

Screening for Alcohol Use Disorder through Games: Alcohol Use Behavioral Phenotyping Test (AUBPT)

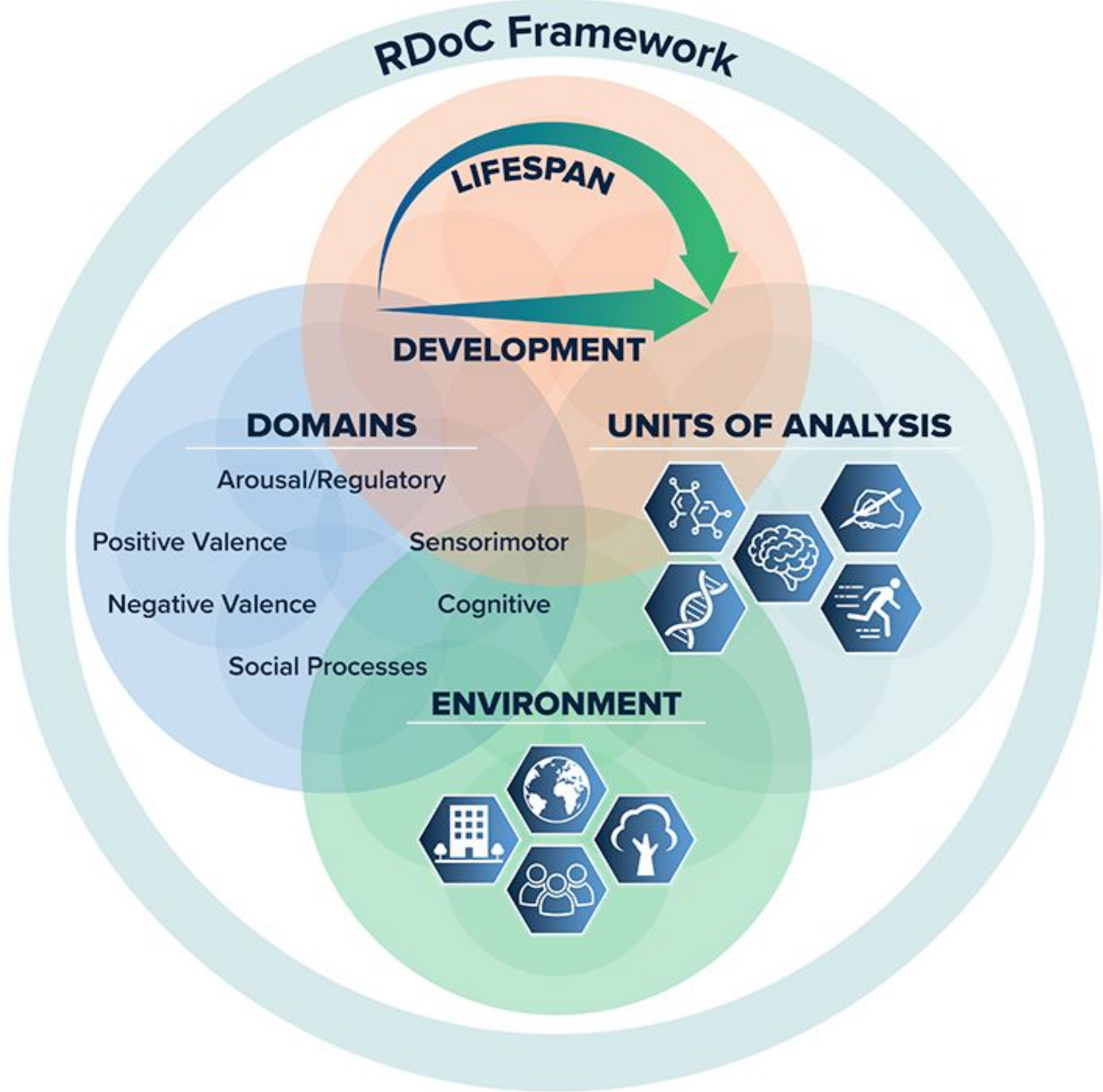
Background

- Alcohol Use Disorder (AUD) is a global health concern, affecting nearly 400 million individuals worldwide
- Tools used for AUD screening are developed in high-income countries so culturally, psychometric, and clinically validated tools are needed for low-setting resource settings both in and outside the US.
- The Alcohol Use Behavioral Phenotyping Test (AUBPT) uses RDoC to create a culturally adaptive computerized test with gamified tasks that assesses psychological traits linked to alcohol use.

Aims

1. To develop, adapt and test feasibility of AUBPT in culturally and lingually different settings through content validation and pilot data collection.
2. To psychometrically validate AUBPT task-based paradigms for the assessment of behaviors with implications for alcohol use and addiction.
3. To test the clinical validity and utility of AUBPT with existing mental health and alcohol use clinical scales across different clinical settings.

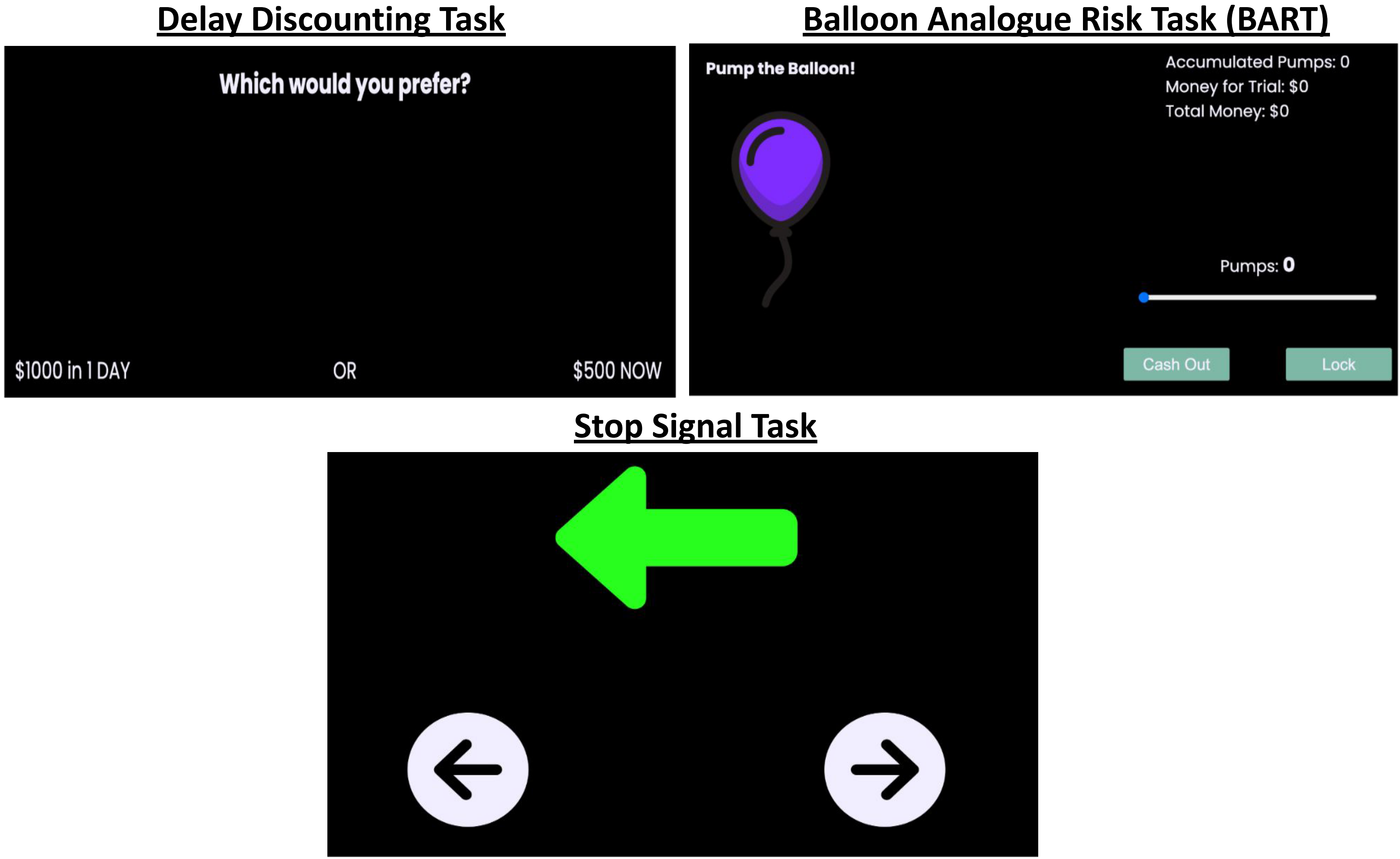
Conceptual Framework



- Organizes transdiagnostic domains and constructs, emphasizing behavioral and neurobiological mechanisms
- Guides selection of AUBPT tasks such that metrics are interpretable across individuals and contexts

RDOC DOMAINS	CONSTRUCT/SUB-CONSTRUCT	AUBPT TASK	METRIC (DEFINITION)
Cognitive Systems	Cognitive Control - Response Selection	Stop Signal Task	To examine response inhibition and impulse control.
	Cognitive Control - Inhibition/Suppression	Balloon Analogue Risk Task (BART)	To examine the risk-taking behavior and risk aversion
Positive Valence Systems	Reward Valuation - Reward/Delay/Effort	Money Selection/Delay Discounting Task	To examine if the perceived value of a reward decreases over time.
Negative Valence Systems	Potential Threat ("Anxiety")	Stop Signal Task , Balloon Analogue Risk Task (BART)	To examine the time interval between receiving the stimulus and making choice/action.

Methods

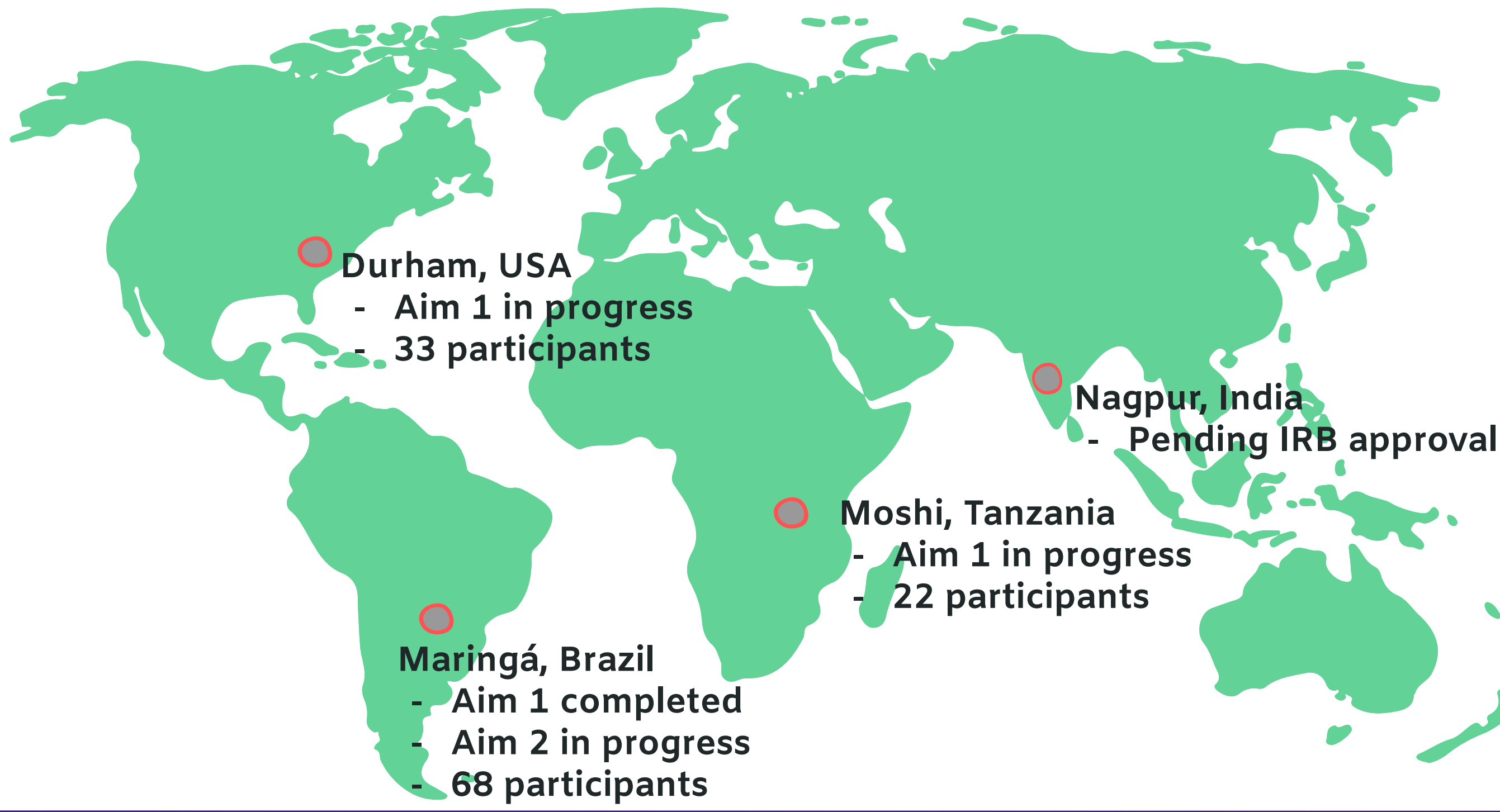


- Inclusion Criteria
 - Age >= 18 years
 - Alcohol consumption within the last 4 weeks
- Administration of validated assessments of mental health and AUD: AUDIT, PHQ-9, GAD-7, AUD DSM V, WEMWBS, PSS, and DrInC
- Participants play through AUBPT tasks (Quantitative data collection)
- Healthcare provider interview conducted regarding feasibility of AUBPT integration in clinical workflows (Qualitative data collection)

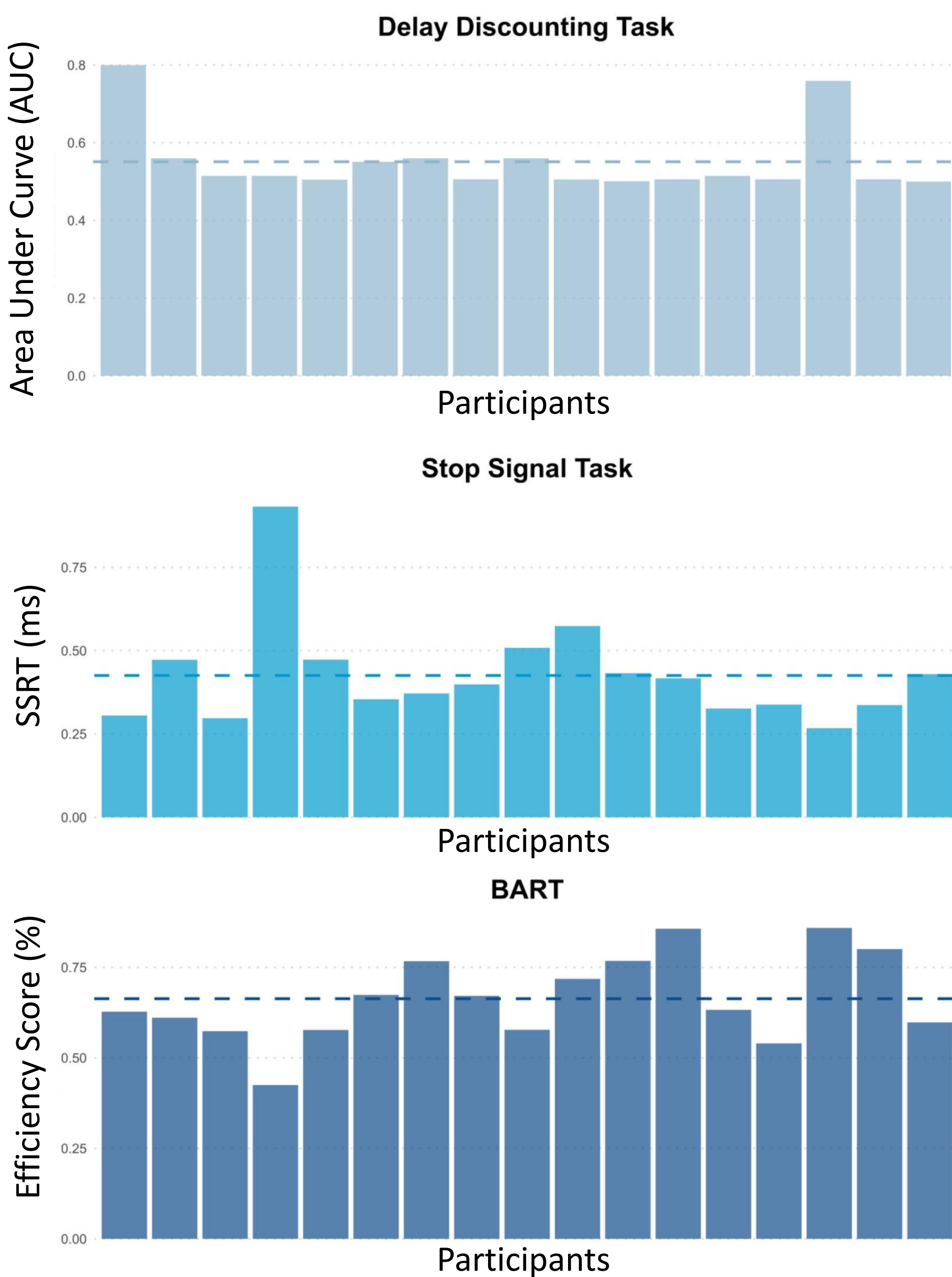


All data securely stored on RedCAP and DukeBox.

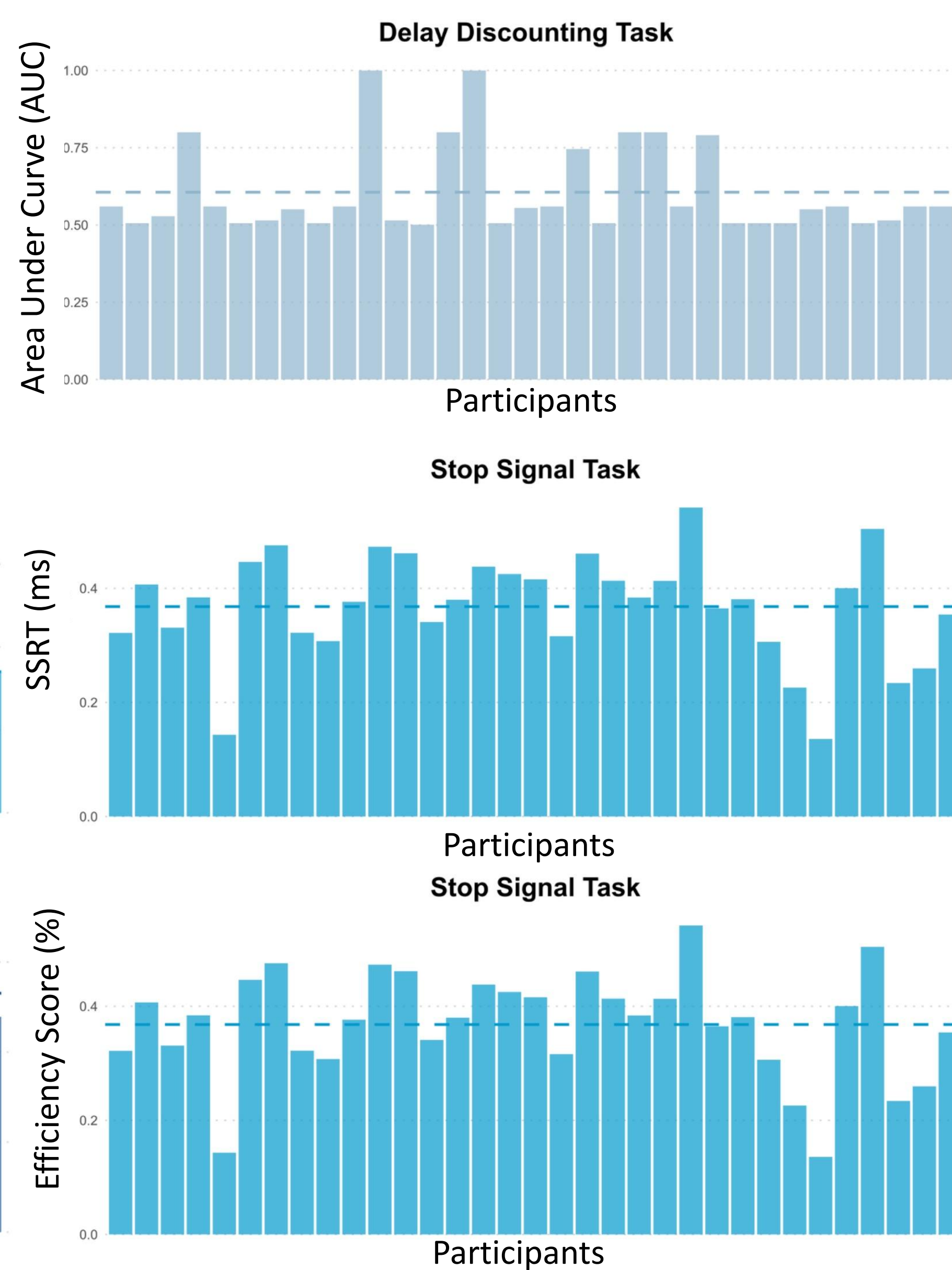
Results



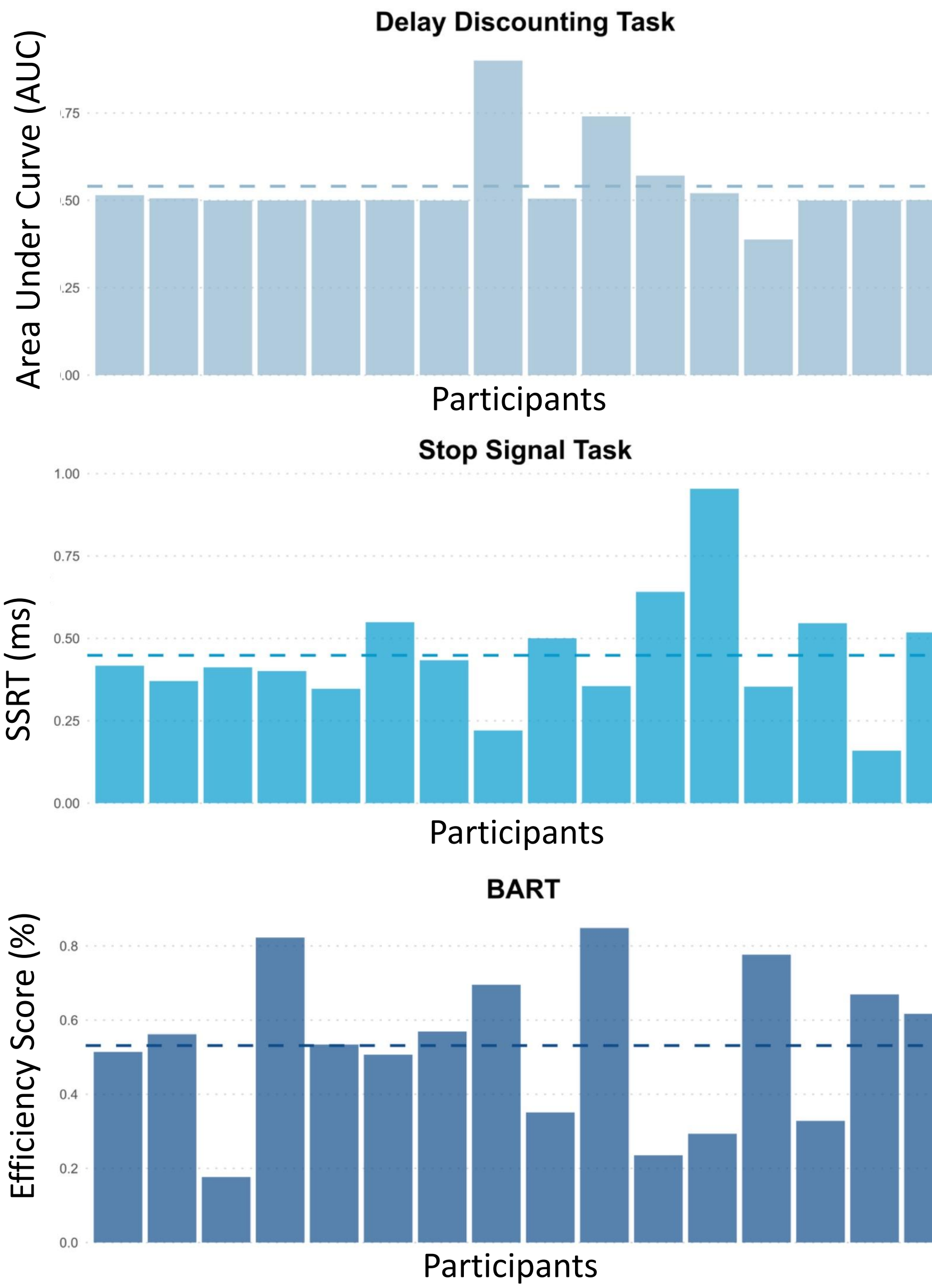
Brazil



United States



Tanzania



- **Delay Discounting:** Area under curve (AUC) is a measurement of discounting. A smaller AUC indicates greater discounting which means stronger preference for immediate rewards.
- **Stop-Signal Task:** Stop-signal reaction time (SSRT) is an estimate of the time it takes to inhibit an ongoing action when a stop signal appears. Longer SSRT values indicate poorer response inhibition ability.
- **Balloon Analogue Risk Task:** Efficiency Score (ES) is calculated as the ratio between total earnings (hypothetical) and total number of pumps, reflecting the average reward obtained per pump. Higher ES score indicates better strategy for how much money someone can make while avoiding risky behaviors.

Discussion & Next Steps

- Pilot study demonstrates feasibility of administering AUBPT in patients as well as general population participants across study sites
- Validated self-report scales and objective game-based metrics have been collected separately to enable comparison and validation in upcoming phases
- Conduct interviews with healthcare providers in Durham and Tanzania to assess feasibility of AUBPT integration in clinical workflows

References

- About RDoC - National Institute of Mental Health (NIMH). (n.d.). Retrieved January 16, 2025, from <https://www.nimh.nih.gov/research/research-funded-by-nimh/rdoc/about-rdoc>
- SAMHSA, Center for Behavioral Health Statistics and Quality. 2022 National Survey on Drug Use and Health. Table 5.9A—Alcohol use disorder in past year, among people aged 12 or older; by age group and demographic characteristics, numbers in thousands, 2022 and 2023. [cited 2025 Jan 16]. Available from: <https://www.samhsa.gov/data/report/2023-nsduh-detailed-tables>
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- Miller WR, Tonigan JS, Longabaugh R. The Drinker Inventory of Consequences (DrInC): [563232012-001] [Internet]. American Psychological Association; 1995 [cited 2025 Jan 16]. Available from: <http://doi.apa.org/get-pe-doi.cfm?doi=10.1037/e563232012-001>