

NIH Toolbox

Assessment of Neurological and Behavioral Function

The Future of the NIH Toolbox for the Assessment of Neurological and Behavioral Function: Implications for the Clinical Neuropsychologist

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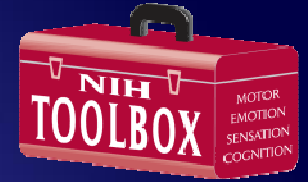
February 11, 2009



For more information, please visit www.nihtoolbox.org
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This study is funded in whole or in part with Federal funds from the Blueprint for Neuroscience Research, National Institutes of Health under Contract No. HHS-N-260-2006-00007-C

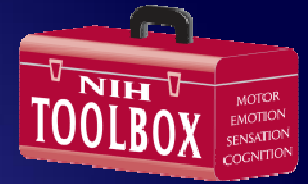
Vision for the Final Toolbox



- ◆ Four Domain level batteries
- ◆ Individual instruments fully normed for ages 3 – 85 years
- ◆ Tool “shed” of additional instruments

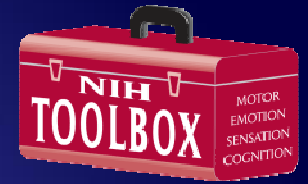


Phase IIA (2008-2009)



- ◆ Calibration of items for CAT instruments
- ◆ Validation testing of new instruments
- ◆ Final instrument selection
- ◆ Spanish translations
- ◆ Development of single technology platform
- ◆ Materials production

Calibration of Item Banks



- ◆ Provide item calibrations that can be used for CAT and short form development
- ◆ All Emotional Health measures, Vocabulary, Reading and Visual Function

Low

TRAIT

High



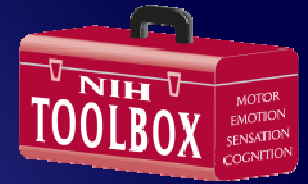
Result:

Medium-High on the Trait

Test length reductions up to 80% with no loss of precision.



Item Calibration



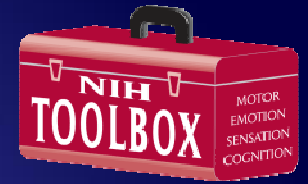
- ◆ Online general population sample
- ◆ Vocabulary N=5,750 representing items and subjects ages 3-85, at all levels of education
- ◆ Additional calibration samples for emotional health, vision and audition self-report measures

Initial Assessment of Psychometric Properties



- ◆ All new and modified measures
- ◆ Will provide data on validity and reliability
- ◆ Results will be evaluated according to pre-established criteria
- ◆ Goal is to demonstrate Toolbox measures equal or superior to existing instruments

Phase IIB (2010-2011)



- ◆ National Norming Study
 - ◆ National random sample
 - ◆ N=5,800
 - ◆ 50% Spanish, 50% English
 - ◆ Ages 3-85
 - ◆ All primary batteries administered to entire sample
 - ◆ Shed measures which require norming administered to subset of total sample

Norming – Adult Sample



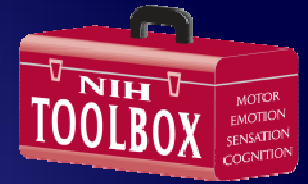
Age	English		Spanish		Total
	Male	Female	Male	Female	
18-29	100	100	100	100	400
30-39	100	100	100	100	400
40-49	100	100	100	100	400
50-59	100	100	100	100	400
60-69	100	100	100	100	400
70-79	100	100	100	100	400
80-85	100	100	100	100	400
Total	700	700	700	700	2800

Norming – Pediatric Sample



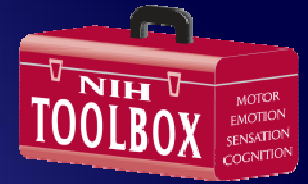
Age	English		Spanish		Total
	Male	Female	Male	Female	
17	50	50	50	50	200
16	50	50	50	50	200
15	50	50	50	50	200
(single year age bands continue 6 – 14)					
5	50	50	50	50	200
4	50	50	50	50	200
3	50	50	50	50	200
Total	750	750	750	750	3000

Demographic Corrected Norms



- ◆ Reference Groups
 - ◆ Age Bands
 - ◆ Spanish Speaking
 - ◆ Gender
- ◆ Potential Groups
 - ◆ African Americans
 - ◆ Socio-economic
- ◆ Additional Studies

Phase IIC (2011)



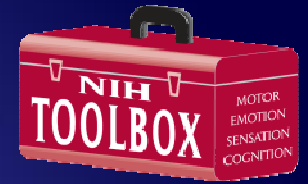
- ◆ Calculate scoring crosswalks with legacy instruments
- ◆ Development of Technical Manual
- ◆ Delivery of final Toolbox at Public Conference

The Impact of Toolbox



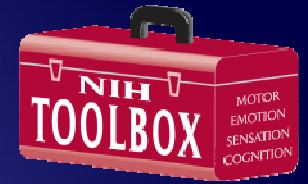
Pre-Toolbox	Post-Toolbox
Custom endpoints are not easily compared across studies	Standardized measures easily compared across studies. Crosswalks to "gold standard" instruments.
Assessments typically limited to looking at cognitive variables	Easily incorporate multiple areas of neurological functioning (motoric, emotional and sensory)
Expensive equipment and per subject royalties	Inexpensive equipment, no royalties, low per subject costs limited to taste and olfaction
Time consuming measures often require highly trained test administrators	Cutting edge short measures (often with greater reliability than their lengthier counterparts), can be administered with minimal training

What the Toolbox is Not



- ◆ Not a diagnostic tool
- ◆ Will not target disease outcomes
- ◆ Not conceptualized to substitute for the in-depth assessment of a domain or subdomain

NIH Toolbox and Related Projects



PROMIS

2004

NINDS
Examiner

2005

MRI Study

2001

NCS

2005

PhenX

2007

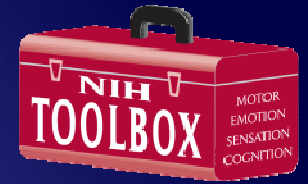
Neuro-QOL

2004

CTSA

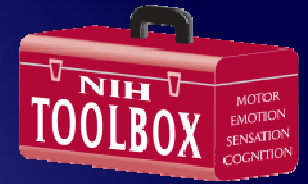
2006

National Children's Study (NCS)



- ◆ Prospective Cohort study from birth to adulthood, to evaluate the effects of both chronic and intermittent exposures on child health and human development
 - ◆ Lead Agency: NICHD
 - ◆ 27 starting hypotheses to be tested
 - ◆ Sample size = 100,000 recruited from 105 sites

National Children's Study (NCS)



◆ NCS Area of Interest:

- ◆ Omnibus IQ
- ◆ Executive function
- ◆ Language / verbal skills
- ◆ Academic skills
- ◆ Visuospatial abilities
- ◆ Learning / memory
- ◆ Attention
- ◆ Motor skills
- ◆ Hearing

◆ NIH Toolbox Contains:

- ◆ 3 Exec Functioning
- ◆ 2 Language
- ◆ 3 Visual
- ◆ 3 Memory
- ◆ 2 Attention
- ◆ 12 Motor skills
- ◆ 4 Hearing

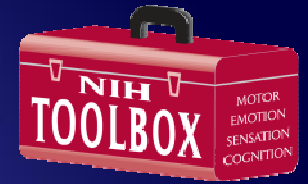
How to Keep Up to Date with the NIH Toolbox



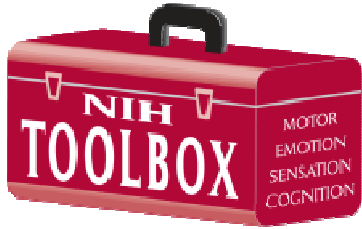
- ◆ www.nihtoolbox.org
- ◆ Quarterly newsletter
 - ◆ Distribution: 400 copies
 - ◆ Available on the website
- ◆ 13 conference presentations



Early Adopters



- ◆ Collaborative Studies
 - ◆ Limited early availability in late 2009
- ◆ Full availability is scheduled for late 2011



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