# **IRTPRO**<sup>™</sup>

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# 1. Graphical users interface

# 1.1 Introduction

In this document the main features of the IRTPRO graphical users interface (GUI) are

summarized.

When IRTPRO is launched (typically by clicking on the IRTPRO icon on the computer desktop), a page is opened containing clickable links to recently used files, the **Import Data** menu, online help documentation and to gain access to the SSI website. At this stage, the main menu bar displays the **File**, **View** and **Help** options.



# 1.2 Opening an IRTPRO data (ssig) file

By clicking the File button, the drop-down menu shown below is activated.

X I	RTPRO	
File	View Help	
	New	Ctrl+N
	Open	Ctrl+O
	Import	
	Print Setup	
	1 Asthma34.ssig 2 Eysenck87-items1_57.2PL-9items-irt.htm 3 Eysenck87-items1_57.ssig 4 SelfMon4.irtpro 5 SelfMon4.ssig	
	Close Exit	

By selecting the **Open** option, a standard **Open** dialog box is displayed.

🔀 Open				×
Look in:	🐌 Spelling	•	G 🤌 📂	
Recent Places	Name Spelling.ssig	<b>A</b>	C 5	Date modified /2/2011 11:45 AM
Desktop Libraries				
Network	<ul><li>✓</li><li>File name:</li><li>Files of type:</li></ul>	III Spelling.ssig IRTPRO Data File (*.ssig) IRTPRO Command File (*.irtpro) IRTPRO Data File (*.ssig) Fixed Format Data (* fixed) IPTIPIO LITMI, O. ut File (* http:)		Open     Cancel
		IRTPRO HTML Output File (*.htm) IRTPRO Plot Files (*.intplot) All Files (*.*)		

There are five main file types that IRTPRO can open, these being:

- An IRTPRO command (syntax) file with extension .irtpro
- An IRTPRO data file with extension .ssig
- $\circ$  Fixed format data with extension .fixed
- An IRTPRO HTML output file with extension .htm
- An IRTPRO plot file with extension .irtplot

A file with extension .**ssig** refers to an IRTPRO data file and is typically created by importing data from a statistical software package such as SPSS or SAS or a spreadsheet program such as Excel.

## 1.3 Spreadsheet main menu bar

IRTPRO data files are displayed in spreadsheet form.

🔀 IRTI	PRO - [Spelli	ng.ssig]					
📑 <u>E</u> il	e <u>E</u> dit <u>D</u> a	ta <u>M</u> anipu	late <u>G</u> raphi	cs <u>A</u> nalysis	<u>V</u> iew <u>W</u> ir	ndow <u>H</u> elp	_ 8 ×
🗋 🗅 🚔	📙 X 🖻	6 3 ?					
	Infidility	Panoramic	Succumb	Girder	Gender		*
1	0	0	0	0	1		E
2	0	0	0	0	1		
3	0	0	0	0	1		
4	0	0	0	0	1		
5	0	0	0	0	1		
6	0	0	0	0	1		
7	0	0	0	0	1		
8	0	0	0	0	1		
9	0	0	0	0	1		
10	0	0	0	0	1		Ŧ
•							•
Ready							

Once a file of type .**ssig** is opened, the main menu bar displays several options. For example, by clicking the **Analysis** button the drop-down menu shown below is obtained.

🔀 IR	TPRO - [Spelli	ng.ssig]										-		X	
	File Edit Da	ta Manipu	late Graphi	cs	Ana	lysis	View	Win	dow	Help			-	5	×
D	🛎 🖬   X 🖻	8 8 ?				Trac	litional	Sum	med-	Score S	Statis	tics			
	Infidility	Panoramic	Succumb			Unic	dimensi	onal	IRT					1	
1	0	0	0	0		Mult	tidimen	sion	al IRT.					- 1	Ξ
2	0	0	0	0		IDT	Cooring							- 1	
3	0	0	0	0		IKT	scoring							_	
4	0	0	0	0		Adv	anced (	Optio	ns					- 1	
5	0	0	0	0		Sho	w Progr	ress B	ox					- 1	
6	0	0	0	0	<u> </u>	Silo	' Hogi	035 0		_	_	_	_	_	
7	0	0	0	0			1								
8	0	0	0	0			1								
9	0	0	0	0			1								
10	0	0	0	0			1								Ŧ
	1													Þ	

There are four main types of analyses, namely:

- Traditional summed-score statistics
- Unidimensional IRT

- o Multidimensional IRT
- IRT scoring
- IRT simulation

There are two additional items on the **Analysis** list, these being **Advanced Options...** (see Section 1.9) and **Show Progress Box**. By selecting the **Show Progress Box** option (the default), various results of the analysis are displayed, enabling the user to visually determine if the analysis is still running and what progress has been made.

The image below is a screen shot of the progress box for an analysis that is partially completed.

IRTPRO	
IRTPRO: Test 1 Parsing config Record 0 / 586 Beginning IRTPRO computations Initializing integration methodsdone. Initializing segment structuresdone. Initializing item structuresdone. Initializing data structuresdone.	
27 : 21.9162 :	63709.7570
	lbort

#### 1.4 Test Tabs

Regardless of the type of analysis specified, several tests (analyses) may be created using the same IRTPRO dataset. To insert a new test, right-click on the right-hand side of a current test to insert a new test tab.

Dete Filer			
Data File:	C:\IRTPRO Examples	\By Dataset\Spelling\Spelling.ssig	Read file
Test1	1		
	Insert Test		
	Delete Test	odels    Scoring    Simulation	
	Rename		_
	Manage Test		
_			
(	Comments:		
(	Comments: 2P1 model Grouping is	Gender	_
	Comments: 2PL model. Grouping is	Gender	_
(	Comments: 2PL model. Grouping is	Gender	-
	Comments: 2PL model. Grouping is	Gender	_
(	Comments: 2PL model. Grouping is	Gender	_
	Comments: 2PL model. Grouping is	Gender	
	Comments: 2PL model. Grouping is	Gender	
	Comments: 2PL model. Grouping is	Gender	
	Comments: 2PL model. Grouping is	Gender	
	Comments: 2PL model. Grouping is	Gender	
	Comments: 2PL model. Grouping is	Gender	

By right-clicking on a test tab, the test may be renamed or deleted. The sequence of steps to rename the first test tab to 2PL is shown below.

Select	the	Rename	0	ption
--------	-----	--------	---	-------

Enter 2PL

			Data File:	C:\IRTPRO Examples\By Dataset\Spelling\
Data File:	C:\IRTPRO Examples\By	Dataset\Spelling\Spelling.ssig		
			2PL	Test2
Test 1				
	Insert Test		Des	cription Group    Items    Models    Scoring
D	Delete Test	sls    Scoring    Simulation	1	<u>[ītle:</u>
	Rename		1	Spelling Test - 4 Items
	Manage Test			
			G	comments:

## 1.5 The Description, Group and Items tabs

When a traditional statistics, unidimensional, or multidimensional analysis is requested via the **Analysis** option, the first three tabs displayed in the corresponding analysis window are

**Description**, **Group** and **Items**. Each of the **Description**, **Group** and **Items** dialogs will be briefly discussed in Sections 1.5.1 to 1.5.3.

#### 1.5.1 The Description tab

Unidimensional Analysis
Data File: C:\IRTPRO Examples\By Dataset\PISA MathBook1\PISAMathBook1USUK.ssig Read file
Traditional IRT Rasch TRT
Description Group Hitems Models Scoring Simulation
2-group IRT Analysis (GPC model for polytomous items)
Comments:
Mixture of 2PL and General Partial Credit Models
,
OK Cancel Run

The **Description** tab has two text boxes that are used to enter a title (description) and optional comments for each test tab. Shown above is the **Description** tab for a **Unidimensional Analysis** based on the test named **IRT**.

#### 1.5.2 The Group tab

The **Group** tab allows one to select one or more grouping variable(s) from the **List of Variables**: text box. In the dialog shown below, the variable Country was selected as the grouping variable. By default, the first group is selected as the reference group. However, the **Group** dialog box allows the user to select any other group as the reference.

Unidimensional Analysis	-	-	×
Data File: C:\IRTPRO Examples\By Da	ataset\PISA MathBook1\PISA	MathBook 1USUK.ss	ig Read file
Traditional IRT Rasch TRT	1		
Description Group Items M	lodels Scoring Simulation		
List of variables:		<u>G</u> roup:	
Cube1 Cube3 Cube4 Farms1 Farms4 Walking1 Walking3 Apples1 Apples2 Apples3 Continent Grow1 Grow3 Grow2	<u>A</u> dd >> [Ref] N ♥ G1 □ G2	Country	
Options		OK	Cancel Run

#### 1.5.3 The Items tab

The **Items** tab dialog box for a traditional statistics or unidimensional IRT analysis is shown below. Items can be selected for each group from the **List of variables**: column and adding it to the **Items**: column.

In most practical applications, a multiple group analysis is based on the selection of the same set of items for each group. If this situation applies, the user selects the items from the **List of variables**: for the first group and then clicks on the **Apply to all groups** button to make the same selection for all groups.

Unidimensional Analysis	<b>x</b>
Data File: C:\IRTPRO Examples\By Dataset\PISA MathBook1\PISA	MathBook1USUK.ssig Read file
Traditional IRT Rasch TRT	1
Description Group Items Models Scoring Simulation	L
Country Grouping value: [G1] 1	<b></b>
List of variables: Cube1 Cube3 Cube4 Farms1 Farms4 Walking1 Walking3 Apples1 Apples2 Apples3 Continent ◀	Items: Cube 1 Cube 3 Cube 4 Fams 1 Fams 4 Walking 1 Walking 3 Apples 2 Apples 2 Apply to all groups
Options	OK Cancel Run

The **Items** tab dialog for a multidimensional IRT analysis is shown below.

Multidimensional Analysis	×
Data File: C:\IRTPRO Examples\By Dataset\PISA MathBook1\PIS	AMathBook 1USUK.ssig Read file
Traditional IRT Rasch TRT	1
Description Group Items Models Scoring Simulation	1
Country <u>G</u> rouping value: [G1] 1 List of variables:	tems:
Cube1	Cube1 Cube3 Cube4 Farms1 Farms4 Walking1 Walking3 Apples1 Apples2 Cube4 Farms4 Walking3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Cube3 Cube4 Farms4 Farm3 Farm
	Apply to all groups
Options	OK Cancel Run

The only difference between this dialog and the corresponding one for a traditional statistics or unidimensional IRT analysis is the presence of the text box **Number of latent dimensions:**. Note that the number of latent dimensions must be specified by the user.

## 1.6 The Categories tab

When a traditional summed-score statistics analysis is requested via the **Analysis** option, the fourth (and last) tab displayed in the corresponding analysis window, is the **Categories** tab. The dialog associated with the selection of this tab displays the default item scores associated with each of the selected items. A user may change these scoring values by selecting a cell and then right-clicking on the selected cell to display the **Recode Item Scores...** option as demonstrated in Section 1.7.1.

Traditional Summe	d-Score Statist	tics	1	1	×
Data File: C:\IR	TPRO Examples	s\By Dataset\PIS	SA MathBook1\P	ISAMathBook 105	SUK.ssig Read file
Traditional	RT Rasch	TRT			
Deservation			1		
Description		is Categories			
	Cour	ntry			
<u>G</u> roupin	g value: G1	]1			<b></b>
	Item List	Categories	Data Codes	Item Scores	▲
	Cube1	2	0, 1	0, 1	
	Cube3	2	0, 1	0, 1	
	Cube4	2	0, 1	0, 1	
	Farms1	2	0, 1	0, 1	
	Farms4	2	0, 1	0, 1	
	Walking1	2	0, 1	0, 1	
	Walking3	4	0, 1, 2, 3	0, 1, 2, 3	
	Apples1	2	0, 1	0, 1	▼
<u>R</u> ead	l parameter valu	es			Apply to all groups
Options				OK	Cancel Run

## 1.7 The Models tab

When a unidimensional IRT or multidimensional IRT analysis is requested via the **Analysis** option, the fourth tab displayed in the corresponding analysis window is the **Models tab**. The dialog associated with selection of this tab displays the default models associated with the items and allow a user to change the model type and scoring values of the items.

The dialogs for unidimensional and multidimensional IRT differ somewhat in functionality. These differences will be briefly discussed in Sections 1.7.1 and 1.7.2.

#### 1.7.1 The Models tab, Unidimensional IRT Analysis

The **Models** dialog displays, for each group, five columns of information, namely an item list, the number of categories (distinct values) for each item, the data codes (values) extracted from the IRTPRO dataset, the item scores (coded as 0, 1, 2,... where 0 corresponds to the smallest data code value, etc.), and the model selected. For an item with two categories, the default model is the 2PL model and for an item with more than two categories, the default is the Graded model.

nidimensional Ar Data File: C: 따 Traditional )	nalysis RTPRO Examples IRT   Rasch	s\By Dataset\PIS	SA MathBook1\P	ISAMathBook 1L	JSUK.ssig	<u>R</u> ead file
Descriptio	n Group I Iten	ns Models S	coring    Simulat	ion		
	Cour	ntry				
<u>G</u> roupir	ng value: [G1	]1				•
	Item List	Categories	Data Codes	Item Scores	Model	
	Apples1	2	0, 1	0, 1	2PL	
	Apples2	2	0, 1	0, 1	2PL	
	Apples3	3	0, 1, 2	0, 1, 2	Graded	
	Continent	3	0, 1, 2	0, 1, 2	Graded	
	Grow1	2	0, 1	0, 1	2PL	
	Grow3	2	0, 1	0, 1	2PL	
	Grow2	3	0, 1, 2	0, 1, 2	Graded	
Con	istraints D	<u>IF</u>	•		Apply to	▼ all groups
Options				ОК	Can	cel Run

Item scores can be user-recoded. To do so, select a cell listing the scores to be changed. By right-clicking on the selected cell, the **Recode Item Scores...** option is displayed.

Item List	Categories	Data Codes	Item Scores	Model	
Cube1	2	0, 1	0, 1	2PL	=
Cube3	2	0, 1	0, 1	2PL	
Cube4	2	0, 1	0, 1	2PL	
Farms1	2	0, 1	0, 1	2PL	
Farms4	2	0, 1	0, 1	2PL	
Walking1	2	0, 1	0, 1	2PL	
Walking3	4	0, 1, 2, 3	0, 1,	Recode Iten	Scores
Apples1	2	0, 1	0, 1	21 L	
Apples2	2	0, 1	0, 1	2PL	
Apples3	3	0, 1, 2	0, 1, 2	GP Credit	~
Constraints	<u>D</u> IF <u>R</u>	ead paramete	er values		Apply to all groups

Selection of this option opens, for each of the groups, an **Item's Codes and Scores** dialog. By double-clicking on an **Item Score:** cell, the relevant cell may be edited and a new value entered. The screenshots below show the recoding of the scores for the item Walking3 from (0, 1, 2, 3) to (0, 1, 1, 2).

#### Double-click on row

Edit number and click **OK** 



Item: Walking	3	
Data Codes	Item Scores	ОК
0	0	Cancol
1	1	Cancer
2	1	
3	2	
•	4	

The user may also change the default model type. This is accomplished by selecting cell(s) that display a similar model type that needs to be changed. Right-click on any of the selected cells to display a drop-down list of available models and make a selection. See Section **Error! Reference source not found.** for an example that illustrates this function.

tom Lin		Data Codoo	Hom Coorne	Madal	
Apples1	2	0.1	0.1	2PL	
Apples2	2	0, 1	0, 1	2PL	_
Apples3	3	0, 1, 2	0, 1, 2	GP Credit	
Continent	3	0, 1, 2	0, 1, 2	GP Credit	
Grow1	2	0, 1	0, 1	2PL	
Grow3	2	0, 1	0, 1	2PL	
Grow2	3	0, 1, 2	0, 1, 2	GP Cre	2PL

At the bottom left of the **Models** dialog there are two buttons, labeled **Constraints...** and **DIF...** respectively. The latter button gives access to a dialog for entering parameter values or reading them from a file. Typically, these values are used to score a set of items that were previously calibrated.

By clicking on the **Constraints**... button an **Item Parameter Constraints** window is invoked. Use of this window allows the user to fix or free parameters or to set selected parameters equal.

Item Parameter Constraints													
Group: Country													
Group, Item													
G2, Cube4	а	37	с	38									
G2, Farms1	а	39	с	40									
G2, Farms4	а	41	с	42									
G2, Walking1	а	43	с	44									
G2, Walking3	а	45	c1		c2		c3		c4				
			Trend	-	γ1	46	γ2	47	γ3	48			
G2, Apples1	а	49	с	50									
G2, Apples2	а	51	с	52									
G2, Apples3	а	53	c1		c2		c3						
			Trend	•	γ1	54	γ2	55					
G2, Continent	а	56	c1		c2		c3						
			Trend	-	γ1	57	γ2	58					
G2, Grow1	а	59	с	60									
G2, Grow3	а	61	с	62									
G2, Grow2	а	63	c1		c2		c3					=	
			Trend	-	γ1	64	γ2	65					
G1, Means	μ1	0.0											
G1, Cov	σ1 1	1.0											
G2, Means	μ1	66											
G2, Cov	σ1 1	67										_	
Set parameters eq	ual acr	ross gro	oups					(	ЭК		Can	cel	

The DIF button (differential item functioning) is enabled when the analysis is to be performed for multiple groups.



#### 1.7.2 The Models tab, Multidimensional IRT Analysis

The **Models** tab for a multidimensional analysis has exactly the same functionality than that described in the previous section for the unidimensional case, except that the buttons below the **Multidimensional Analysis** window are labeled **Constraints...**, **EFA...**, and **Bifactor...**, where **EFA** denotes exploratory factor analysis and **Bifactor** denotes a bifactor analysis.

Traditional	IRT    Rasch	TRT			_	
Descriptio	n   Group    Iten	ns Models S	coring Simulati	ion		
	Cour	ntry				
<u>G</u> roupir	ng value: G1	]1				<u> </u>
	Item List	Categories	Data Codes	Item Scores	Model	
	Cube1	2	0, 1	0, 1	2PL	
	Cube3	2	0, 1	0, 1	2PL	
	Cube4	2	0, 1	0, 1	2PL	
	Farms1	2	0, 1	0, 1	2PL	
	Farms4	2	0, 1	0, 1	2PL	
	Walking1	2	0, 1	0, 1	2PL	
	Walking3	4	0, 1, 2, 3	0, 1, 2, 3	Graded	
	Apples1	2	0, 1	0, 1	2PL	<b>-</b>
<u>C</u> on	straints <u>E</u> l	FA <u>B</u> ifacto	or		Apply to a	all groups

Clicking the **EFA**... button activates the **Exploratory Factor Analysis** dialog shown below. To verify that the user intends to specify EFA, the **Exploratory item factor analysis** box is checked. Additionally, a selection of one of the four available rotation methods can be made.

The reader should note that once the **EFA**... option is selected, the **Constraints**... option is no longer available, since IRTPRO automatically sets up the constraints in this case.

Exploratory Factor Analysis						
Exploratory item factor analysis						
✓ <u>T</u> reat item responses as ordered						
Rotation						
Oblique CF-Quartimax						
Orthogonal <u>C</u> F-Varimax						
◯ Oblique CF- <u>V</u> arimax						
OK Cancel						

The **Bifactor...** option provides access to the **Bifactor Analysis** dialog that allows the user to select items associated with specific factors.

Bifactor Analysi	s					×
Crewine ush	Cour	itry				
Grouping Valu	e: [[G1]	1				•
			Factor			
	2	3	4	5	6	
Cube1	×					
Cube3	×					
Cube4	×					
Farms1		X				
Farms4		×				
Walking1		×				
Walking3		×				
Apples1			×			
Apples2			X			
Apples3			X			<b>▼</b>
						OK Cancel

# 1.8 The Scoring tab

When a unidimensional IRT or multidimensional IRT analysis is requested via the **Analysis** option, the second last tab displayed in the corresponding analysis window is the **Scoring** tab.

Unidimensional Analysis	
Data File: C:\IRTPRO Examples\By Dataset\PISA MathBook1\	PISAMathBook 1USUK.ssig Read file
Traditional IRT Rasch TRT	
Description Group Httems Models Scoring Simula	tion
Person ID:	Compute response pattern
Create summed-score to scale conversion table	Score persons
Scaling	Standard deviation: 1
Mi <u>n</u> imum:	Maximum:
Scale in:	
Options	OK Cancel Run

# 1.9 The Simulation tab

When a unidimensional IRT, or multidimensional IRT analysis is requested via the **Analysis** option, the last tab displayed in the corresponding analysis window, is the **Simulation** tab.

Multidimensional Analysis	×
Data File: C:\IRTPRO Examples\By Dataset\PISA MathBook1\PISAMathBook1USUK.se	ig Read file
Traditional IRT Rasch TRT	1
Description Group H Items Models Scoring Simulation	
Simulation	
Group: Country	Examinees
[G1] 1	358
[G2] 2	889
Number of replicate datasets: 5 Percentage missing	values: 2
Latent variable deviates: 4987 New seed	
	Cancel Run

## 1.10 Advanced options window

The Advanced options window can be accessed using the Analysis, Advanced Options... selection via the main menu bar, or alternatively, by clicking the Options... button (lower right-hand corner of an Analysis window).

🔀 IRT	IRTPRO - [PISAMathBook1USUK.ssig]								
🔳 Fil	e Edit Da	ta Manipu	late Graphi	ics	Analysis View Window Help				
🛛 🗅 🚔	<b>-</b> X <b>b</b>	6 3 ?			Traditional Summed-Score Statistics				
	Cube1	Cube3	Cube4		Unidimensional IRT				
1	0	0	0	0	Multidimensional IRT				
2	1	1	1	0	IDT Cooring				
3	1	1	0	0	IKT Sconng				
4	1	1	0	1	Advanced Options				
5	1	1	1	1	Show Progress Box				
6	1	1	0	0					

This window currently has five active tabs, these being Estimation, Starting Values, Priors, **Miscellaneous**, and **Save**. The estimation window is shown below and makes provision for three estimation methods:

- o Bock-Aitkin
- Adaptive quadrature
- o MH-RM

Advanced Options	×
Test: IRT Estimation Starting Values Priors Miscellaneous	Apply to all tests
Estimation method: Bock-Aitkin Adaptive Quadrature Converge informatic	
Maximum number of cycles: 500	Convergence criterion: 1e-005 Convergence criterion: 1e-006
Quadrature details Number of points: 49	Ma <u>xi</u> mum value: 6
Standard errors: S-EM ▼	Apply dimension reduction Group Gen Dim G1 1 G2 1
Default	
	OK Cancel Apply

The **Miscellaneous** dialog is used to control printout of results, and the number of processors to be used.

Advanced Options	×
Test: IRT Apply to all t	ests
Estimation Starting Values Priors Miscellaneous Save	
Number of decimal places in tabular listings:	
Number of processors: 2	
Erint table of standardized residuals	
✓ Compute Chen-Thissen LD and item fit statistics	
Compute limited information overall model fit statistics	
Print each item's goodness of fit frequency table     Minimum expected value:	
Print factor loadings	
✓ Print parameter numbers	
Print diagnostic information	
🏳 Print dump file 🕅 Print full dump file	
OK Cancel	Apply

The **Save** dialog is used to request the print-out of results to specific files.

dvance	d Options
Test:	IRT Apply to all tests
Estim	ation    Starting Values    Priors    Miscellaneous   Save
¥	Item parameter estimates (-prm.txt)
	Asymptotic covariance matrix of the parameter estimates (-cov.bt)
	Inter-item polychoric correlations, for EFA models only (-ini.xt)
	Factor loadings (-fac.txt)
	Main output in ASCII text format (-irt.txt, -sss.txt, or .ssc.txt)
	Debugging output (-dbg.txt)
	OK Casad Andr
	OK Cancel <u>A</u> ppiy

## 1.11 The Data menu

The **Data** option (main menu bar) enables one to insert or delete variables and/or cases from the IRTPRO data file that is currently open. In addition, the drop-down menu makes provision for the renaming of variables (**Variable Properties...** option) and for entering a missing value code.

🔀 IRTPRO - [PISAMathBook1USUK.ssig]									
File Edit Data Manipulate Graphics Analysis View Window Help									
🗅 😅 🖬 🛛 🐰 Insert Variables									
	Cube <sup>-</sup>	Delete Variables		F.	arms4	Walking1			
1	0	Insert Cases	Insert Cases			0			
2	1	Delete Coses	1		0				
3	1	Delete Cases		1		0			
4	1	Variable Properties		1		1			
5	1	Missing Value Code		1		0			
6	1	wissing value code		0		0			
7	1	Recalculate Item Counts		0		1			

#### 1.11.1 The Variable Properties... Option

The **Properties** dialog displays the distinct values (data codes) for each item, together with the frequency counts.

Properties	-	-	-	-			
<u>N</u> ame:	Cube1						
<u>T</u> ype: F	ixed point		•	<u>T</u> ype:	Discrete		•
Description	on:						
Values							
Item		Count	Label				
0 1		411 836					
						Edit	
0		Cancel					

Variables may be renamed. A description of each item may be entered along with descriptive names for corresponding to the numeric values. For example 0 = Experimental, 1 = Control.

Properties <u>N</u> ame: Group	Properties       Name:     Group       Rename										
Type: Fixed	Type: Fixed point   Type: Discrete  Type: Discrete Ty										
Description: Defines the control and experimental groups Values											
Item	Count	Label									
0	130	Control									
1	870	Experimental									
		Edit									
ОК	Cancel										

#### 1.11.2 The Missing Value Code... Option

The Missing Value Code... option allows one to assign a missing value code by entering the appropriate value in the Missing Value text box. The value entered is accepted if the OK

button is clicked. In this case, the user must use the **File**, **Save** option to ensure that this change to the dataset definitions is permanent. The default missing value code is -1.

Missing Value Cod	e	X
Missing value	9	ОК
		Cancel
	_	

## **1.12 The Data Manipulation window**

This window makes provision for the recoding of variables. Suppose, for example, that the variable Group is coded 0, 3 and 4 and that we want to recode these values so that 0 = 1; 3 and 4 = 2. This recoding is accomplished by clicking the **if...else...endif** button. Variable names can be entered by double-clicking on a variable name, or dragging it to the appropriate position in the recode window. The last statement shows the recoding of the variable Score to Score = exp(Score).

Data Manipulation	Functions: Abs() Exp() Ln() Rand() Randomize() Sqrt()	ifend if       ifelseendif         <<=>>       !===         ()       ^%       Backspace         Z       9       /       Delete         4       5       *       Enter         0       =       +	
		OK Cancel	]