

Predicting Alcohol Use Disorder Through Games: Alcohol Use and Behavior Phenotyping Test (AUBPT)

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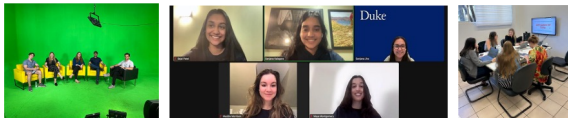
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Brain & Society

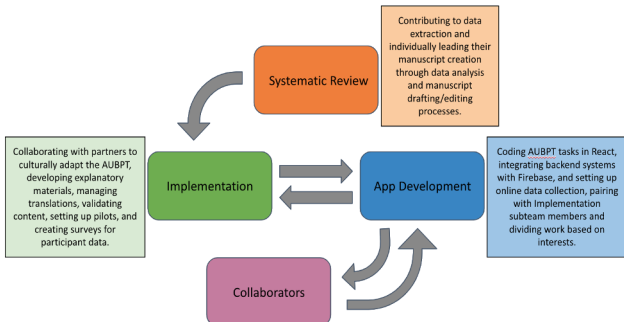


Background

- Alcohol Use Disorders (AUD) are complex and affected by genetics, psychology, and socio-environmental factors.
- Traditional AUD assessments, which mainly use self-reports, struggle with accuracy and are not always suitable across different cultures.
- AUBPT is a computerized test with gamified tasks that assesses psychological traits linked to alcohol use.
- Designed to work across various cultures, the AUBPT aims to enhance our global understanding and treatment of alcohol use and disorders.
- Team members:



Team Structure



RDoC Framework

RDoC Domains: reflect contemporary knowledge about major systems of emotion, cognition, motivation, and social behavior

Positive Valence Systems:

Responsible for responses to **positive motivational situations**/contexts, such as reward seeking, consummatory behavior, and **reward learning**

Cognitive Systems:

Responsible for various cognitive processes like **declarative memory**

Constructs:

Behavioral elements, processes, mechanisms, and responses that comprise different aspects of the overall range of functions

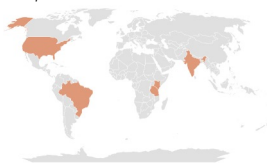
Delay Discounting

Balloon Analogue

Stop Signal

Methods

Populations:



Data collection procedures for Pilot Study:

Patients screened/enrolled/consented	AUDIT, PHQ-9, GAD-7, AUD DSM 5, WEMWBS, PSS, DRIinC, AUBPT,	Data stored on RedCAP and DukeBox
Healthcare providers screened/enrolled/consented	In-depth interview	Data stored on RedCAP and DukeBox

AUBPT App Tasks

Delay Discounting: Instructions

Money Selection Task

In this task, your goal on every trial is to choose between two hypothetical cash rewards.

For example:

Which would you prefer?

\$500 NOW OR \$1000 LATER

If you prefer the reward on the left side of the screen, press on the left side of the screen near the reward; if you prefer the reward on the right, press on the right side of the screen near the reward. In between trials, there will be a brief pause with a "0" sign.

Remember that the rewards are hypothetical. You will not receive any of the chosen rewards for the task; you need to select the value that you would pick if given these choices in real life.

Delay Discounting: RDoC Positive Valence Systems

Which would you prefer?

\$1000 in 1 DAY OR \$500 NOW

Balloon Analogue: Instructions

Balloon Analogue Risk Task

In this task, your goal is to win as much money as possible!

You earn money by simply pumping a balloon. Every balloon pump earns you money.

In every trial, you need to indicate the number of times you want to pump the balloon using the automatic slider. There will be 30 trials; so you will pump 30 balloons.

Large balloons can result in winning hypothetical money. However, if a balloon pops, you will not win any reward for that trial. All such trial results will influence your total game reward.

Balloon Analogue Risk Task: RDoC Cognitive Systems

Pump the Balloon!

Accumulated Pump: 0
Money for Trial: \$0
Total Money: \$0

Pumps: 0

Start Trial Start Trial

Stop Signal: Instructions

Stop Signal Task

In this task, you will see a green arrow in the center of the screen. Your job is to indicate which direction the arrow is pointing.

If the green arrow points to the left, then press the left arrow button; if the green arrow points to the right, then press the right arrow button. You will have 1 second to select which direction the green arrow is pointing.

Stop Signal: RDoC Cognitive Systems

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Next Steps

- Conduct AUBPT Pilot in Tanzania, Kenya, and India
- Complete Pilot Study data collection in Brazil
- Begin crowd source data collection (Mturk and Prolific)
- Synthesize and analyze data from Systematic Review
- Apply for NIH grant for cross cultural implementation of AUBPT
- Create an AI to model individual patients' performance on AUBPT and thereby identify their alcohol use phenotypes