

# Participant Information Sheet

School of Psychology

University of Leeds

## Study Title:

Determinants of Task Difficulty in Human Multi-Step Problem-Solving

**Short Title:** *Task Difficulty in Problem Solving*

*Ethical approval reference number:* PSYC-798

**Researcher:** Dr. George Gabriel (email: [cypherspacestudy@leeds.ac.uk](mailto:cypherspacestudy@leeds.ac.uk))

I am a researcher in the School of Psychology at the University of Leeds interested in how people learn new cognitive skills, including problem-solving skills.

My research follows the ethical guidelines set out by the British Psychological Society. Under these guidelines, it is important that you are fully informed of what the research involves and what you will be asked to do during the study. This document is designed to provide you with enough information to allow you to make an informed decision about whether to participate.

## **General Information**

**About the Study:** In this study, you will play a browser-based computer game involving a series of problem-solving puzzles.

**The Tasks:** In the main experiment task, you will be shown a string of letter-like symbols and a set of rules that can change some groups of symbols into other groups of symbols. In each trial, you will use the rules to transform an initial symbol string into a target symbol string in as few steps as possible.

You will also be asked to complete a short cognitive assessment task. The task will assess your short-term memory, through a simple game. Instructions for the task will be provided during the session.

**Sessions:** A single experiment session will contain 20 trials of the memory task and 18 trials of the main problem-solving task. Participants will have a maximum of 90 seconds to complete each problem-solving trial. The main task will therefore last at most 25 minutes, but participants may be able to complete the session in less time if they solve the puzzles more quickly.

The study consists of four individual sessions. The sessions must be completed with a gap of between 8 and 24 hours between sessions, and participants will be asked to return to the task later if they try to begin a new session too early.

**Additional Data Collection:** Participants' existing demographic information will be collected from Prolific, including age, sex, and education level data. Participants' current operating system language, timezone, approximate location, and device type will also be collected automatically based on browser or device settings.

### **Payment**

Participants will be paid £3.50 for each completed session, plus a bonus payment of £6.00 for completion of the final (fourth) session. This gives a total payment of up to £20 for approximately 2 hours of participation.

### **Qualifying Requirements**

To participate in this study you must be at least 18 years old. The content of the game is suitable for all adults and children of age 3 years and above, under the PEGI content rating guidelines (<https://pegi.info>).

### **Confidentiality**

All participants in this study will be anonymous. You will only be identifiable through your Prolific ID. Anonymous experiment data (with Prolific IDs removed) will be shared publicly in full through open-access repositories for reuse by other researchers.

### **Right to Withdraw**

You are free to withdraw from participating in a session of the study at any time during or before that session. No special action is required to withdraw: you may simply choose not to begin the session, or close the browser tab containing the game task. Your partial data for incomplete sessions will be retained for analysis. If you would like your data to be deleted, please contact the experimenter via the email address provided above. Your data can be deleted at any time before you complete the final session. Data cannot be deleted after completion of the final session.

If you have any further questions, please get in touch.