STUDYING THE HUMAN MIND USING ONLINE GAMES

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OUR APPROACH

- **Online games**
  The far-reaching web of the internet allows us to collect a large, rich data set by making online games out of cognitive tasks.

- **Radical Randomization (RR)** (Baribault et al., 2018)
  Traditional laboratory experiments usually have generalizability concerns because it is easy for them to see effects that simply land in a few sweet spots among a vast ocean of potential variables.

  The RR approach investigates the variables that are pertinent to the hypothesis as well as those that seem less relevant.

  A variety of those variables get randomized to explore more of the variable ocean and avoid coincidental sweet spots.

GAME 1: GRAVE MISTAKES

**GOAL:** Study working memory through the N-Back Task. (Kirkner, 1958)

- **What is working memory?**
  A limited storage of short-term information to be processed and manipulated.

  This project focuses on visual-spatial working memory, which contains information about what you see and visualize, such as shapes, colors, and locations.

  We use working memory in many aspects of everyday life.

    For example, when you...

- **What is the N-Back task?**
  Presented with a series of stimuli, like letters or pictures, the participant must determine whether the stimuli they are currently seeing is the same as the stimulus they have seen n stimuli ago.

  Example 2-back task: \[ 	ext{FKFLRKR} \]

**PARTY MODE**

- **Join a room through a code**
- **Compete in a series of games**
- **Earn scores to rank high**

  Flexibility for radical randomization:
  Traditionally, games get more difficult as a player acquires more experience. In party mode, players are competing against each other, training up to select random levels every time a group plays.

**GAME 2: RAINBOW RUN**

**GOAL:** Study the Motor Sequence Learning through the Serial Reaction Time Task.

- **What is Motor Sequence Learning?**
  The process by which a sequence of movements comes to be performed faster and more accurately than before.

  This happens commonly in our daily life.

    For example, when you learn to...

- **What is a Serial Reaction Time (SRT) Task?**
  In a SRT task, participants are asked to repeatedly respond to a fixed set of stimuli.

  Faster reaction time suggests that the learning takes place.

 尼斯奈 & 布勒梅尔 (1984)

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**Gamification**

- **Task:** Run through a maze of colored tiles, where each color has a unique shape.

  **Gameplay:** Tap on the next tile appears. The tiles behind collapse in an increasing speed to urge the player to go as quickly as possible.

  **Variables**

  - color of the tiles
  - shape of the tiles
  - starting direction
  - number of tiles in a color sequence
  - number of colors
  - complexity of the shape (number of turns)

**TRY IT OUT WITH YOUR FRIENDS:**

www.thebraingamelab.org

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