**2. Hypothesis** What's the main question being asked or hypothesis being tested in this study?

Q: To which extent the (in)separability of sequences in intertemporal choice can be explained by attentional mechanism?

We developed a discounted utility model that incorporates attentional mechanism, and derived the following hypotheses from the model:

(H1) The common sequence effect and mere token effect can be reversed when there is a large difference in delay between large later reward (LL) and small sooner reward (SS).

(H2) Increasing the reward for a specific future period enhances people’s sensitivity to changes in its reward.

**3. Dependent variable** Describe the key dependent variable(s) specifying how they will be measured.

Key dependent variables: The individuals’ choices between different sequences of rewards (sequences are compared in pair, so each choice is binary)

Measure: There are 35 choice questions in total, of which 28 questions require choices between sequences, 6 questions measure risk attitude, the left 1 is attention check question.

**4. Conditions** How many and which conditions will participants be assigned to?

We use a within-subjects design. Each participant will face the same choice questions.

To test H1, in some questions, participants have to choose between LL and SS (e.g. “receive £112 in 6 months” vs “receive £100 tomorrow”). In other questions, we insert a common reward into LL and SS (e.g. “receive £10 today and £112 in 6 months” vs “receive £10 today and £100 tomorrow”).

To test H2, participants have to choose between different sequences of equal length and equivalent total rewards (e.g. “receive £30 today and £50 in 3 months” vs “receive £20 today and £60 in 3 months”).

**5.** **Analyses** Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We will calculate and compare the average responses for each choice question. We will also compute the value of each option using our model, then obtain the choice probability of each option via a logistic function. The parameters of the model will be estimated with MLE. Moreover, we will compare the goodness-of-fit of our model with other models of time discounting: exponential, hyperbolic, quasi-hyperbolic (with and without a fixed delay cost), optimal-precision, costly-empathy. We also estimate an intertemporal tradeoff model and a decision-tree model on the sample.

**6. Outliers and Exclusions** Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Subjects will be excluded if they fail the attention check, or spend less than one minute on the entire survey.

**7. Sample Size** How many observations will be collected or what will determine sample size?

We will recruit 150 subjects (female: 50%) via Prolific. The recruitment will be completed when the number of submissions hits 150.

**8. Other** Anything else you would like to pre-register?

We term our model as “attentional discounted utility”. It assumes that, given a certain sequence of rewards, people tend to evaluate it by computing a weighted sum of utilities obtained from all periods within the sequence, with greater weights assigned to periods containing larger rewards.