



NIH Toolbox

Assessment of Neurological and Behavioral Function

HOW WE ASSESS 12 AREAS OF EMOTIONAL HEALTH IN UNDER 15 MINUTES USING CAT

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On Behalf of Emotion Health Team

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Emotional Health Team



- ◆ Northwestern University Feinberg School of Medicine
 - ◆ David Cella, Zeeshan Butt, John Salsman, Kathleen Swantek
- ◆ University of Pittsburgh Medical Center
 - ◆ Paul Pilkonis, Jill Cyranowski, Morgen Kelly, Tara Moore, Catherine Maihoefer
- ◆ Medical College of Wisconsin
 - ◆ Mary Jo Kupst
- ◆ Indiana University School of Medicine
 - ◆ Hugh Hendrie
- ◆ Westat
 - ◆ Nick Zill
- ◆ U of Maryland
 - ◆ Nathan Fox
- ◆ NIH
 - ◆ Pim Brouwers, Kate Stoney, Gitanjali Taneja

Plus our content expert-consultants

Organizing Ideas



- ◆ Focus on emotional health and adaptation, not disorder or impairment
- ◆ Independence of positive and negative affect
- ◆ 30 minute Toolbox
 - ◆ Data-based assumption of 6 items / minute adults (5 items / minute peds)
 - ◆ Each subdomain allocated up to 45 questions for adults (37 for peds)

Domain Framework



Sampling Plan



	8-12 Self		13-17 Self		18+ Self	
	Sample n (item n)		Sample n (item n)		Sample n (item n)	
Negative Affect	500	(153)	500	(153)	600	(169*)
Positive Affect	500	(64)	500	(72)	600	(94)
Stress & Coping	500	(94)	500	(86)	600	(99)
Social Relationships	500	(119)	500	(119)	600	(164)

	3-7 Proxy		8-12 Proxy	
	Sample n (item n)		Sample n (item n)	
Negative Affect	500	(153)	500	(153)
Positive Affect	500	(64)	500	(72)
Stress & Coping	500	(94)	500	(86)
Social Relationships	500	(119)	500	(119)

Sample Demographic (across domains)

	Proxy 3-7 Yr (N=1,000)	Proxy 8-12 Yr (N=1,086)	8-12 Yr (N=1,553)	13-17 Yr (N=1,525)	18+ Yr (N=2,551)
Mean Age	5.05	10.10	10.09	14.99	45.56
	%	%	%	%	%
Sex					
Male	51.0	49.2	50.5	50.3	43.3
Ethnicity					
Not-Hispanic/Latino	87.8	88.8	88.5	92.5	90.0
Race					
American Indian/Alaska Native	1.8	2.0	1.8	1.8	2.7
Asian	3.4	1.9	2.4	2.0	3.6
Black/African-American	12.0	12.9	11.7	10.0	10.3
Native Hawaiian/Pac Islander	1.3	0.6	0.5	0.4	0.6
White	80.4	80.7	82.0	84.7	81.6
Other	6.8	5.2	5.3	3.5	3.9
Proxy Relationship					
Mother/Female Guardian	75.0	71.6			
Father/Male Guardian	17.4	22.5			
Grandmother	4.8	4.3			

Analysts



- ◆ **Negative Affect: Seung Choi**
- ◆ **Positive Affect: Jin-Shei Lai**
- ◆ **Stress & Self-Efficacy: Jamie Griffin**
- ◆ **Social Relationships: Rita K Bode**

Analytic Strategy

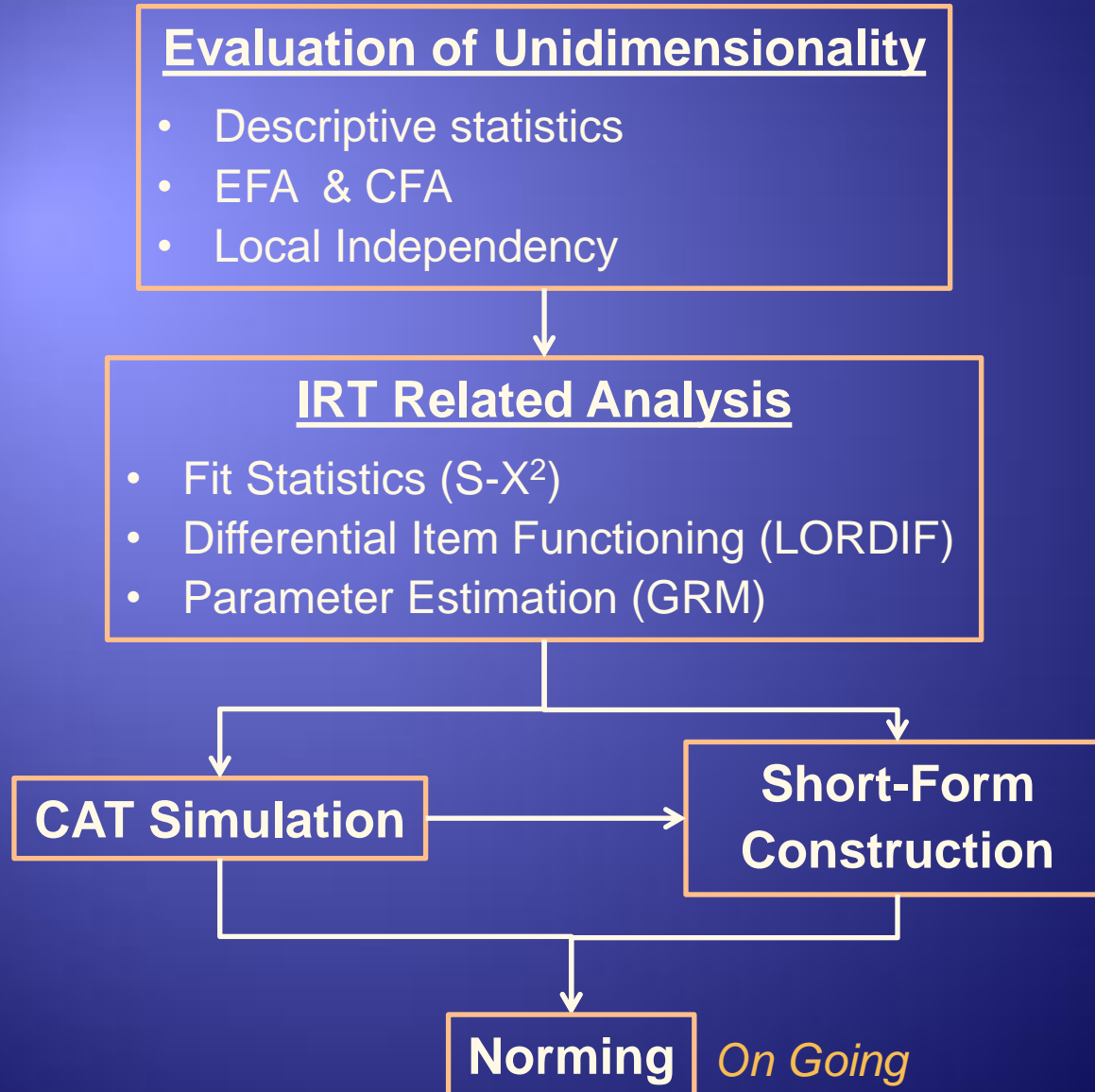


- ◆ Dimensionality based upon EFA/CFA
- ◆ IRT Modeling, DIF & CAT simulations
- ◆ Convergent validity

Key Considerations:

- Conceptual similarity across age bands
- Age-appropriate items/measures

Analysis Flowchart - Positive Affect



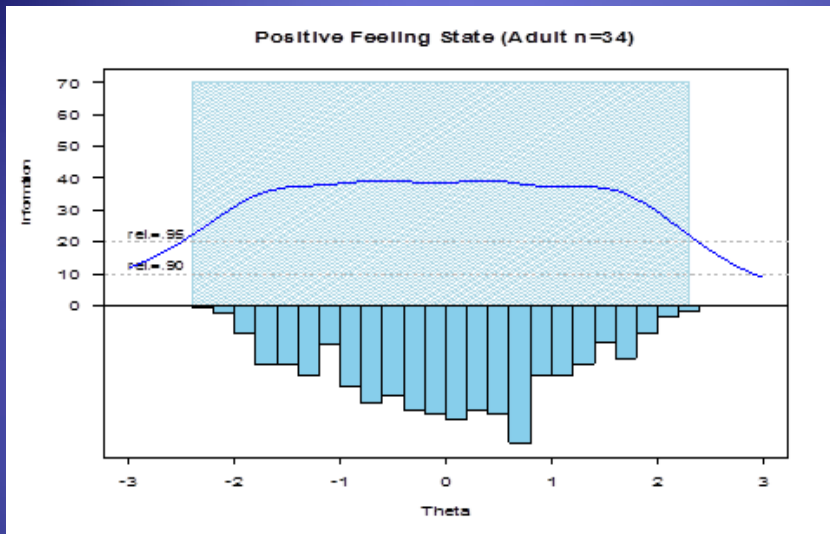
PA Analysis Results



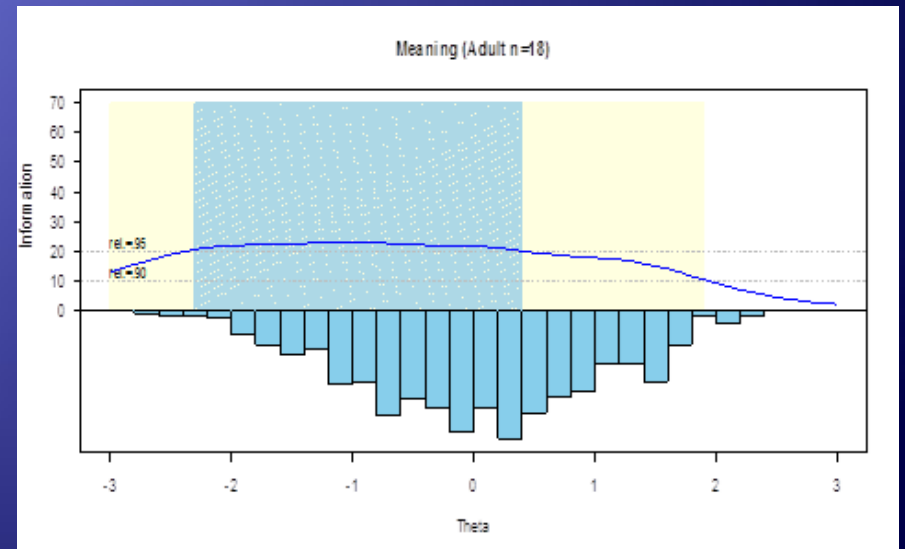
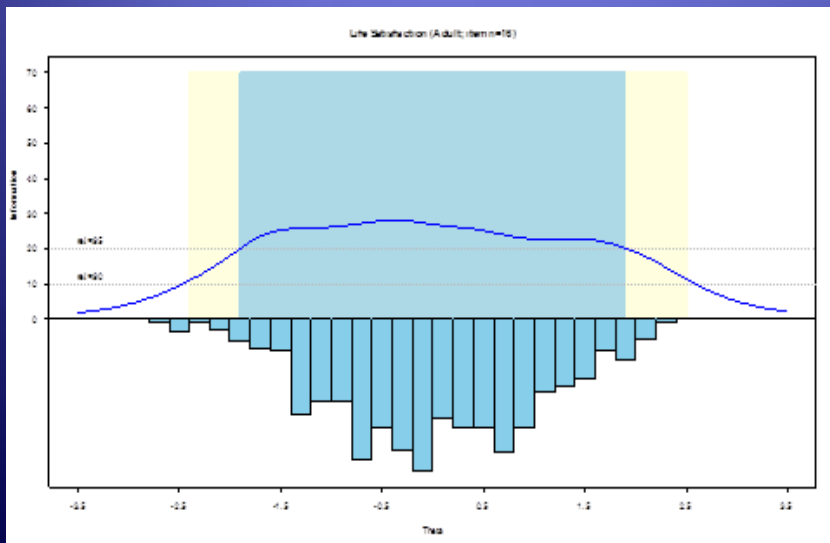
Age Group	Hypothesized Subdomains (# of items)		Final item bank (# of items)	
Adult (18 or older)	Positive Feeling State	(44)	Positive Feeling State	(34)
	Life Satisfaction	(50)	Life satisfaction	(21)
			Meaning	(18)
Adolescent (13-17)	Positive Feeling State	(50)	Positive Feeling State	(40)
	Life Satisfaction	(22)	Life Satisfaction	(14)
Child (8-12)	Positive Feeling State	(42)	Positive Feeling State	(19)
			High Intensity Pleasure*	(17)
	Life Satisfaction	(22)	Life Satisfaction	(17)

* *Not calibrated*

Precision level: Adult (18+)



Sub-Domain	$r \geq 0.95$	$0.9 \leq r < 0.95$	$r < 0.9$
PFS	100%		
Life Satis	97%	2%	1%
Meaning	69%	29.50%	1.50%

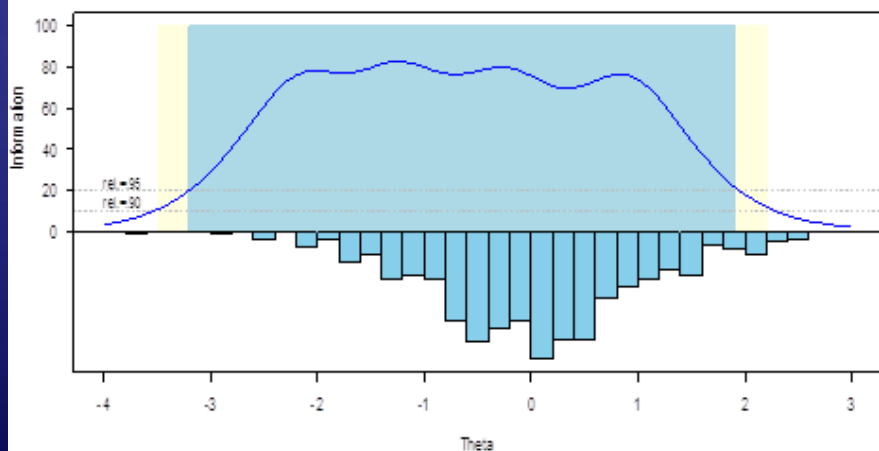


Precision level: Adolescents (13-17)

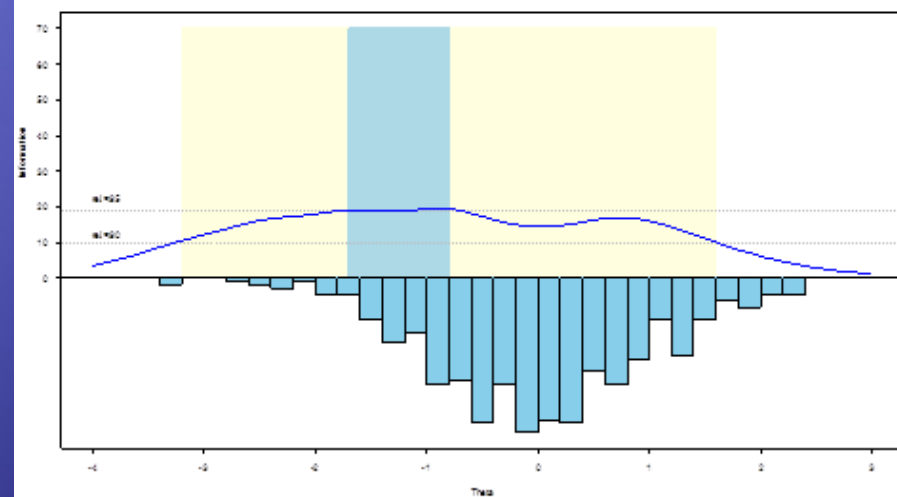


Sub-Domain	$r \geq 0.95$	$0.9 \leq r < 0.95$	$r < 0.9$
PFS	96.70%	2.30%	1%
Life Satis	17.20%	77.70%	5.10%

Positive Feeling State (Adolescent)



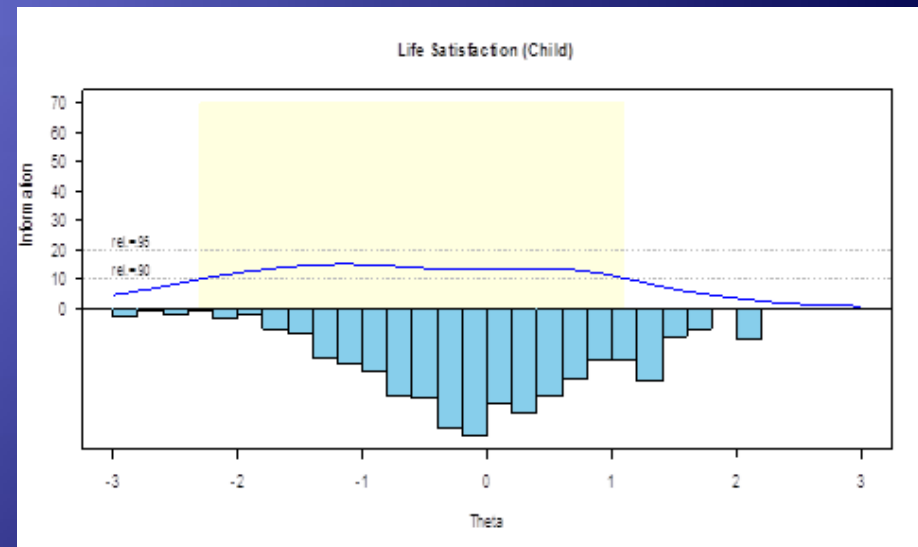
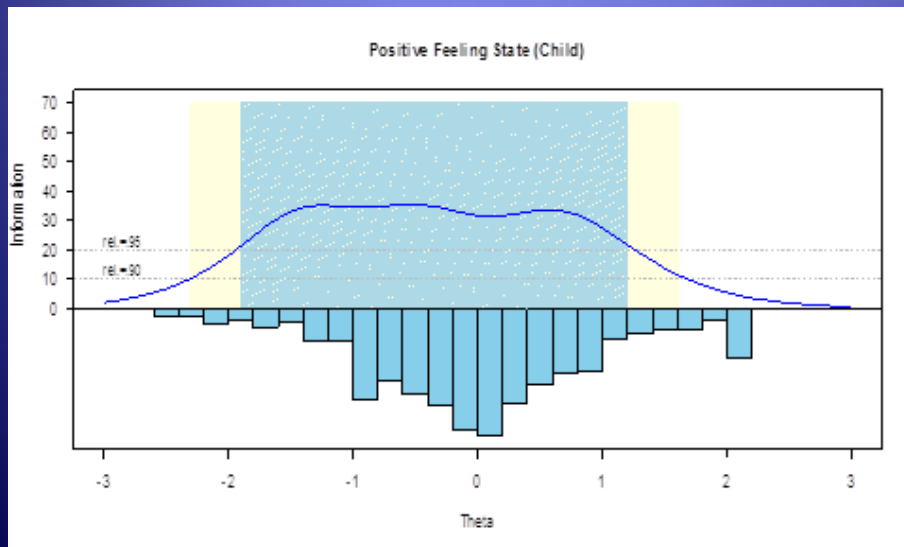
Life Satisfaction (Adolescent)



Precision level: Child 8-12

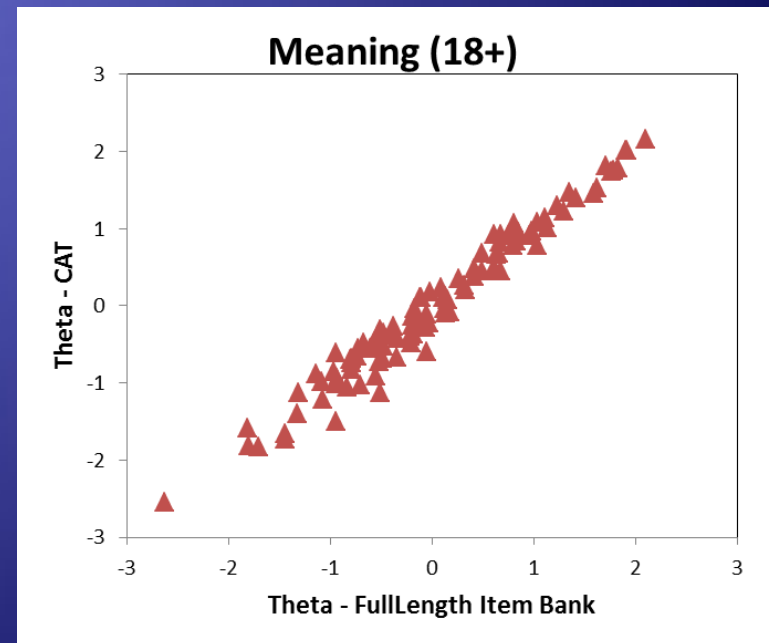
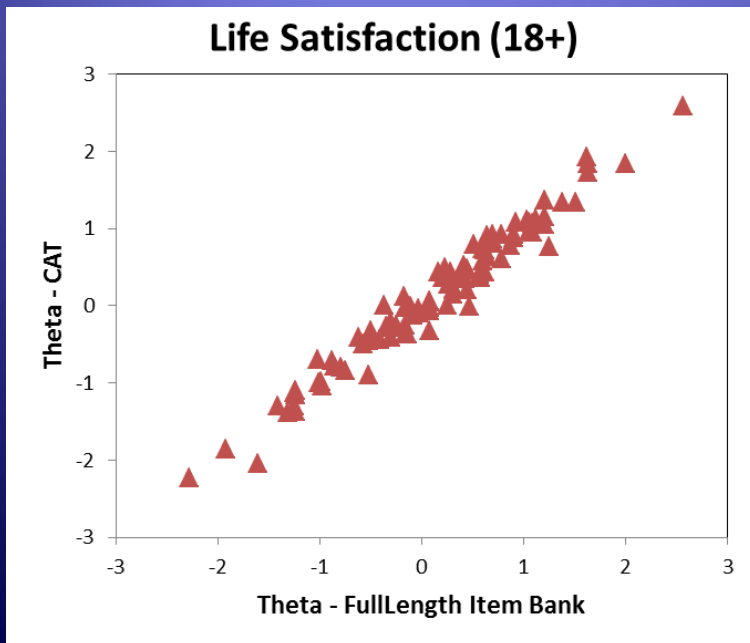
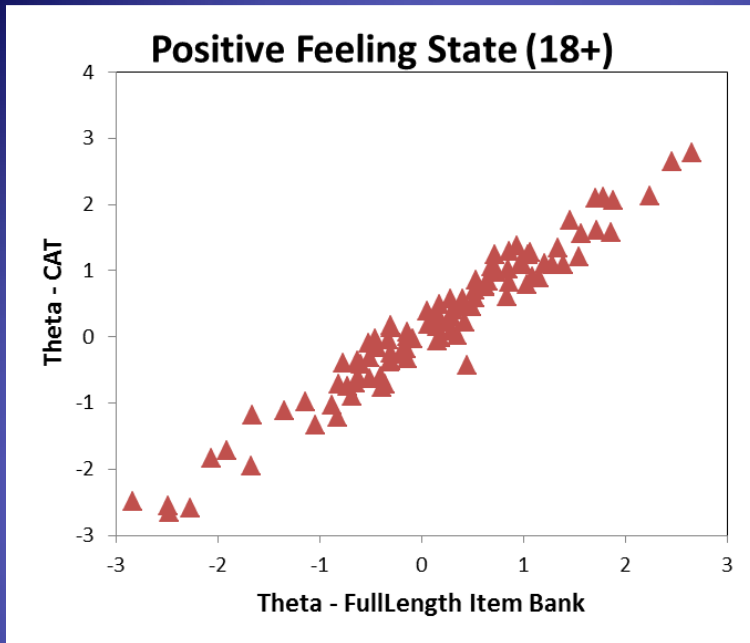


Sub-Domain	$r \geq 0.95$	$0.9 \leq r < 0.95$	$r < 0.9$
PFS	87.10%	5.70%	7.20%
Life Satis	0%	85.20%	14.80%



CAT vs. Full-Length Item Bank Adults (18+ yrs)

Domain	correlation (CAT vs full-length)	# of items administered	SD
PFS	0.97	6.56	1.47
Life Satis	0.98	4.43	1.12
Meaning	0.98	7.2	1.66

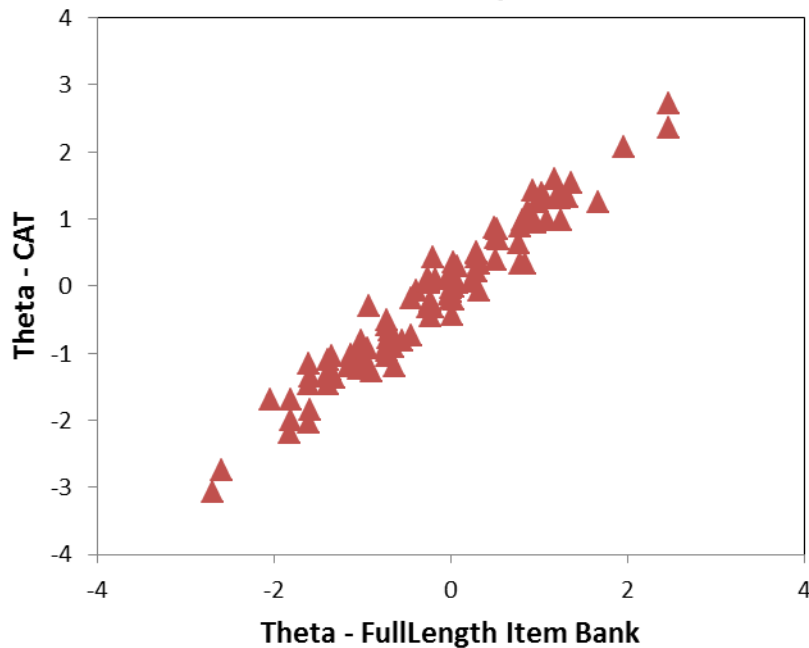


CAT vs. Full-Length Item Bank Adolescents (13-17 yrs)

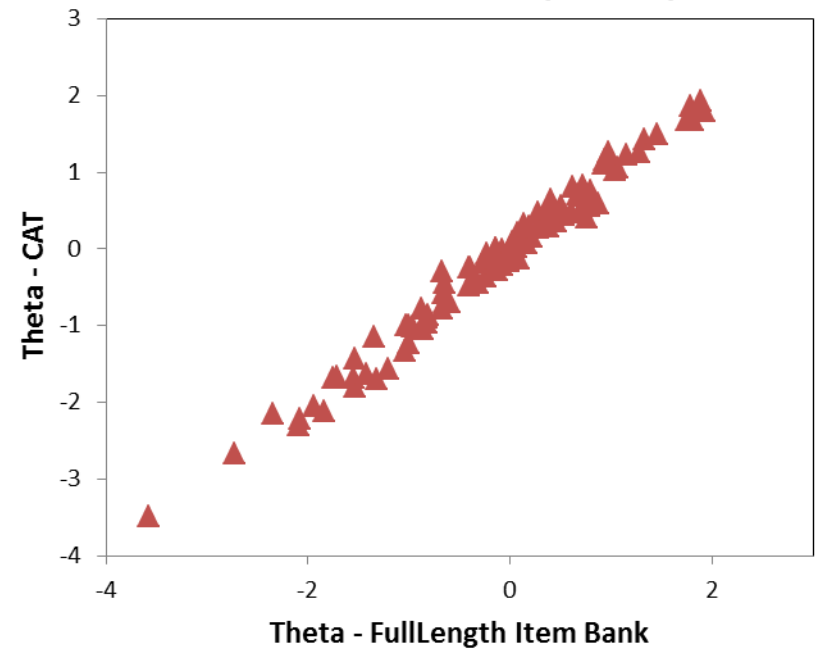


Domain	correlation (CAT vs full-length)	# of items administered	SD
PFS	0.97	4.65	1.62
Life Satis	0.99	7.99	1.86

Positive Feeling State (13-17)



Life Satisfaction (13-17)

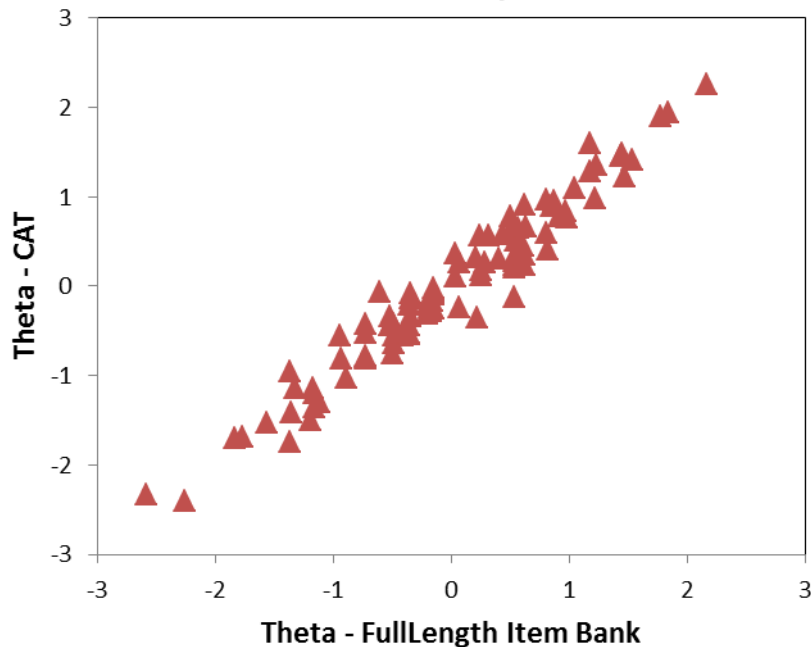


CAT vs. Full-Length Item Bank Adolescents (8-12 yrs)

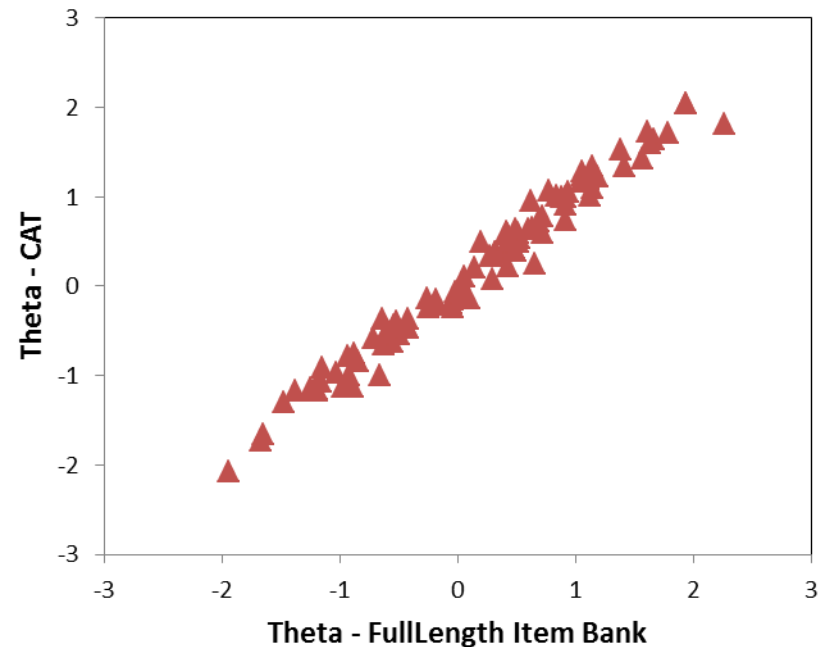


Domain	correlation (CAT vs full-length)	# of items administered	SD
PFS	0.97	5.55	2.35
Life Satis	0.99	8.53	1.71

Positive Feeling State (8-12)



Life Satisfaction (8-12)



Norming Strategies



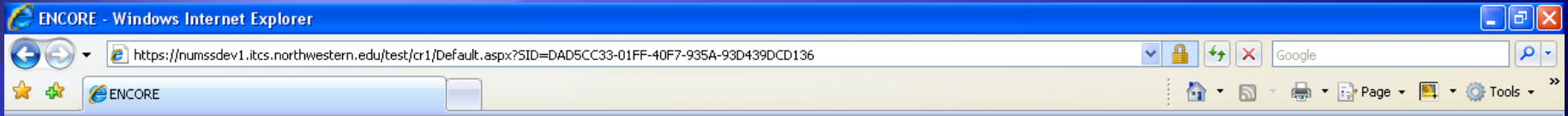
Subdomain	Concept	Adult (18+ yrs)		Adolescent (13-17 yrs)		Child (8-12 yrs)	
		CAT vs Fixed Form	# of items	CAT vs Fixed Form	# of items	CAT vs Fixed Form	# of items
Negative Affect	Anger	CAT	29	Fixed	6	Fixed	6
	Fear	CAT	28	Fixed	8	Fixed	8
	Sadness	CAT	28				
Positive Affect	Positive Feeling States	CAT	21	Fixed	16	Fixed	20
	Life Satisfaction	Fixed	14	Fixed	24	Fixed	16
	Meaning	Fixed	8	Fixed		Fixed	
Stress & Self-Efficacy	Perceived Stress	Fixed	15	Fixed	14	Fixed	14
	Self-Efficacy	Fixed	20	Fixed	30	Fixed	30
Social Relationships	Social Support	Fixed	16	Fixed	13	Fixed	13
	Companionship	Fixed	13	Fixed	12	Fixed	12
	Social Distress	Fixed	16	Fixed	12	Fixed	12

Emotional Health Testing Platform



- ◆ Browser-based, with easy-to-use web conventions to operate
 - ◆ Can use mouse or keyboard to answer items.
- ◆ Template includes auto-advance to make operation easier / faster.
- ◆ Will be available for remote (website) or local delivery (portable laptop).
 - ◆ Can be adapted for tablet pc and touchscreen technology.

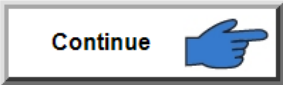
Emotional Health Testing Platform



On the next screens, we will ask you questions about your thoughts, feelings and behaviors. Read each question carefully and answer as well as you can. There is no right or wrong answer, only what is true for you and describes your thoughts, feelings, and behaviors. Some questions may seem similar to ones you have already answered. This is intentional. Please consider each question by itself and choose an answer that shows how you behave or what you really feel or believe.

After you make your choice, the computer will automatically go on to the next question. If you want to change your answer, click on the GO BACK button to return to the question, then choose a different answer.

Click on the CONTINUE button when you are ready to begin.



Form: N_EH_Intro

Emotional Health Testing Platform



ENCORE - Windows Internet Explorer

https://numssdev1.itcs.northwestern.edu/test/cr1/Default.aspx?SID=DAD5CC33-01FF-40F7-935A-93D439DCD136

ENCORE

In the past month, please describe how often...

I have friends who will have lunch with me when I want.

Never

Rarely

Sometimes

Usually

Always

Go Back

Skip

Form: N_SelfL
Item: SOC239

Emotional Health Testing Platform



ENCORE - Windows Internet Explorer

https://numssdev1.its.northwestern.edu/test/cr1/Default.aspx?SID=DAD5CC33-01FF-40F7-935A-93D439DCD136

ENCORE

In the past month, please describe how often...

I feel like I'm part of a group of friends.

Never

Rarely

Sometimes

Usually

Always



Form: N_SelfL
Item: SOC247



NIH Toolbox

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QUESTIONS?



For more information, please visit www.nihtoolbox.org

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