

Initial Mandate of the NIH Toolbox



- The mandate of the NIH Toolbox was to develop a battery that could be used across the lifespan----ages 3-85
- Developing assessments for young children presents a significant challenge
- But providing assessment tools across domains will have a significant impact on the field of pediatric assessment
- As well, including pediatric assessment adds important value to the Toolbox

Current Status of Pediatric Assessment



- While there are many pediatric assessments, particularly in the area of Cognition, and to some extent in the area of Emotion:
 - These measures are expensive
 - They are normed on homogeneous non-diverse populations
 - They are not brief and easily administered
 - They do not easily link up to their adult counterpart

Current Status of Pediatric Assessment (continued)



- There is a paucity of instruments to assess "normal children" for Motor and Sensation
 In many of these domains there is a general reliance on proxy reporting
- These measures are rarely based in the current thinking in neuroscience
- National norms are typically based upon Caucasian, English speaking samples

Importance of a Developmental Perspective



- Developmental conceptualizations necessary for understanding etiology of chronic diseases in children and adults
- Many chronic mental and physical illnesses begin in early childhood
- Treatments, interventions and prevention targeting children may offer best hope of reducing long-term morbidity

Importance of a Developmental Approach



- In order to understand developmental processes involved in illness etiology we need:
 - Longitudinal research starting and targeting pediatric populations
 - Assessment of normative functioning across multiple domains of behavior

Example



- National Children's Study
 - 105,000 children and families
 - 21 years
 - Examines details of exposure to environmental toxins and looks at etiology of disease and psychopathology
 - Needs reliable, validated instruments for assessment across multiple domains of behavior

Challenges Presented by Pediatric Assessment



- There are significant changes in children's motor abilities that must be taken into account when requiring motor responses during assessment
- Young children need non-written language stimuli
- Interactions between test administrator and subject should be crafted to the age of the child

Dealing with the Challenges of Pediatric Assessment



- Pediatric consultants were identified and recruited for all of the domains and by subdomain
- State-of-the-art assessment measures were identified and selected for validation
- A working group was formed to develop guidelines for administration of pediatric assessments

SUBDOMAIN WORK GROUPS in Cognition---TOOLBOX **bolded names are Pediatric Consultants** Language Richard Gershon Sandy Weintraub Episodic Memory Sureyya Dikmen **Executive Function** Adele Diamond Phil Zelazo Jennifer Manly Patricia Bauer Jean Berko Gleason Gordon Chelune Joel Kramer Beth Borosh Kathy Hirsch-Pasek Dean Delis Joni Machamer Roberta Golinkoff Beth Borosh Working Memory Processing Speed Nancy Chiaravalloti Attention David Tulsky Nancy Chiaravalloti Sandy Weintraub Nathan Fox Koraly Perez-Edgar David Tulsky Bob Heaton Timothy Salthouse Keith Yeates Amanda O'Brien Frank Zelko Timothy Salthouse Dick Havlik Keith Yeates Amanda O'Brien Pediatric Assessment in Toolbox Allows measurement of same constructs through developmental ages Provides validated measures that are brief, reliable, and normed across diverse populations One example follows from the Cognition Domain---Executive Functioning

Dimensional Change Card Sort Task



- Developed by Phil Zelazo (University of Minnesota)
- Designed to assess set shifting abilities in young children
- Similar to adult measures such as the Wisconsin Card Sort
- Science based link to neuroscience data on brain development

Dimensional Change Card Sort Task



-Structure

- •1 block of 10 Shape trials
- •1 block of 10 Color trial
- •1 block of 40 Mixed trials (20 Shape, 20 Color)
- •Relevant dimension cued by written and spoken word ('Shape' or 'Color')
- •Order of dimensions counterbalanced (i.e., half of participants complete shape trials first, other half complete color trials first.)

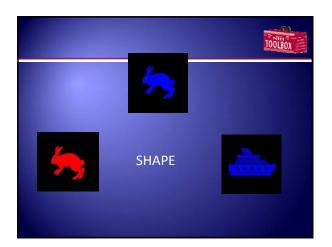
We're going to play a game! If you hear the word COLOR press the button that is the same color as the picture in the middle of the screen.

If it is RED like these two

If it is BLUE like these two

Press this button

Press this button



Meeting the Challenge of Pediatric Assessment



- Working group established to identify issues specifically important to testing young children
 - Clarity of instructions
 - Appropriate feedback
 - Stop rules
 - Attention to varying motor and language abilities
 - Training of test administrators

Pediatric Assessment Summary



- Pediatric Assessment to date:
 - Instruments that assess children in all four domains have been reviewed
 - Choices have been made for reliable, brief, inexpensive instruments
 - A good deal of thought, care and work has gone into this effort and selection

Validating the Pediatric Assessments



- Validation of the measures in a pediatric sample is about to begin. It will ultimately enable:
- Accurate assessment at all age levels across diverse populations
- Tracking of function changes across the lifespan
- Easy comparisons between studies

