Background/Objective

• Traditional standardized assessment tools such as Bayley Scale of Infant and Toddler Development (Bayley) are primarily used to assess cognition in infants with neuromotor impairments.
• Ability to use cognitive skills during daily activities is often not reflected in traditional standardized developmental assessments.
• Infants with neuromotor impairments may not be able to complete items on standardized assessments because of their motor impairments rather than cognitive impairments.
• Play based assessments tools such as Early Problem Solving Indicator (EPSI) provide a way to quantify infants’ ability to use cognitive skills during play.
• Play based assessment tools often capture the child’s cognitive abilities in a natural environment, which may not be documented with standardized assessment tools.
• Ability to administer play based assessment tools repeatedly and at shorter time intervals, provides the benefit of capturing subtle changes in the early problem solving behavior during infancy.

Purpose: Evaluate the concurrent validity of EPSI and Bayley Cognitive Scale in infants with neuromotor impairments.

Materials/Methods

• Bayley Scale of Infant and Toddler Development (BSID), third edition- Cognitive Scale and EPSI were administered on the same day or within 24 hours.
• EPSI is the cognitive subtest of the Individual Growth and Development and Indicators (IGDI) used to assess early problem solving skills during 3 trials each 2 minutes long of playing with a standard set of toys (popup animals toy, cups and gumball machine toy)
• The Bayley Cognitive Scale and EPSI both assess visual and object exploration as well as problem solving.

Results

• Correlation analyses revealed significant linear relationships between infants’ Bayley cognitive raw scores (r = 0.59, p < 0.001 [95% CI = .39 to .74]) of EPSI problem solving behaviors and Bayley Cognitive Scores vs Frequency of EPSI behaviors (N=59)

Conclusions

• EPSI and Bayley Cognitive Scale measure some common constructs of cognition in infants with neuromotor impairments and may hold analogous diagnostic value. However they are not duplicate given the correlation is < 1. 
• Infants with neuromotor impairment included for the correlation analysis used problem solving to a relatively similar degree during play as during a examiner guided assessment.
• Pediatric physical therapists and other early intervention providers could use either of these scales to evaluate problem solving abilities and to measure change in response to intervention.
• We need more evidence to evaluate sensitivity of EPSI and Bayley Cognitive Scale in measuring change in problem solving abilities across time or in response to intervention.

References

1. Tripathi T, PhD candidate. Concurrent Validity of the Bayley Cognitive Subtest and Early Problem Solving Indicator in Infants with Neuromotor Impairments. Field/Dept: Motor Development Lab, Department of Physical Therapy, Virginia Commonwealth University, Richmond, VA. 2. Department of Rehabilitation Medicine, University of Washington, Seattle, WA.

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Design

• Descriptive correlation analysis

Participants and Setting:

• Data from 59 assessment visits of 26 infants (1-4 visits per infant) enrolled in the START-Play clinical trial were included in the analyses.
• Infants with motor delays were recruited between 7-16 months of corrected age, when they could sit propped or arms free, and could not move in/out of sitting.
• The average age adjusted for prematurity was 10.2 ± 2.8 months.
• Sample was 48% female, 65% White, and 8% of Hispanic origin. Of the 26 infants, 28% had a brain injury. All infants had gross motor delays.

Figure 1: Traditional standardized assessment tools vs Play based assessment tools

Figure 2: An infant being assessed for problem solving and cognition using EPSI and Bayley at 10 mo AA

Figure 3: Graphs representing correlation between EPSI and Bayley cognitive raw scores