Assessing Early Developmental Functioning of Children Born Premature

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The speaker has signed a disclosure form and indicated he has no significant financial interest or relationship with the companies or the manufacturer(s) of any commercial product and/or service that will be discussed as part of this presentation.

Session Summary

The speaker will provide a review of several commonly used instruments designed to measure early childhood development. Particular attention will be paid to the conceptual and practical aspects of evaluating infants and toddlers.

Session Objectives

Upon completion of this presentation, the participant will:

- understand conceptual and practical issues in assessing infants and toddlers;
- be able to state commonly used tests.

References


**Session Outline**

See presentation handout on the following pages.
Assessing early developmental functioning of children born premature

Primary questions
1. What are the short-term and long-term consequences of premature birth on development?
   • How do we measure development in these kids?
2. How can we identify those children at greatest risk for poor outcomes so that we can recommend appropriate services?
   • Can our tests predict outcomes?

Outline
• Methods of developmental assessment
• Psychometrics
• Common tests
• Case examples

Methodological Issues
• Types of assessments
  • Screener vs detailed assessment
  • Observational assessment
  • Caregiver ratings

Methodological Issues
• What are we testing?
  • Development vs Intelligence
• When/how often to test?
• Correction for prematurity

Outline
• Methods of developmental assessment
• Psychometrics
• Common tests
• Case examples
Psychometrics

- Standardized administration
- Norm-referenced scores

Norm-referenced Scores

- Z-scores
  - Mean = 0
  - Standard deviation = ± 1
- T-scores
  - Mean = 50
  - Standard deviation = 10

Norm-referenced Scores

- Standard scores (IQ/composite scores)
  - Mean = 100
  - Standard deviation = 15
- Scaled scores
  - Mean = 10
  - Standard deviation = 3
- Percentile
  - % of scores that fall at or below a given test score
  - Mean = 50th percentile

Psychometrics

- Reliability
  - Internal consistency
  - Test-retest reliability
  - Inter-rater reliability

Psychometrics

- Validity
  - Content validity
  - Construct validity
  - Concurrent validity
  - Predictive validity
Outline

- Methods of developmental assessment
- Psychometrics
- Common tests
- Case examples

Common Developmental Tests

- Bayley Scales of Infant Development – 3rd edition
- Mullen Scales of Early Learning
- Griffiths Mental Development Scales – Extended Revised
- Battelle Developmental Inventory- 2nd edition

Common Early Childhood IQ tests

- Wechsler Preschool and Primary Scales of Intelligence – 4th edition (WPPSI-IV)
- Stanford Binet Scales of Intelligence – 5th edition (SB-V)
- Differential Ability Scales – 2nd edition (DAS-2)

Bayley Scales of Infant Development-III

- Last updated in 2006
- 1 month – 42 months
- 50-90 minutes
- Domains:
  - Cognitive
  - Language
  - Motor
  - Social Emotional
  - Adaptive
  Task administered to the child
  Caregiver questionnaire

Bayley Scales of Infant Development

- Acceptable reliability and validity
- Manual suggests correction for prematurity up to 24 months
- Questionable predictive utility
Mullen Scales of Early Learning – AGS edition

- Last updated in 1995
- Birth – 5 years, 8 months
- Domains:
  - Gross Motor (< 33 months)
  - Fine Motor
  - Visual Reception
  - Receptive Language
  - Expressive Language

Mullen

- Acceptable reliability and validity
- More commonly used in Autism population
- Some support for sensitivity in neurological populations
  - Burns et al. (2006)

Griffiths Mental Development Scales – Extended revised version

- 2006
- Birth to 23 months
- 35 – 60 minutes
- Domains:
  - Locomotor
  - Personal-social
  - Hearing and language
  - Eye and Hand Coordination
  - Performance

Griffiths Mental Development Scales

- Used mostly in Europe
- Acceptable reliability and validity
- Variable predictive utility
  - Better at predicting nonverbal skills

Griffiths Scales
Battelle Developmental Inventory- 2nd edition

- Birth – 7 yrs 11 months
- 60 – 90 minutes
- Domains
  - Personal-social
  - Adaptive
  - Motor
  - Communication
  - Cognitive ability

Battelle Developmental Inventory -2

- Acceptable reliability and validity
- Primarily used in Autism and Intellectual disability populations
- Not much evidence for predictive utility in LBW population

WPPSI-IV

- 2012
- Ages 2.6 – 7.7
- 30 – 60 minutes
- Domains
  - Full Scale IQ
  - Verbal Comprehension Index
  - Visual Spatial Index
  - Working Memory
  - Processing speed

WPPSI-IV

- Strong reliability and validity
- Strong predictor of school performance
- Often used as an outcome measure in LBW
Stanford Binet – 5th edition

- 2003
- 2 yrs – 85 yrs
- 45 – 90 minutes
- Domains
  - Full Scale IQ
  - Nonverbal IQ
  - Verbal IQ
  - Fluid Reasoning index
  - Knowledge index
  - Quantitative reasoning index
  - Visual spatial index
  - Working Memory index

Stanford Binet – 5

- Strong psychometric properties
- Frequently used in autism and low IQ populations
- Less often used in LBW populations

Differential Ability Scales – 2nd edition

- 2007
- 2 years 6 months – 17 years 11 months
- Early Years battery
  - General Conceptual Composite (not IQ)
  - Verbal Ability
  - Nonverbal Ability
- School age battery
  - General Conceptual Composite
  - Verbal Ability
  - Nonverbal Reasoning Ability
  - Spatial Ability

DAS-2

- Acceptable reliability and validity
- Not much research on predictive utility
- Gaining wider use in clinical settings
Primary questions

1. What are the short-term and long-term consequences of premature birth on development?
   • How do we measure development in these kids?
     - Screening instruments
     - Standardized assessments

2. How can we identify those children at greatest risk for poor outcomes so that we can recommend appropriate services?
   • Can our tests predict outcomes?
     - Maybe?
     - Screeners
     - IQ tests

Case Examples