**PSYC573 Prospectus**

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***I will be working alone and plan on doing an oral presentation***

**Background**

Behavioral measures of risk-taking (BMRT) are game like tasks that claim to approximate an individual’s risk-taking propensity. In these games, participants are evaluated on the number of actions they choose to take without being penalized. For example, the number of times they choose to pump a balloon before it pops or number of gain cards they flip over before encountering a loss card. Generally, the more actions a participant takes the more risk seeking they are considered. However, not all participants will have an opportunity to engage in the number of actions they want to for each round because they could be penalized and have the round end early. For example, if they wanted to pump the balloon 15 times in a round but it popped after 8 pumps the number of pumps intended would not be recorded. Therefore, to provide a fairer comparison of BMRT, which already have low convergent validity with each other, I intend to use a Bayesian regression model with censoring to predict the number of actions participants would have taken on rounds in which they were penalized.

**Data Description**

Data from this study is sourced from two samples, one from Prolific (N = 270) and one from SONA (N = 280). Data is collected for the following BMRT, the Balloon Analogue Risk Task (BART), Cloudy Angling Risk Task (C-ART), and Sunny Angling Risk Task (S-ART). Each participant completed 10 trials of each BMRT presented in a random order along with measures of numeracy, open minded thinking, and self-reported risk-taking. All three BMRT had a maximum possible number of actions set to 31.

**Previous Study**

Zhou et. al (2021) conducted a very similar study comparing the BART, C-ART, and S-ART to each other. However, in this study, only trials in which the participants were not penalized was the data used for. The maximum number of actions was set to 39. The means and standard deviations reported in this study can be found in Table 1.

**Table 1**

*Means (Standard Deviations) from Previous Study*

|  |  |  |
| --- | --- | --- |
| Measure | Sample 1 | Sample 2 |
| BART | 11.46 (3.95) | 12.72 (4.41) |
| C-ART | 10.44 (3.04) | 10.17 (3.40) |
| S-ART | 12.59 (4.27) | 11.57 (4.34) |

**Description of Statistical Models**

The main Bayesian analysis in this paper will revolve around using the brm function from the *brms* package to create a regression to predict the number of actions participants would have taken on rounds they were penalized. This will then be compared using ANOVA and follow up t-tests, correlations with other measures in the study, and PCA to determine the shared variance among the BMRT.

**References**

Zhou, R., Myung, J. I., Mathews, C. A., & Pitt, M. A. (2021). Assessing the validity of three tasks of risk-taking propensity. *Journal of Behavioral Decision Making*, *34*(4), 555–567. <https://doi.org/10.1002/bdm.2229>