

cognitive functions (e.g., general intelligence, processing speed, working memory, attention) are strongly related. Our goal is to examine how RAN performance relates to neurocognitive function in sub-Saharan Africa and whether RAN performance could reveal the effect of HIV on pre-literacy. The current study examines the relationship between RAN performance and cognitive variables in both children living with HIV (CLWH) and healthy controls in Tanzania.

**Participants and Methods:** 486 children (ages 3-8) were administered RAN Color and Object tasks as part of a larger longitudinal study in Dar es Salaam, Tanzania. All participants were also administered the Leiter International Performance Scale – 3rd Edition (Leiter-3), a test of nonverbal intelligence and general cognitive function. Binomial logistic regression examined the likelihood of completing a RAN task and included age, Leiter-3 composite standard scores, and HIV status. Multiple linear regression using the same predictors assessed factors associated with RAN completion time in children who completed the tests. SES and education were not included in the model specifications because they were not correlated with any RAN measures.

**Results:** Only 40% of children could complete the RAN Color task, while 88% completed the Object task. Logistic regression models showed that age ( $p < 0.001$ ), Leiter-3 Nonverbal IQ ( $p < 0.01$ ), and Processing Speed ( $p < 0.001$ ) composite scores were all unique predictors of whether children would complete the RAN Color task. Age ( $p < 0.001$ ) and Nonverbal IQ ( $p < 0.001$ ) were predictors of completing of the RAN Object task. Of those who could complete the RAN Color task, multiple linear regression demonstrated that age ( $p < 0.01$ ), Leiter-3 Nonverbal IQ ( $p = 0.01$ ) and Processing Speed ( $p = 0.001$ ) composites predicted completion time, with the model accounting for 25% of the variance. For the RAN Object task, multiple linear regression indicated age ( $p < 0.001$ ), Leiter-3 Processing Speed ( $p = 0.01$ ) and Nonverbal Memory ( $p = 0.01$ ) composites, and living with HIV ( $p = 0.01$ ), predicted completion time, with the model accounting for 42% of the variance.

**Conclusions:** Completion rates for RAN Color and Object tasks were low but improved with age. Consistent with brain maturation, increasing age and processing speed improved completion time, regardless of the RAN task. General cognitive ability predicted RAN Color performance, and Nonverbal Memory (encompassing attention, working memory, and

retrieval) and HIV status additionally predicted RAN Object performance. Results extend research indicating RAN is distinct yet multifactorial, relying on various neurocognitive functions working together. Additionally, the relationship of HIV to RAN Object performance implies an overlap between the neurocognitive functions inherent in RAN and the neurocognitive weaknesses often reported in CLWH. These findings suggest cognitive vulnerabilities in CLWH may extend to literacy skills in sub-Saharan Africa, which requires further study.

#### Categories:

Assessment/Psychometrics/Methods (Child)

**Keyword 1:** HIV/AIDS

**Keyword 2:** cross-cultural issues

**Keyword 3:** pediatric neuropsychology

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## 69 Psychometric Properties of the PediaTrac

### Social/Communication/Cognition Domain

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**Objective:** Research has established the importance of early identification and

intervention for children with developmental disorders and delays. In striving toward earlier recognition and treatment of developmental concerns, it is crucial to have a universal system to monitor infant and toddler development over time. This system should comprehensively assess the desired areas of development, be based on normative data from large samples, and have strong psychometric properties. While a few developmental monitoring tools are currently in use, they lack many of the aforementioned qualities. The current study reports on the cross-sectional psychometric properties of PediaTrac, which is a novel caregiver-report measure of infant and toddler development. Specifically, this study focuses on psychometric properties of PediaTrac's social/communication/cognition (SCG) domain during the first 9 months of life.

**Participants and Methods:** The current sample included 571 caregiver-infant dyads recruited into term ( $n=331$ ) and preterm ( $n=240$ ) groups. Participants were from the PediaTrac multisite, longitudinal study and were socioeconomically (41.9% below median income) and racially (33.6% Black, 47.6% White, 11.0% multiracial/other) diverse. Data included caregiver reports of infant development from the SCG domain of PediaTrac at 5 sampling periods (newborn, 2, 4, 6, and 9 months). Item response theory (IRT) graded response modeling was used to estimate theta, an index of the latent trait, social/communication/cognition. Exploratory factor analysis (EFA) was used to further examine the underlying structure of the SCG domain.

**Results:** Mean theta values could be reliably estimated at all time periods and followed a linear trend consistent with development. At 9 months, theta values were statistically different between the term and preterm groups, indicating that term infants demonstrated more advanced SCG abilities. Item parameters (discrimination and difficulty) could be modeled at each time period across the range of ability. Reliability of the SCG domain ranged from 0.97 to 0.99. Results of the EFA suggested a two-factor solution (affect/emotional expression, social responsiveness) at the newborn period accounting for 43% of the variance, a three-factor solution (affect/emotional expression, social responsiveness, imitation/emerging communication) at the 2-, 4-, and 6-month periods accounting for 43%, 34%, and 34% of the variance, respectively, and a four-factor solution (affect expression, social

responsiveness, imitation/communication, nonverbal/gestural communication) at the 9-month period accounting for 34% of the variance.

**Conclusions:** The PediaTrac SCG domain has strong psychometric properties, including reliability estimates higher than other existing caregiver-report measures of SCG abilities. EFA analyses demonstrated that the structure of affect/emotional expression and social responsiveness remains relatively stable and may reflect affective and regulatory aspects of temperament. Conversely, the quality and type of communication continually develops and becomes more differentiated throughout the time periods of interest. Notably, parents appear to be capable of observing and reliably reporting on their infants' abilities in these areas. The use of a universal screening tool developed with rigorous psychometric methods, such as PediaTrac, could transform the way that clinicians identify infants in need of early intervention.

#### Categories:

Assessment/Psychometrics/Methods (Child)

**Keyword 1:** assessment

**Keyword 2:** psychometrics

**Keyword 3:** test development

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## 70 Uncovering Comorbid Neuropsychological Disorders in Children with Unilateral Hearing Loss Under Consideration for Cochlear Implantation

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**Objective:** Children with unilateral hearing loss (UHL) have difficulty hearing in noisy environments and localizing sounds, impacting learning and social opportunities across contexts. Using a visible device like a cochlear implant (CI) may improve functioning but can