Bond&FoxChapter5.pdf: Bond & Fox (2006) Applying the Rasch Model Chapter 5: The BLOT Test	
Bond & Fox Bond's Logical Operations Test data Skip down to Let's remind ourselves about the BLOT if Bond&FoxChapter5.txt and this Tutorial are already displaying on your screen. <i>Please print out the Tutorial for reference</i> . <i>Please install Bond&FoxSteps on your computer by double-</i> <i>clicking on Bond&FoxStepsInstall.exe on your CD</i>	001 H G 11111111101101010101011111110011111 002 H G 11111111111111111111111111111111111 003 H G 1101011111111111111111111111111111111
Launch Bond&FoxSteps from the short-cut on your desktop or from the Windows "Start" menu.	B Bond&Fox Steps
The Bond&FoxSteps Control File Set-Up Screen displays. We are going to follow the instructions in the blue box.	We day with the first set to the first set to the day with the da
Click on the "Data files" menu. Click on Bond&FoxChapter5.txt	Files Edit Analysis Data files Tutorials Hel; BondFoxAppendix2.txt BondFoxChapter2.txt TITLE = Report 1 PERSOI BondFoxChapter4.txt BondFoxChapter5.txt
The Bond&FoxChapter5.txt control instructions and data are displayed on your screen.	Cond&FoxChapter5.txt Files Edit Analysis Data files Tutorials Help Bond& FoxSte TITLE = Report title is Bond & Fox BLOT data: Chapter 5.txt PERSON= A data row is a NAME1 = First person label column Number of data columns Number of data columns Number of data columns Number of data columns Oclumn: 1 2 3 4 5 6 7 8 9 10 11 12 Veccus Person: 1 2 3 4 5 6 7 8 9 10 11 12 Veccus Number of 1 2 3 4 4 Monte of 0 02 03 04 Label: 0 0 1 H G 0 0 2 H O 0 1 H G 0 0 2 H 0 0 2 H G 1 1 1 1 Yet

Click on the "Tutorials" menu. Click on "Bond&FoxChapter5.pdf" - this is the Tutorial matching Bond&FoxChapter5.txt	Files Edit Analysis Data files Tutorials Help BondFoxAppendix2.pdf BondFoxChapter2.pdf BondFoxChapter3.pdf PERSON= A data BondFoxChapter5.pdf
This PDF file displays. It is what you are reading now. <i>Please print</i> out the Tutorial for reference.	Bond&FoxChapterS.pdf: Bond & Fox (2006) Applying the Rasch Model Chapter 5: The BLOT Test Bond & Fox B ond's L ogical Operations Test data Skip down to Lef's remind ourselves shout the BLOT if Bond& FoxChapterS.txt and this Tuttrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are already displaying on your screen. Please print out the Tutrial are on your Coll. Launch Bond&FoxSteps from the short-cut on your desktop or from the Windows 'Start' menu. Image: Please playse. Displayse. The Bond&FoxSteps Control File Set-Up Screen displays. We are going to follow the instructions in the blue box. Image: Please playse. Please playse. Displays
Now step-by-step through this Tutorial Click "OK" on the Welcome dialog	Wekome to Bond&FoxSteps ! Wekome to Bond&FoxSteps, a version of Winsteps customized to analyze the examples in "Applying the Rasch Model" by Trevor Bond and Christine Fox. Click on the "Data files" menu. Then click on the data file you want to investigate. Each is dentified by its chapter. Click on the "Tutorials" menu. Then click on the Tutorial matching the data file. It is a PDF file and will be displayed after a few moments by Adobe Reader or equivalent. S. Follow the Tutorial. Download Adobe Reader OK Thanks, I dont need to see this again
 Let's remind ourselves about the BLOT. It consists of 35 multiple-choice items administered to 150 persons. Each answer is then scored 1 ifcorrect, 0 if it does not. Bond & Fox allocate each person to an ability group: raw scores of 0-26 are the Low group. 27-35 are the High group. H and L are coded in column 5 of the person label. The children's genders are also indicated: B=Boy, G=Girl, x=unknown. 	Bond&FoxSteps Control File Set- TITLE= Report title is PERSON= A data row is a PERSON= A data row is a PERSON= A data row is a NAME1 First person label column ITEM= A data column is a ITEM1 = First item column NAME1 First person label column 1 ITEM1 = First item column 9 NAME1 First person label column 1 ITEM1 = First item column 9 NAME1 First person label length 7 NI = Number of Items 35 Number of data columns 43 CODES= Valid codes 10 Refresh Data Display Data entry direction: Free excess rows and columns Scan data for codes Categee CC Column: 1 2 4 5 6 7 8 9 10 11 12 13 14 15 14
Let's remind ourselves about the BLOT. It consists of 35 multiple-choice items administered to 150 persons. Each answer is then scored 1 ifcorrect, 0 if it does not. Bond & Fox allocate each person to an ability group: raw scores of 0-26 are the Low group. 27-35 are the High group. H and L are coded in column 5 of the person label. The children's genders are also indicated: B=Boy, G=Girl, x=unknown. Let's perform the H Analysis of these data. Click on "Analysis" menu Click on "Exit to Analysis (does not Save)" - we don't want to make any changes at this point	Bond&FoxSteps Control File Set- TITLE= Report title is Bond & Fox BLOT data: Chapter 5 PERSON= A data row is a Person ITEM= A data column is a Item NAME1 First person label column 1 TEM= A data column is a Item 35 NAME1 First person label length 7 NI= Number of Items 35 Number of data columns 43 CODES= Valid codes 10 Refresh Data Data entry 1 Remove excess Scan data for Codes Column: 1

Bond & Fox Fig. 5.1 is a scatterplot of the item difficulties for the low ability children plotted against the item difficulties for the high ability children. So we need to do two analyses: first for the high ability children, then for the low ability children.	3 2 1 0 -1 -2 -3 -3 -2 -3 -3 -2 -1 0 1 -2 -3 -3 -2 -1 0 1 -2 -3 -3 -2 -1 0 1 2 -3 -3 -2 -1 0 1 2 -3 -3 -2 -1 0 1 2 -3 -3 -2 -1 0 1 2 -3 -3 -3 -2 -1 0 1 2 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3
This is the analysis for the High Ability children. Bond&FoxSteps - Analysis phase - correctly reports that the analysis control file is Bond&FoxChapter5.txt. "Report output file name"? Press your Enter key "Extra specifications"? Type in: PSELECT=????H Press your Enter key This specifies: "Only analyze records with H in column 5 of the person label"	<pre>Bond&FoxChapter5.txt File Edit Diagnosis Output Tables Output Files Batch Help Specific Bond&FoxAnalysis Version 1.0.0 Aug 22 23:31 21 Current Directory: c:\Bond&FoxSteps\Bond-data\ Name of control file: C:\Bond&FoxSteps\Bond-data\Bond&FoxChapter5.txt Current Directory: C:\Bond&FoxSteps\Bond-data\ Report output file name (or press Enter for tel Extra specifications (or press Enter): PSELECT=????H</pre>
The BLOT data are Rasch-analyzed. Measures (person abilities, item difficulties) are constructed. Note that only 79 measures have been estimated. These are the 79 high ability, H, children.	Zero Color Color <thc< td=""></thc<>
Let's save the item difficulties from this H analysis in to a file called "H.txt" Click on "Output Files" menu Click on "Item File IFILE="	Output Files Batch Help Specifies 00 ,Control variable file= Item File IFILE=
"Output File Specifications"? Most options are correctly pre-selected Click on "Permanent file: specify file name" Click on "OK"	Output File Specifications Display the Output File with: • Text Editor • Excel © SPSS • Don't display File format: • Text: space-separated: fixed field • Text: tab-delinited fields fixed tor EXCEL] • Text: tab-delinited fields fields in "guotation marks" • SPSS: save format Column Headings: • No column file: rougest file name • Tent statue • Permanent file: rougest file name • OK Cancel OK Cancel

	I
"Item Measure File: IFILE="? "File name:" Type in H.txt Click on "Save"	Item Measure file IFILE Item Save n Imodelfand data Imodelfand data Imodelfand data I
WordPad displays file "H.txt". The first two columns are crucial. They show the item entry number and the measure (item difficulty) for each item. This is all we need from the H analysis.	H.bxt - WordPad File Edit View Insert Format Help Image: Strain St
Close all open and output windows	
Now for the analysis of the low ability, L, children. Launch Bond&FoxSteps from the short-cut on your desktop or from the Windows "Start" menu.	Bond&Fox Steps
The Bond&FoxSteps Control File Set-Up Screen displays. Click on "OK" to close the blue "Welcome" box	Construction Construction <td< td=""></td<>
Click on the "Data files" menu. Click on Bond&FoxChapter5.txt	Files Edit Analysis Data files Tutorials Hel; BondFoxAppendix2.txt BondFoxChapter2.txt BondFoxChapter3.txt PERSOI
The Bond&FoxChapter5.txt control instructions and data are displayed on your screen.	If Control and Casts Me Sectory Files Edit Analysis Data files Tubration Help Bond & Fox BLOT d TITLE - Report Hell is Bond & Fox BLOT d PERSON-A data row is Person NAMELEN - Person lobellengty Number of data comes Number of data comes Data ontry Display Column Column Column Labelto 1 2 0 0 0 1 1 2 0 0 0 1 1 2 0 0 0 1 1 2 0 0 0 1 0 1 0 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Let's perform the H Analysis of these data. Click on "Analysis" menu Click on "Exit to Analysis (does not Save)" - we don't want to make any changes at this point	Image: Section 2016 Image: Section 2016 File Edit Analysis Data files Tutorials Help File Edit Analysis Data files Tutorials Help Save control with data file and exit to Analysis Save control file without data and exit to Analysis Save data-only file and exit to Analysis Save data-only file and exit to Analysis Save data-only file and exit to Analysis Start Analysis (does not "Save") Exit to Analysis (does not "Save") Exit to Analysis (does not "Save") Save "Distribution"

This is the analysis for the Low Ability children. Bond&FoxSteps - Analysis phase - correctly reports that the analysis control file is Bond&FoxChapter5.txt. "Report output file name"? Press your Enter key "Extra specifications"? Type in: PSELECT=????L (you can copy-and-paste if you want) Press your Enter key This specifies: "Only analyze records with L in column 5 of the person label"	<pre>Pie Edit Diagnosis Output Tables Output Files Batch Help Specification F Bond&FoxAnalysis Version 1.0.0 Aug 22 22:55 2006 Current Directory: c:\Bond&FoxStepsXBond-data\ Name of control file: C:\Bond&FoxStepsYBond-data\Bord&FoxChapter5-BLOT.txt Current Directory: C:\Bond&FoxSteps\Bond-data\ Report output file name (or press Enter for temporal Extra specifications (or press Enter): PSELECT=????L</pre>
The BLOT data are Rasch-analyzed. Measures (person abilities, item difficulties) are constructed. Note that only 71 measures have been estimated. These are the 71 low ability, H, children.	Z72 .00 .0000 112 17 Calculating Fit Statistics
Let's take a look at the item difficulty estimates. Click on "Output Tables" Click on "14. Item: entry"	260 261 262 263 264 264
Table 14 displays. It shows the item difficulties for the low ability children.	TABLE 14.1 Bond & Fox BLOT data: INFUT: 150 Persons 35 Items ME Person: REAL SEP.: 1.48 REL.: . Item STATISTICS: ENTRY
Return to then Analysis screen. Click on "Bond&FoxChapter5.txt" on the Windows Taskbar.	Bond&FoxChapter5.txt
Now we have the item difficulties for both sets of children. The those for the high ability children are in file "H.txt". Those for the low ability children have now been estimated. Click on "Plots" menu Click on "Compare statistics"	SpecificationPlotsSAS/SPSSGraphs13.2Plotting problems?53.2Compare statisticsBubble chart

On the "Compare statistics" screen, For "persons" The x-axis in Fig 5.1 is from the High Ability analysis. Click on "Measures" Click on "PFILE=" Type in "H.txt" or use the "Browse" button to find <i>H.txt</i> The y-axis is from the current Low Ability analysis. Click on "Measures" Click on "Measures" Click on "this analysis" and "measures" Click on "OK"	Compare statistics X For © items persons Plotthis [left, x-axis] P-value: Average rating Observed match © Expected match Outfit mean-squares Outfit t standardized Displacement Lower Asymptote Infit mean-squares Infit t standardized Correlation Upper Asymptote from © this analysis P-value: Average rating Statistic field number: Statistic name: C:Bond&FoxStepsiBond-dataiti.txt Statistic name: 3 Label field number: 13 and this [right, y-axis] P-value: Average rating Observed match © Expected match Raw score Discrimination Outfit mean-squares Standard errors Outfit t standardized Observed match © Expected match Outfit mean-squares Infit standardized Observed match © Expected match Raw score Displacement Lower Asymptote from © this analysis P-value: Average rating Observed match © Expected match Raw score Displacement Lower Asymptote from © this analysis P-value: Average rating Observed match © Expected match Statistic field number: Statistic field number: Statistic field number: Statistic field number: Statistic fi
"Plot data-point label" Label with "Marker" like Fig. 5.1	Plot data-point label How are the plotted datapoints to be labeled? Marker Entry number Help Label Entry+Label Cancel Only part of the label?
After some number crunching, the Excel plot displays The curved lines are the 95% confidence intervals. Each black point is an item. There is agreement with Fig. 5.1	Measures (H.txt)
Close all open and output windows	\boxtimes
Bond & Fox Chapter 5 focuses on Invariance. The examples come from the BLOT data set, Rasch analyzed and compared in a variety of ways. You should now have enough experience to attempt those yourself. The Excel spreadsheet from Chapter 5 is on the accompanying CD as well.	Files Edit Analysis Data files Tutorials Help BondFoxAppendix2.txt BondFoxChapter2.txt BondFoxChapter3.txt BondFoxChapter4.txt
The Bond&FoxSteps Control and Data file for the PRTIII is in Bond&FoxChapter5~PRTIII.txt	PERSON BondFoxChapter5.txt NAME1 = First pe BondFoxChapter5~PRTIII.txt



We want to analyze all the children. Bond&FoxSteps - Analysis phase - correctly reports that the analysis control file is Bond&FoxChapter5.txt. "Report output file name"? Press your Enter key "Extra specifications"? Press your Enter key	<pre>Pier Specifications (or press Enter):</pre>
The BLOT data are Rasch-analyzed. Measures (person abilities, item difficulties) are constructed for all 150 children.	1 2/8 .00 .0000 112 20* 1 279 .00 .0000 112 28* 1 Calculating Fit Statistics
Now let's look at the performance of the Girls on each item. Click on "Specification" menu Type into the Specification box PSELECT=????G Click on "OK"	Jatch Help Specification Plots SA5/SPS5 Graphs Data Setup 125 32* 135 38* Control Specification = Value X Specification = Value X PSELECT=?????G OK and again OK and again OK
Your Analysis screen shows that 79 girls were selected	PSELECT=?????G Persons SELECTED: 79
Now lets look at the girls' behavior on each item. Click on "Graphs" menu Click on "Expected Score ICC"	Graphs Data Setup Category Probability Coves Expected Score ICC
The empirical item characteristic curve (jagged blue line) displays. This shows the performance of the Girls on item 1. Click on "Next Curve" twice to advance to item #3	1.01 Negation (to negate identity)



