Scalable Transdiagnostic Early Assessment of Mental health (STREAM)

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Background

➢ Lack of developmental surveillance in early childhood prevents children faltering in their development from being identified and supported to reach their full developmental potential.
➢ Barriers include:
  ➢ Limited access to trained professionals
  ➢ Services concentrated in urban, often private clinics
  ➢ Dependence on time-consuming, specialist-driven, proprietary assessment tools
➢ There is a pressing need for tools that can:
  ➢ Be administered by non-specialist workers (NSWs) in the field
  ➢ Be adaptable across different cultural settings

Methods

➢ STREAM is developing and validating an open-source, tablet-based application designed to assess neurodevelopment in children aged 0–6 years
➢ STREAM is an interdisciplinary effort, with collaboration among 9 institutions across 4 countries, drawing on expertise from:
  ➢ Psychologists and neuroscientists
  ➢ Paediatricians
  ➢ Computer scientists
  ➢ Statisticians
  ➢ Public health experts
➢ Through consensus workshops and iterative pilot testing, STREAM has integrated 3 developmental assessment tools into a unified platform:
  ➢ DEEP- Mukherjee et al. (2020). Proof of Concept of a Gamified Developmental Assessment on an E-Platform (DEEP) Tool to Measure Cognitive Development in Rural Indian Preschool Children. Frontiers in Psychology, 11: 1202.
  ➢ MDAT- Gladstone et al. (2010). The Malawi Developmental Assessment Tool (MDAT): The Creation, Validation, and Reliability of a Tool to Assess Child Development in Rural African Settings. Plos Medicine, 7(5).
  ➢ START- Dubey et al. (2022). Quantifying preference for social stimuli in young children using two tasks on a mobile platform. PLoS ONE, 17(6).

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Results

➢ The STREAM app features:
  ➢ Gamified neuropsychological tasks for cognitive, social and fine motor development
  ➢ Observational assessments and parent-report tools
  ➢ Audio and video recording capabilities
  ➢ A flexible survey engine
➢ The app measures 3 key domains of child development:
  ➢ Fine motor skills
  ➢ Attention and cognitive abilities
  ➢ Social and communication skills
➢ The backend infrastructure includes:
  ➢ A secure server for data management and storage
  ➢ Multiple access levels for data control
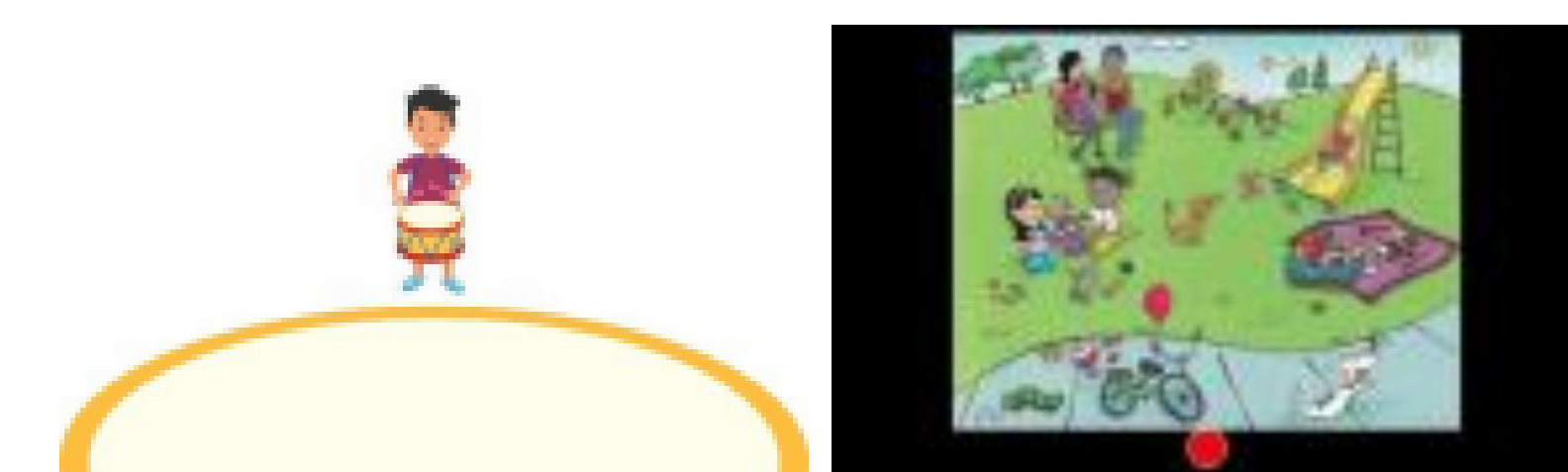 ➢ An intuitive content management system

DEEP
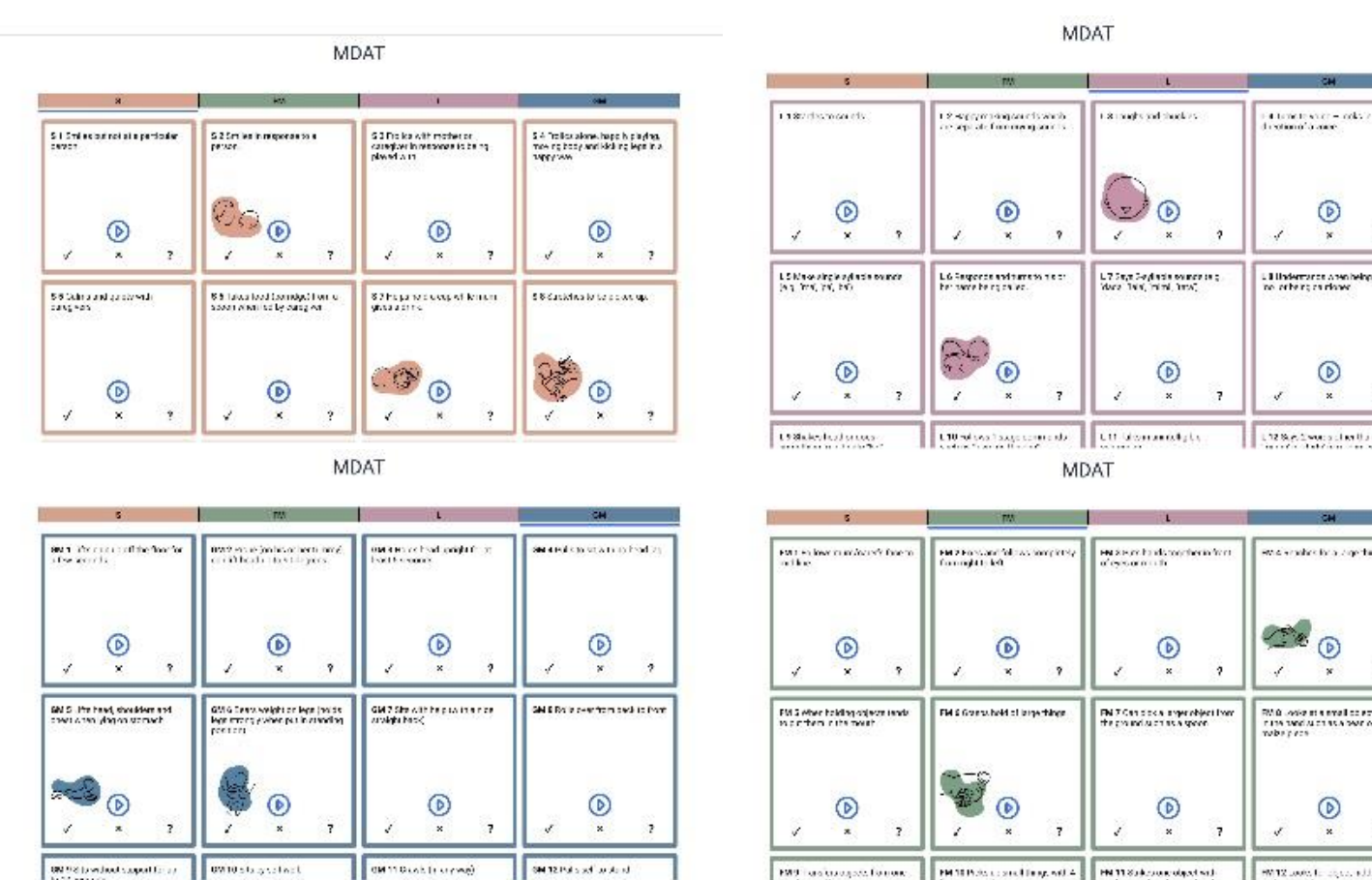
MDAT
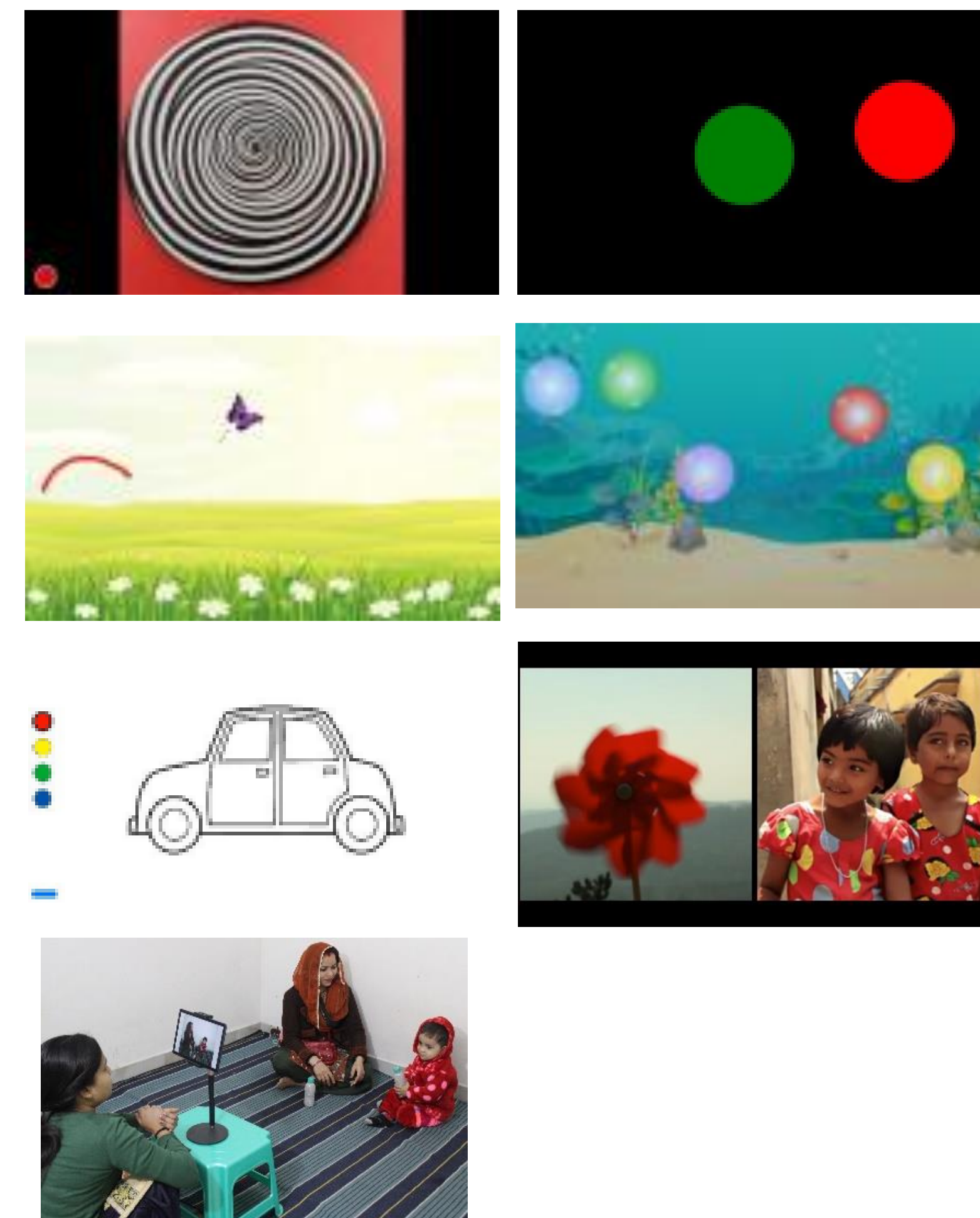
START

Synchrony task   Language sampling task

Delayed Gratification task

STREAM components: $DEEP^2$, $MDAT^3$, $START^4$

Discussion

➢ STREAM data has been collected on 4,000 children, including both community samples and children diagnosed with, or at-risk for, neurodevelopmental disorders in India and Malawi.
➢ Task completion rate of 97% has been observed
➢ The app has demonstrated:
  ➢ Ease of use in offline field settings by NSWs
  ➢ Feasibility and acceptability across contexts
  ➢ Cultural neutrality in its application
➢ STREAM's metrics will be:
  ➢ Validated against a gold-standard developmental measure, the Griffiths Mental Development Scales (GMDS)
  ➢ Evaluated for their ability to reflect the impact of known developmental risk factors

STREAM is currently being tested with 4,000 children, including both community samples and 'at-risk' populations in India and Malawi.

References

1. Olusanya, et al. (2018). Developmental disabilities among children younger than 5 years in 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Global Health*, 6(10).

STREAM Consortium

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