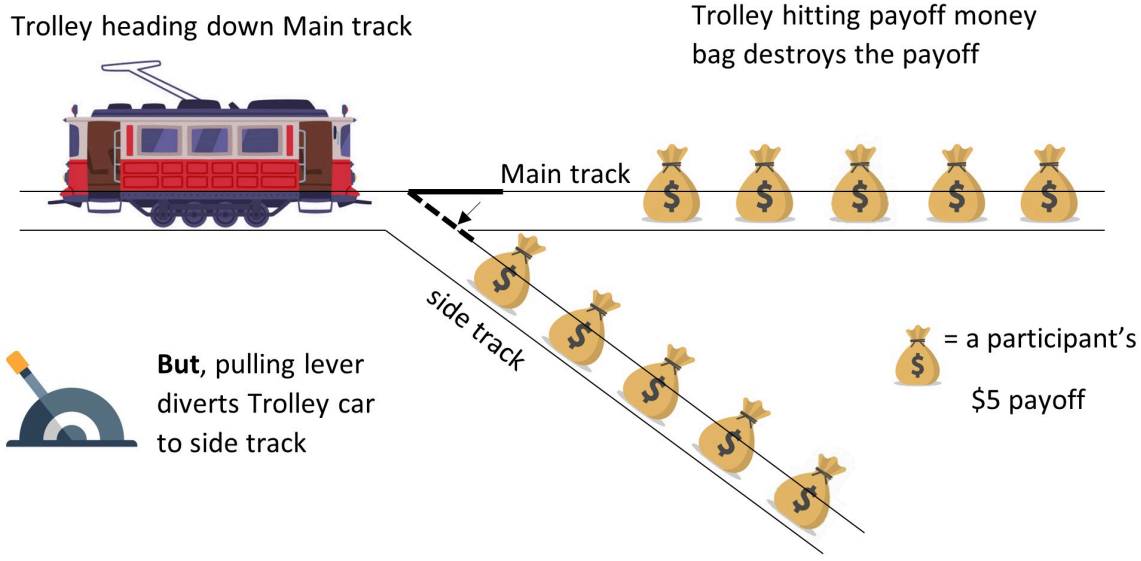


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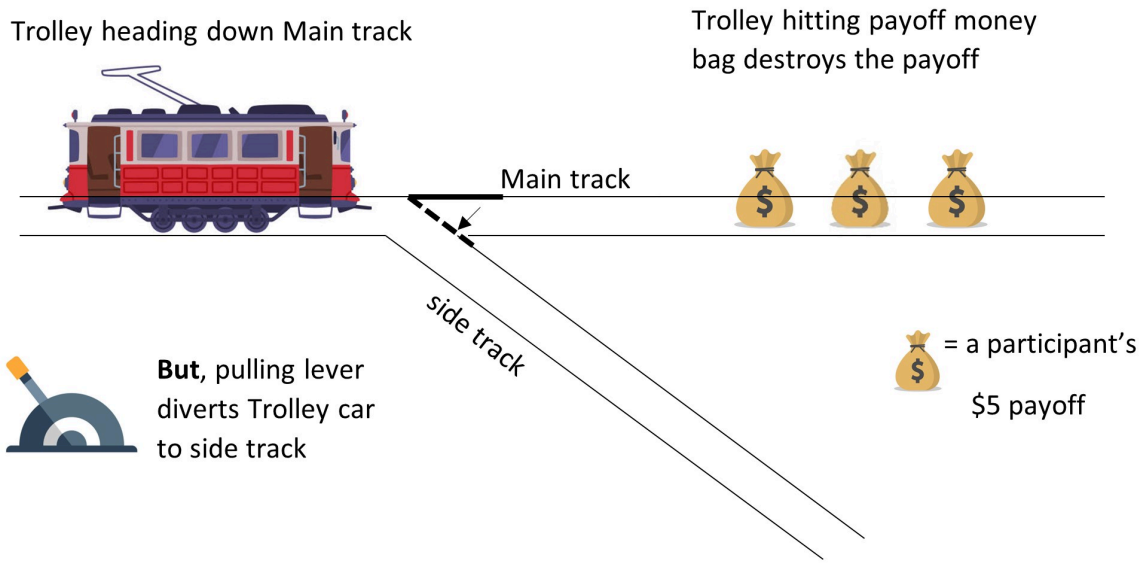


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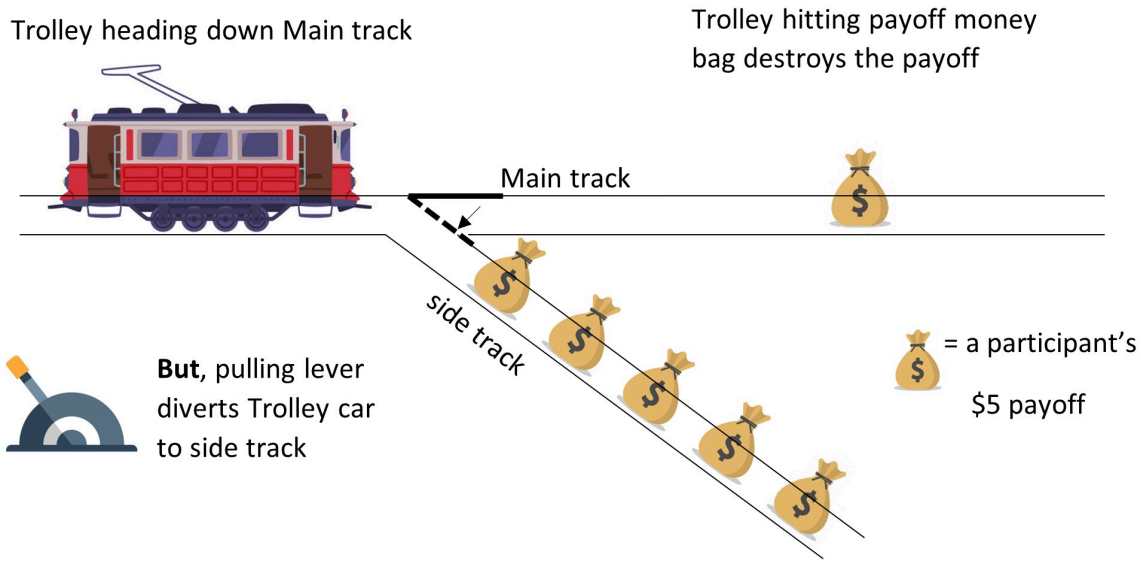


***What do you choose to do?***

- ○ **Do nothing** (train continues on main track)
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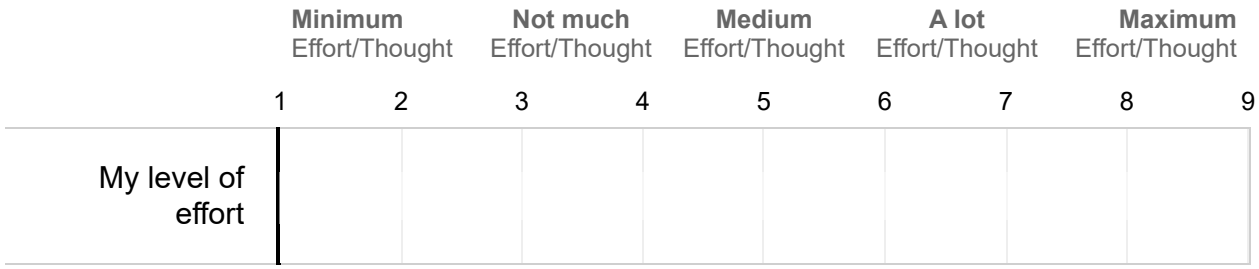
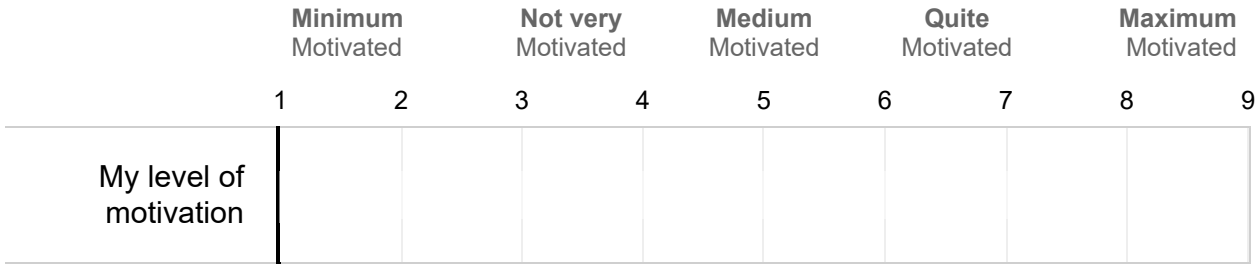
**Motivation and Interest (Trolley)**

On the scale below please indicate **how much effort/thought** you put into the multi-round task you just completed.




On the scale below please indicate **how motivated you were** in doing the multi-round task you just completed.




**AT THIS POINT, PARTICIPANTS ARE ADMINISTERED AN UNRELATED INFORMATION UPDATING TASK**