Development of the
Inventário Dimensional de Avaliação do Desenvolvimento Infantil
(Dimensional Inventory for Child Development Assessment)

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INTRODUCTION

- It is estimated that 16% to 18% of children have a developmental delay, but less than one-third of these children are identified by their health care provider (Brothers et al., 2008; Committee on Children with Disabilities, 2001)

- In Brazil, under detection of children with developmental delays is even greater due to the limited number of standardized screening and assessment tools with appropriate normative data (Becker et al., 2013)

- In response to this critical assessment need, the *Inventário Dimensional de Avaliação do Desenvolvimento Infantil* (IDADI; Dimensional Inventory for Child Development Assessment) was created

  o Developed by Dr. Denise Bandeira and Euclides Mendonça Filho from the Federal University of Rio Grande do Sul, and Dr. Mônia Silva from the Federal University of São João del-Rei

  o Designed to assess, via mother report, the cognitive, motor, communication and language, and socioemotional development, and adaptive behavior, of young children ages 0 to 72 months living in Brazil

  o Has undergone theoretical evaluation of the intended domains, development of an item pool, and reviews for content-related validity evidence

  o Is in need of empirical data to further refine the item pool and evaluate construct validity evidence

PRESENT STUDY

- A collaboration between researchers at UNL and in Brazil via the UNL-Brazil Pilot Impact Grants Program

- The overall **objective** was to refine and psychometrically evaluate the IDADI using empirical data

- The **specific aims** were to

  1. gather reliability and validity evidence to support the intended use of IDADI test scores

  2. investigate the sensitivity and specificity of IDADI for early detection of Autism Spectrum Disorder (ASD)

METHOD

Participants and Procedures

- Full sample included 2,159 children and their biological mothers (see Table 1)
  o Aim 1 results based on 1,336 children
  o Aim 2 results based on matched sample (25 ASD, 50 typically developing)
- Recruitment spanned all regions of Brazil (Figure 1)
- Data were collected in-person and online
- Analytic methods included Rasch modeling, cluster analysis, and ROC curve analysis

Figure 1. Geographic distribution of sample.

Table 1. Demographic summary of sample.	
	M (SD) or %
Child's age (months)	37.1 (23.2)
Child's sex	51.6% male
Child's weight at birth	43% 3,000-3,500 g
Child's diagnosis status	1.6% ASD
	0.5% Down syndrome
	0.4% Cerebral Palsy
Mother's age (years) at birth	33.6 (5.8)
Mother's education level	53.9% undergrad degree/higher

Instrument (*Inventário Dimensional de Avaliação do Desenvolvimento Infantil*)

- 525 Likert-type items (0 = *not yet*; 1 = *sometimes*; 2 = *yes or used to*) theorized to measure five theoretical domains
- Only age-appropriate items were administered; items were divided across seven age bands, with partial overlap of items across adjacent bands
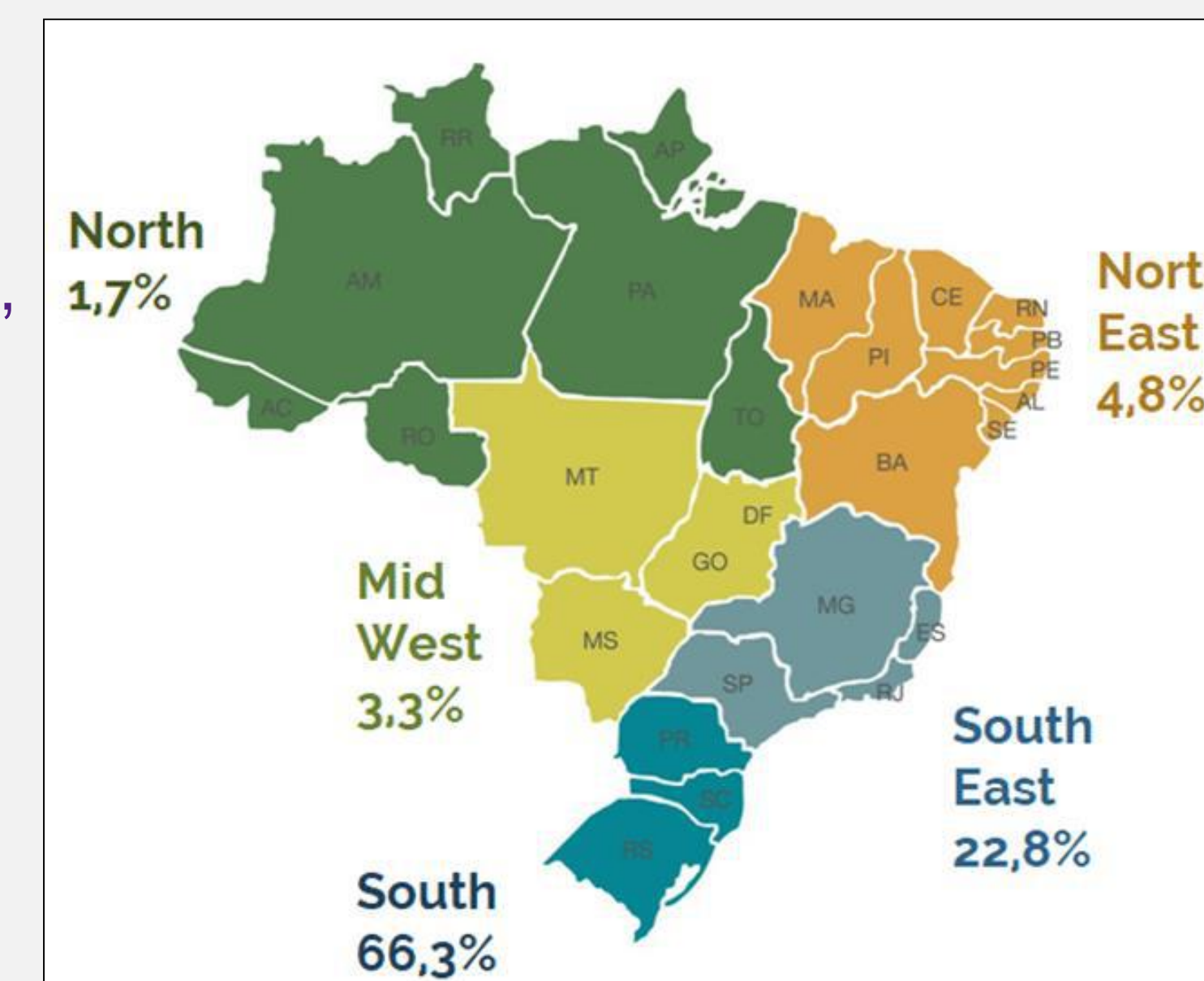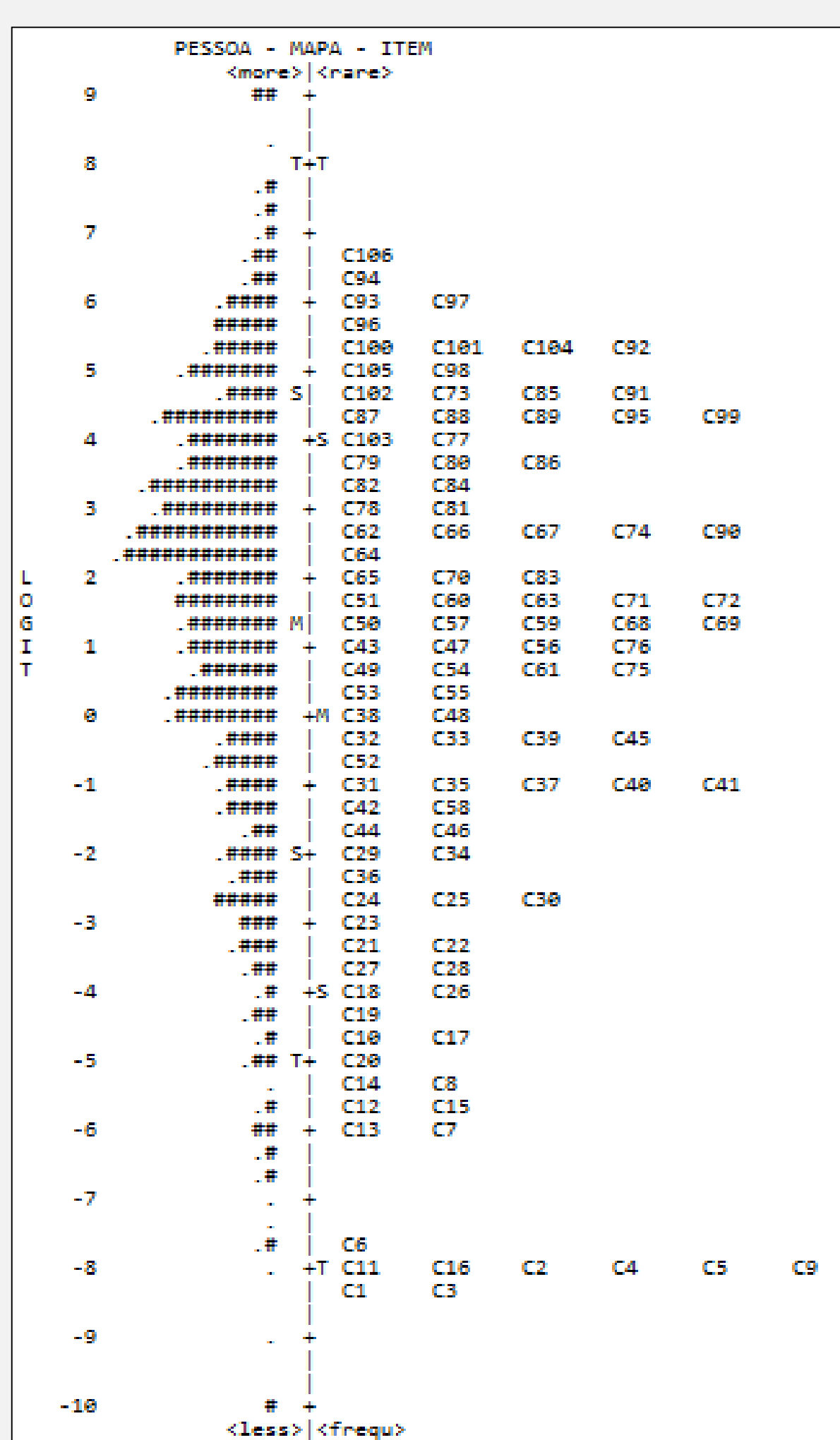
KEY FINDINGS: AIM 1

Figure 2. Person-item map of the IDADI cognitive domain.

- Person and item separation estimates provided strong evidence of the scales' capacity to discriminate among people (items) with differing trait levels (difficulties)

- Person-item maps (a) supported the hypothesized ordering of items by difficulty, (b) illustrated an adequate range of item difficulties, and (c) revealed strong correspondence between the person and item distributions (Figure 3)
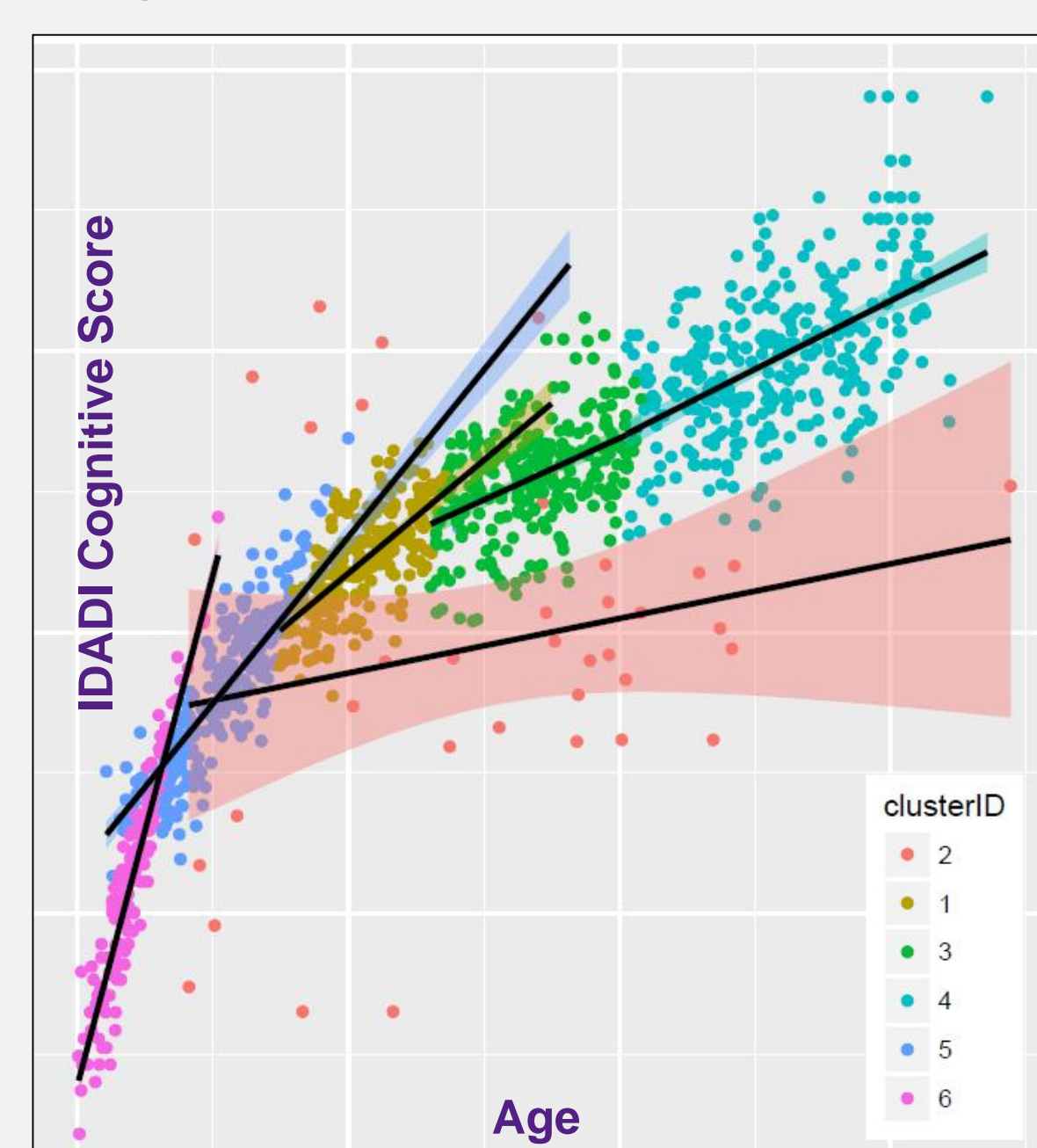
- Scores demonstrated strong associations with age, clinical diagnosis, and SES

- Clustering revealed five groups defined by developmental stages, and one group with a high prevalence of developmental disorders in which age-based trends were less apparent

Figure 3. IDADI cognitive scores by age and cluster membership.

KEY FINDINGS: AIM 2

- IDADI domain scores showed strong sensitivity and specificity in distinguishing ASD from typically developing children

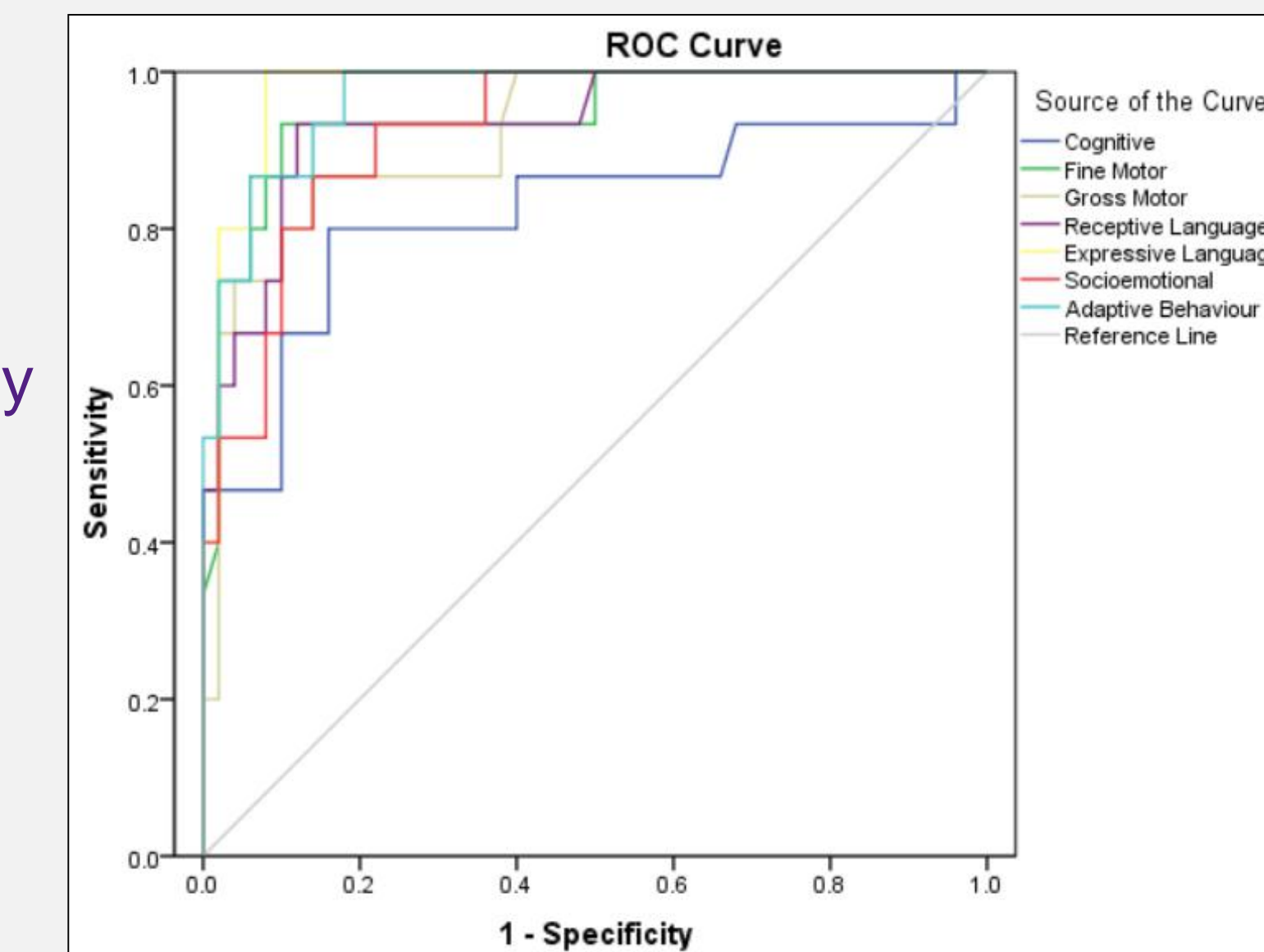- All Areas Under the Curve (AUC) >.5 (p < .05) indicating better than chance performance

Figure 4. ROC curve by IDADI domain.

IMPLICATIONS FOR PRACTICE & POLICY

- In early childhood, when delays or developmental problems are detected and treated early, negative outcomes can be mitigated.

- The IDADI has the potential to advance early childhood **practice** by (a) improving the detection and referral rate of Brazilian children with developmental problems, and (b) providing treatment efficacy information via continuous evaluation

- The IDADI has the potential to advance early childhood **policy** by facilitating data-driven decision making with respect to public investments in early child development programs, health, education, and social assistance

NEXT STEPS

- Develop population norms specific to children living in Brazil to ensure that their developmental outcomes are appropriately interpreted within their cultural context

- Integrate IDADI into pediatric practice

- Develop a brief form that minimizes assessment time but maintains adequate validity and reliability evidence, potentially via application of computerized adaptive testing procedures