

A RASCH MODELING APPROACH TO SCALE IMPROVEMENT

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CLASSICAL TEST THEORY

$$X = T + e$$

LIMITATIONS

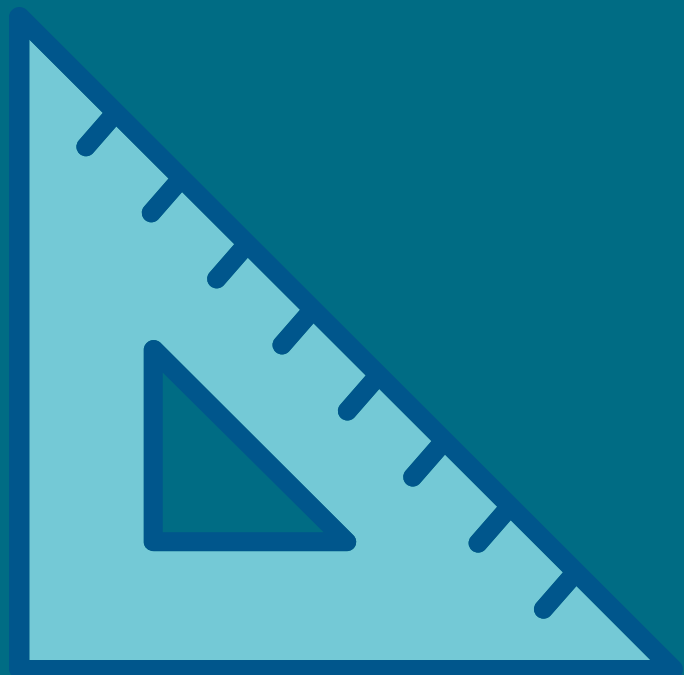
- *Sample dependent*
- *Test dependent*
- *Ordinal vs. interval*



Ben Wright

THE RASCH APPROACH

*Observed score = Item difficulty X Person
ability*



RASCH BENEFITS

- *Sample free*
- *Item free*
- *Explore quantitative properties of trait*

ISSUE 1: TOO MANY ITEMS

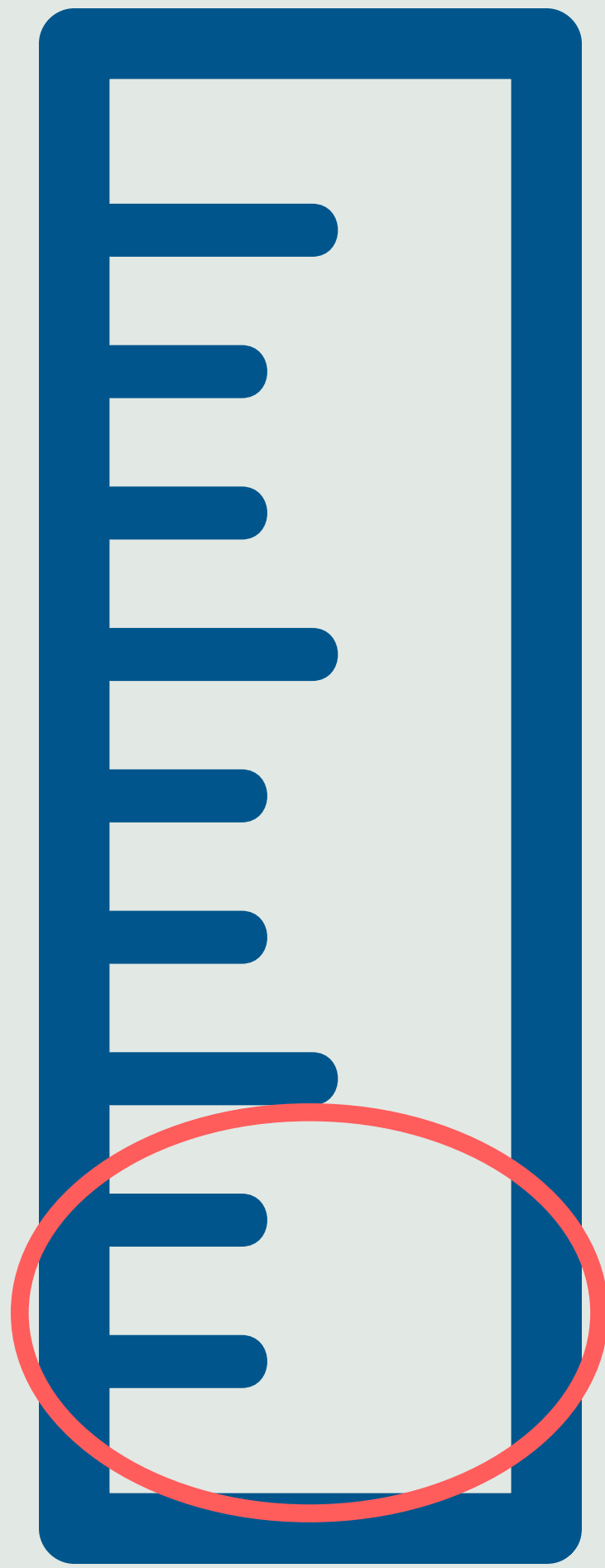
```

12-661WS - Notepad
File Edit Format View Help
TABLE 12.2 AYO_baselineRAW March 2015_IRTanalysisi ZOU661WS.TXT Mar 31 2017 11:26
INPUT: 4356 PERSON 42 ITEM REPORTED: 4354 PERSON 42 ITEM 6 CATS WINSTEPS 3.92.1
-----
MEASURE PERSON - MAP - ITEM
      <more>|<rare>
2      . +
      . |T BLQ120 BLQ128
      . T|
1      .## + BLQ113
      .##### S|S BLQ102_R BLQ105_R BLQ123 BLQ124 BLQ126
      .##### | BLQ100 BLQ115 BLQ121 BLQ125 BLQ127
      BLQ129 BLQ181_R BLQ195_R
0 .##### M+M BLQ10 BLQ107_R BLQ114 BLQ122 BLQ132
      BLQ191_R BLQ197_R BLQ19_RE BLQ97 BLQ98
      .##### | BLQ101 BLQ104_R BLQ106 BLQ131 BLQ148
      BLQ150 BLQ153 BLQ154_R BLQ196_R BLQ99
      .##### S|S BLQ130 BLQ198_R BLQ8
-1      .## + BLQ12 BLQ9
      .# T|
      . |T
-2      . +
      . |
      . |
-3      . +
      . | BLQ11_RE
      . |
-4      . +
      . |
      . |
-5      . +
      . |
      . |
-6      . +
      . |
      . |
-7      . +
      <less>|<freq>
EACH "#" IS 73: EACH "." IS 1 TO 72

```

**ISSUE 2: VERY
SMALL EFFECTS**

2-3
levels of person ability



2	MEASURE	PERSON	ITEM			
3	(Highest Risk) 2	.				
4		.	How wrong do you think it is for someone your age to take a handgun to school? (120)	How wrong do you think it is for someone your age to use LSD, cocaine, amphetamines, or other illegal drugs? (128)		
5		.				
6	1	. ##	When I am an adult, I will smoke cigarettes. (113)			
7		. #####	In the past two weeks, I have had thoughts of ending my life. (102R)	I think it is okay to take something without asking if you can get away with it.(105R)	How wrong do you think it is for someone your age to attack someone with the idea of seriously hurting them? (123)	How wrong do you think it is for someone your age to stay away from school all day when their parents think they're at school? (124)
8		. #####	All in all, I am inclined to think that I am a failure. (100)	When I am an adult, I will smoke marijuana. (115)	How wrong do you think it is for someone your age to steal anything worth more than \$5? (121)	How wrong do you think it is for someone your age to drink beer, wine, or hard liquor regularly? (125)
9			How much do you think people risk harming themselves if they smoke one or more packs of cigarettes a day? (129)	The rules in my family are clear. (181R)	Do you enjoy spending time with your mother? (195R)	
10	0	. #####	How important do you think the things you are learning in school are going to be for your later life?(10)	I think sometimes it's okay to cheat at school.(107R)	When I am an adult, I will drink beer, wine, or liquor (114)	How wrong do you think it is for someone your age to pick a fight with someone? (122)
11			Do you feel very close to your mother? (191R)	If I had a personal problem, I could ask my mom or dad for help. (197R)	I feel safe at my school. (19R)	I like to see how much I can get away with. (97)
12		. #####	In the past year have you felt depressed or sad MOST days, even if you feel OK? (101)	It is all right to beat up people if they start the fight. (104R)	It is important to be honest with your parents, even if they become upset or you get punished.(106)	How much do you think people risk harming themselves if they smoke marijuana regularly?(131)
13			I like my neighborhood.(150)	I feel safe in my neighborhood. (153)	I'd like to get out of my neighborhood. (154R)	Do you enjoy spending time with your father? (196R)
						At times I think I am no good at all. (99)

NEXT STEPS

- *Survey revision*
- *Cognitive interviewing focus group*
- *Pilot (re)revised survey*
- *Data gathering*
- *Creating tool for using person ability location as program assessment*

RESOURCES

Rasch Measurement Transactions: <https://www.rasch.org/rmt/>

Winsteps website: <http://www.winsteps.com/>

Bond & Fox's Applying the Rasch Model: Fundamental Measurement in the Human Sciences (3rd ed).