# Using the SPSS training materials creation features of Stat-JR (1.0.6)

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# Contents

## Introduction

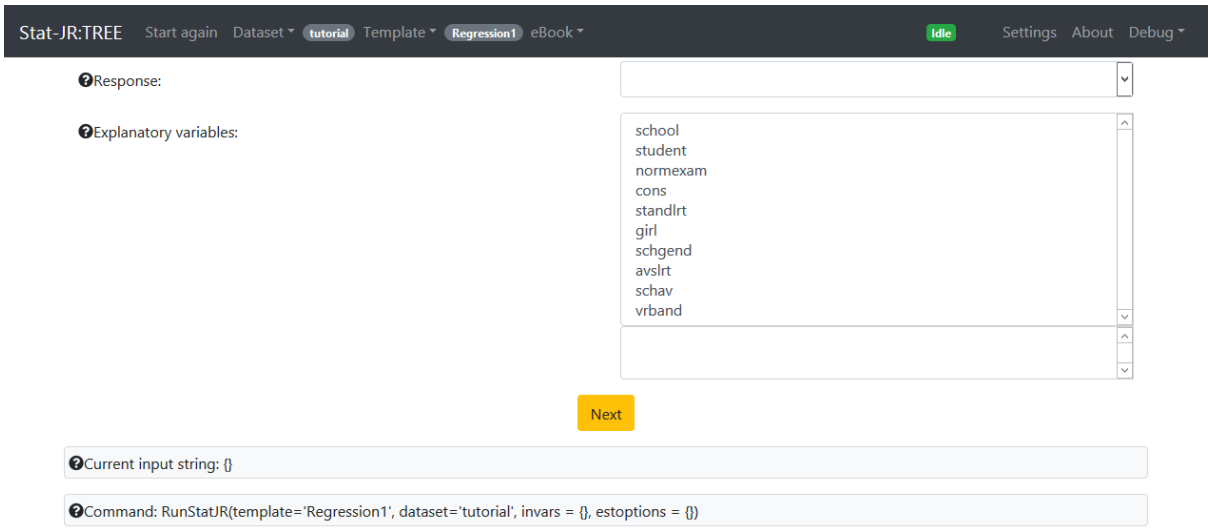
This document accompanies the new Stat-JR templates and eBooks that were created as part of a grant from the British Academy. This documentation also uses the OECD's PISA data (see http://www.oecd.org/pisa/data/2015database/) that has been extracted, processed and stored in .dta format. The new template, eBook and data files are available from http://www.bristol.ac.uk/cmm/software/statjr/downloads/ along with instructions for extracting them. Details on how these files were created and what they contain can be found in the Appendix to this document.

The remainder of the document takes the reader through constructing SPSS training materials using Stat-JR. The document doesn't contain background information on Stat-JR so for this we advise the reader to look at the extensive documentation at http://www.bristol.ac.uk/cmm/software/statjr/manuals/ in particular the Quick Start guide and Beginner's guide.

## Linking data to a skeletal SPSS eBook

The TREE module within Stat-JR allows the user to interactively run models, manipulate data and perform data summarisation. The outputs from these can be combined into an eBook form via a word-processing like interface, which will be the focus of this document.

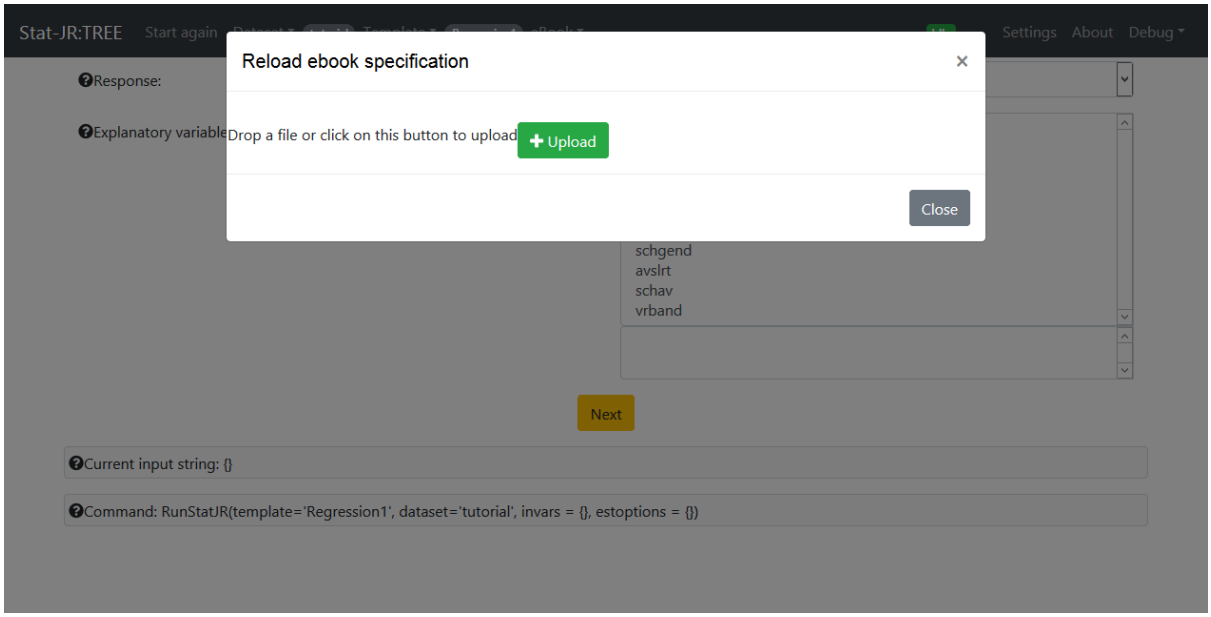
To start using the system click the "TREE" shortcut under "Centre for Multilevel Modelling" within the *Start* menu. Once the application has started the following should appear in a browser window:



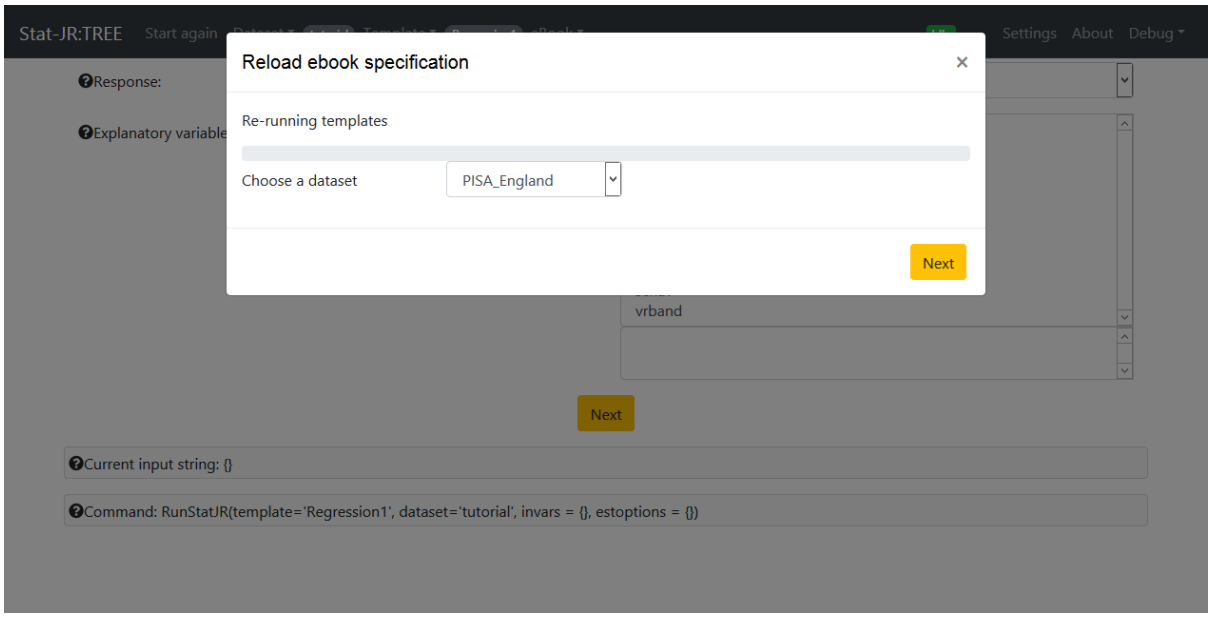

Note that the software has primarily been tested with Chrome and Firefox, so if it opens in a different browser copy the address and use this to open the page in one of these.

While it is possible to create eBooks from scratch using this system we have provided 26 skeletal versions for the 13 topics to help you get started as quickly as possible. For each topic there is a concepts practical eBook which essentially gives the user SPSS instructions and shows the outputs SPSS produces along with interpretations. There is then in addition a quiz (or questions and solutions) practical eBook which consists of two eBook pages, one that asks questions and the other which gives solutions. We will be working with a concepts practical eBook throughout this document.

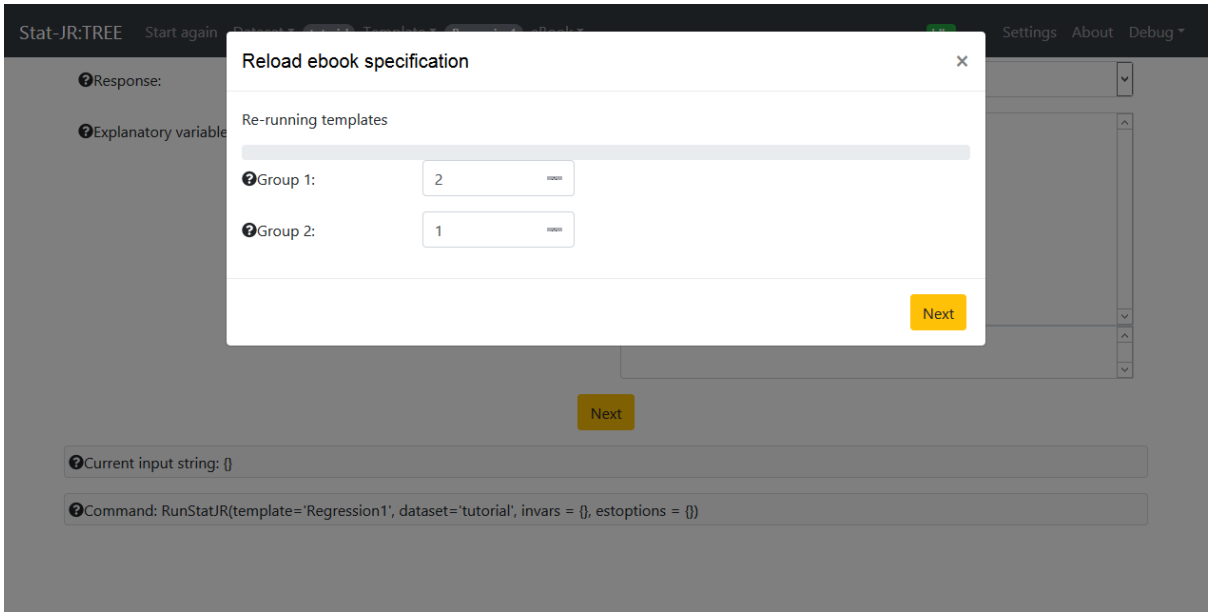
To enable you to become familiar with the system we will start by producing a simple PDF to go with the specific eBook. To do this click the "*eBook*" menu at the top of the screen, followed by "*Load*". You should now see the following screen:




Next click the *"+Upload*" button, navigate to the location where you put the provided eBooks. We will use *SPSS -Independent Samples t test - Practical.zip* here, so select it and click "*Open*". The system will then load and begin to run the eBook. When it encounters an input that has not been specified it will prompt the user to provide an answer specific to this instance of running the eBook. For the provided eBook the first of these will be ask for the data to be used. Select "*PISA_England*" from the drop-down and click "*Next*".

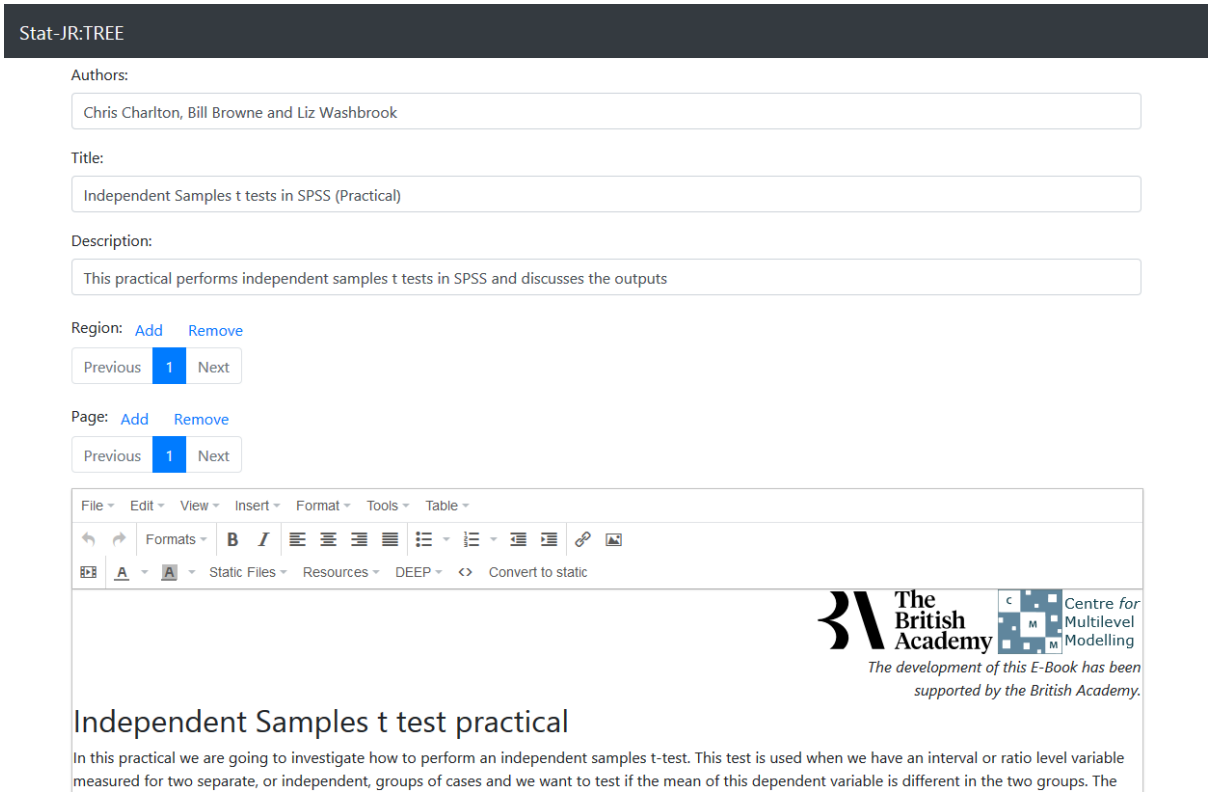



The rest of the questions will ask for the Test Variable and Grouping Variable, so Select "*SCISCORE*" and "*GENDER*" respectively clicking "*Next*" after each input:

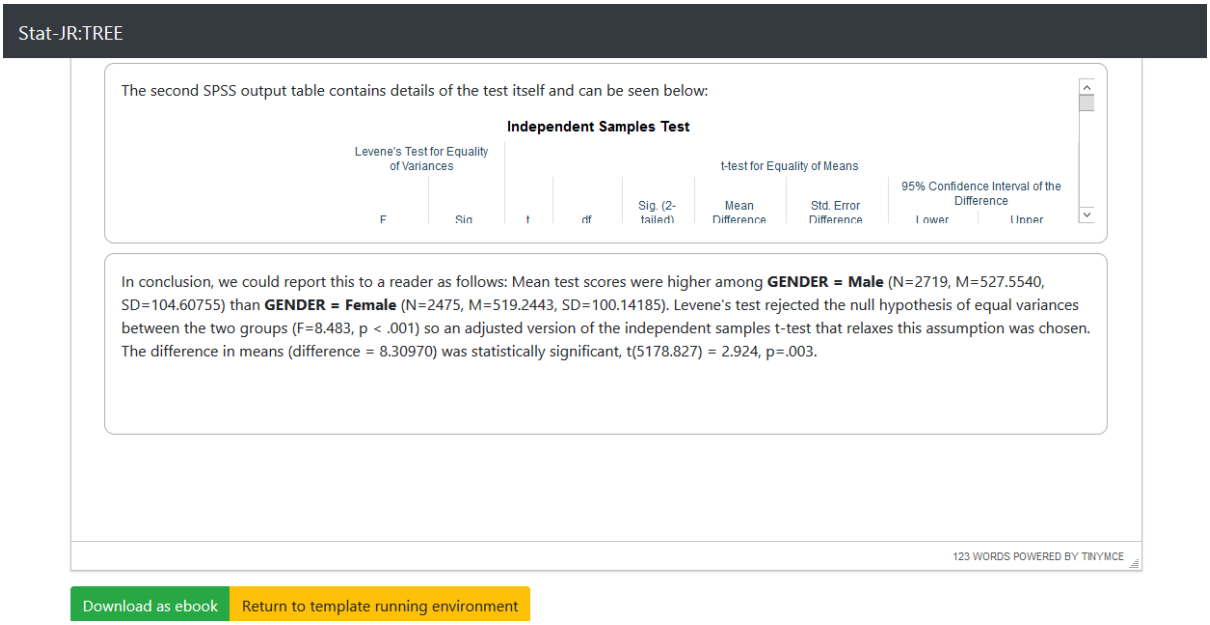



Finally choose (type in) "*2*" and "*1*" to represent the two groups as shown above and click "*Next*" again.

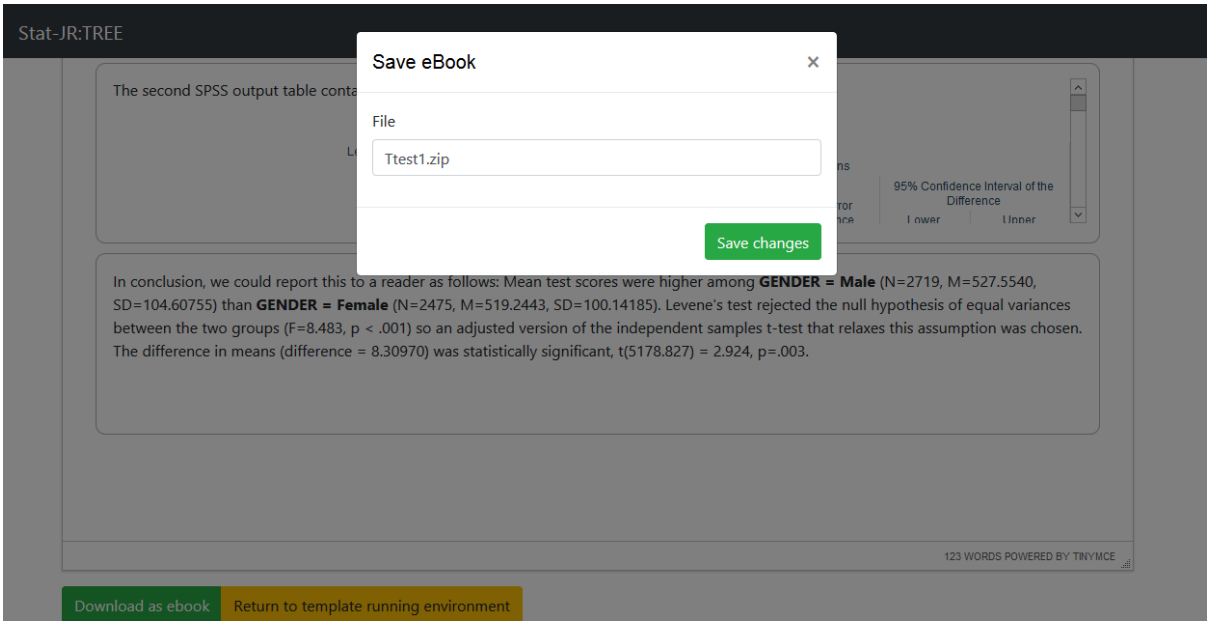
Now that all the inputs have been specified the system can finishing running the commands referenced by the eBook, and it will proceed to do so. When this has finished the screen will switch to an eBook editing screen containing the content from the loaded eBook, along with outputs created from running the referenced commands with the chosen data and variable.




This eBook contains the concepts practical that gives instructions and interprets the outputs. At this stage we are simply replicating the provided PDF for this eBook, so to continue scroll to the bottom of the page and click the "*Download as eBook*" button.




You will then be asked for a file name to use for the new eBook. Type in "*Ttest1.zip*".

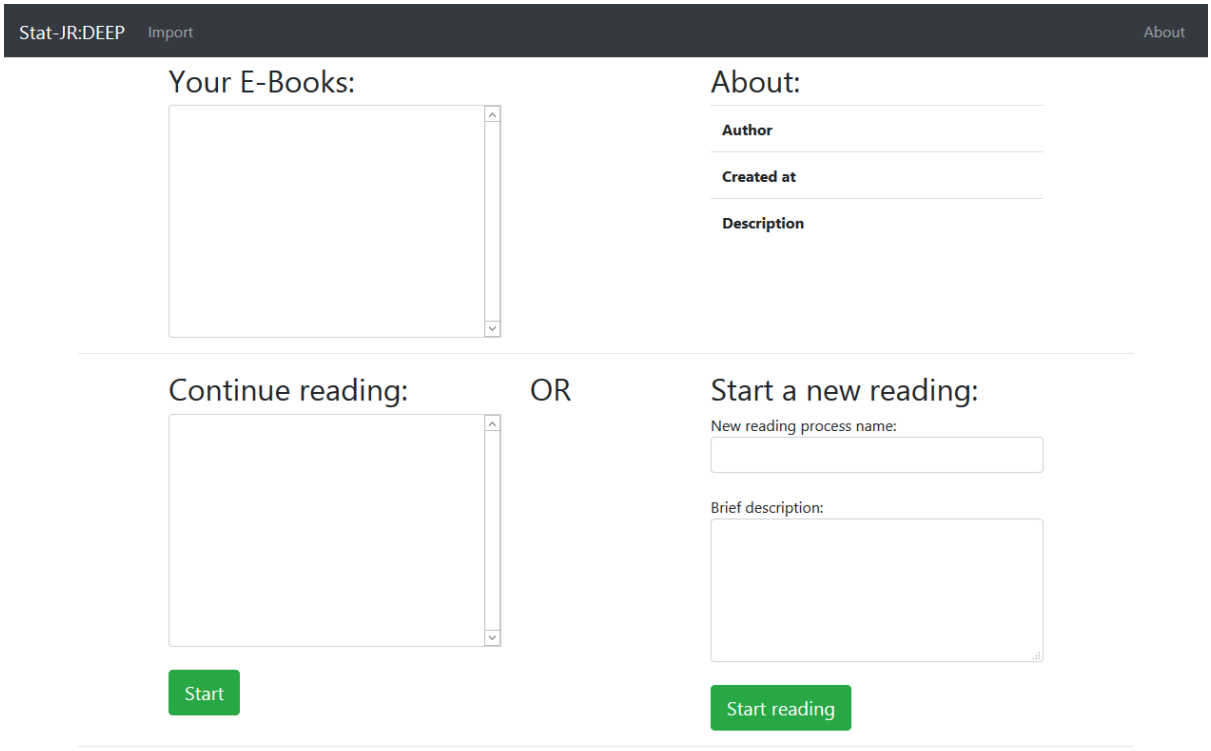



Finally click the "*Save changes*" button. At this stage, depending on your browser settings, the file will either be downloaded to your default download location or you will be asked for a location to save the file. Make a note of this as it will be required for the next stage.

## Reading and printing the eBook

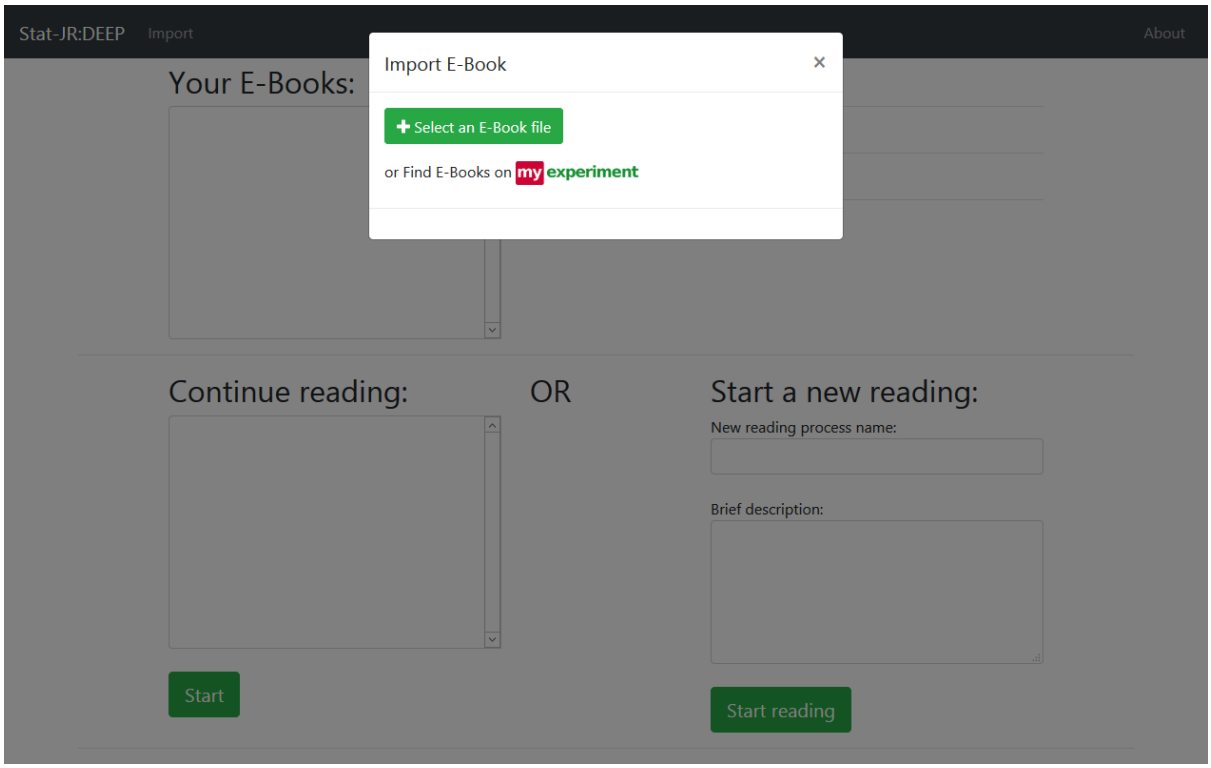
We will now load this up in the eBook version of Stat-JR so return to the "Centre for Multilevel Modelling" group within the *Start* menu and select the "DEEP" module. This module provides a read-only reading interface for eBooks. As well as static text this allows reading of more dynamic eBooks with user inputs, however we will not use this functionality in this document.

After a while the following will appear:

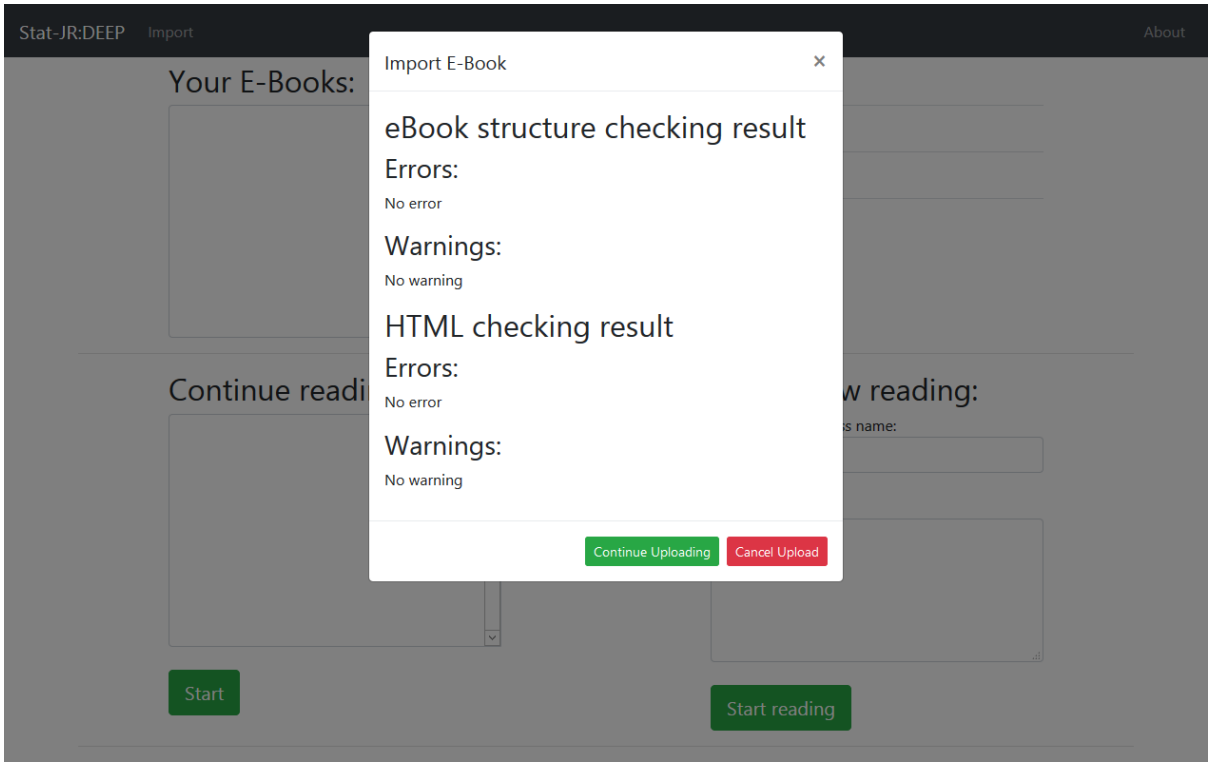



Again, if this opens in a browser other than Chrome or Firefox copy the address and open it in one of these.

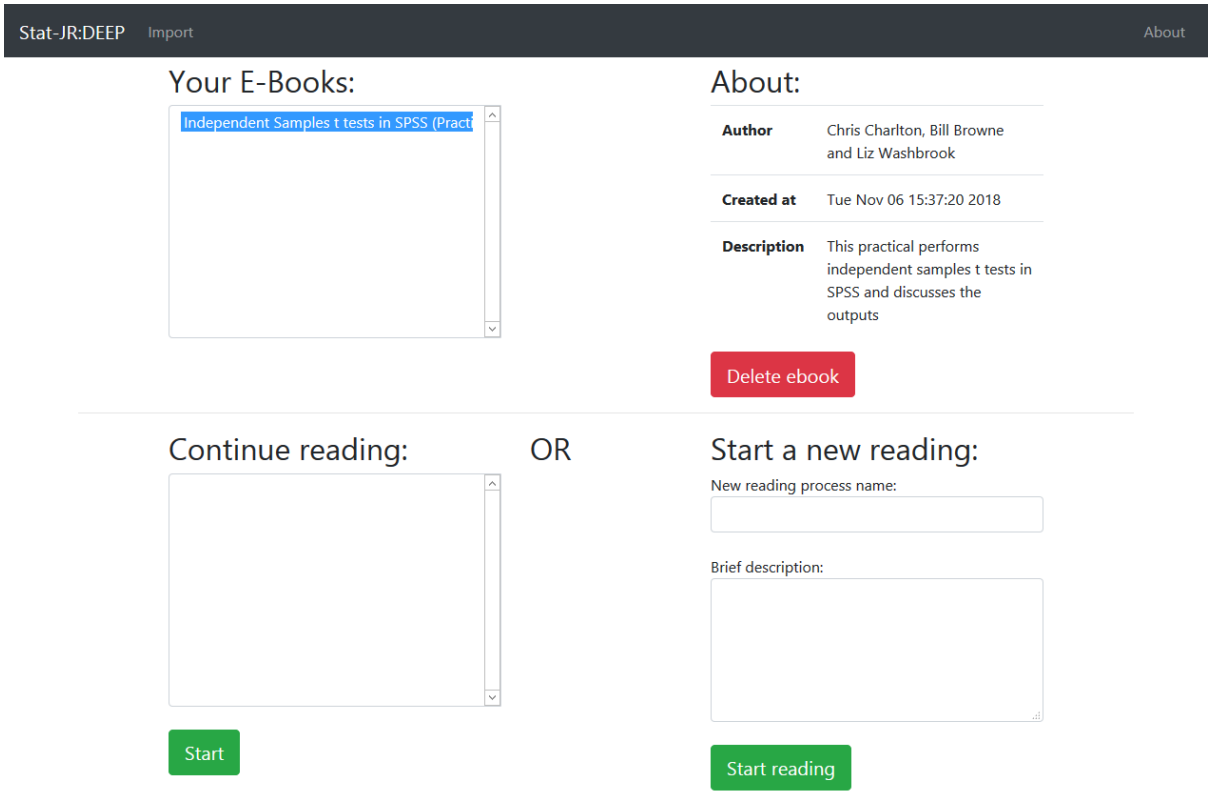
To load the eBook that we have saved earlier click the "*Import*" button at the top of the screen.




Next, click "*Select an E-Book file*" and navigate to the location that you saved the eBook in the previous section, click on the file *Ttest1.zip* and click "*Open*". Once you have done this the following screen will appear:



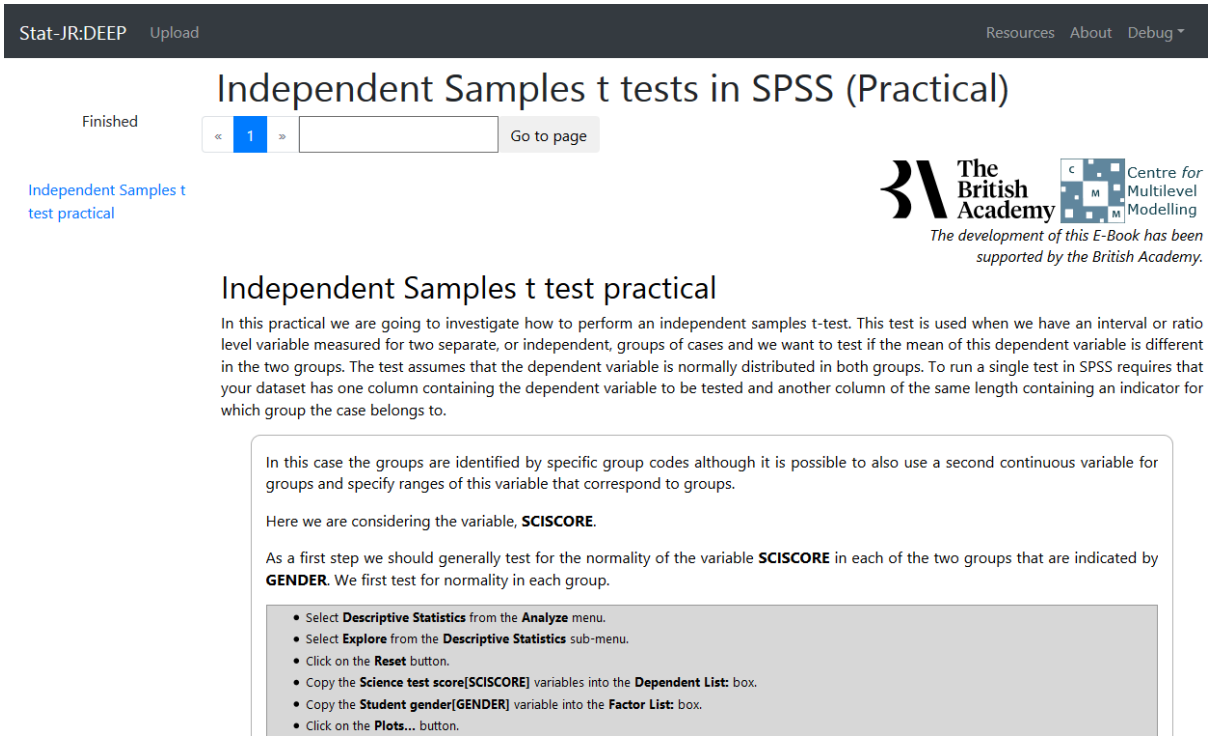

Click on "*Continue Uploading*", followed by "*Continue*". Once this has completed the title of the eBook will appear in the list of available eBooks. Clicking on this will provide additional information regarding the eBook content.



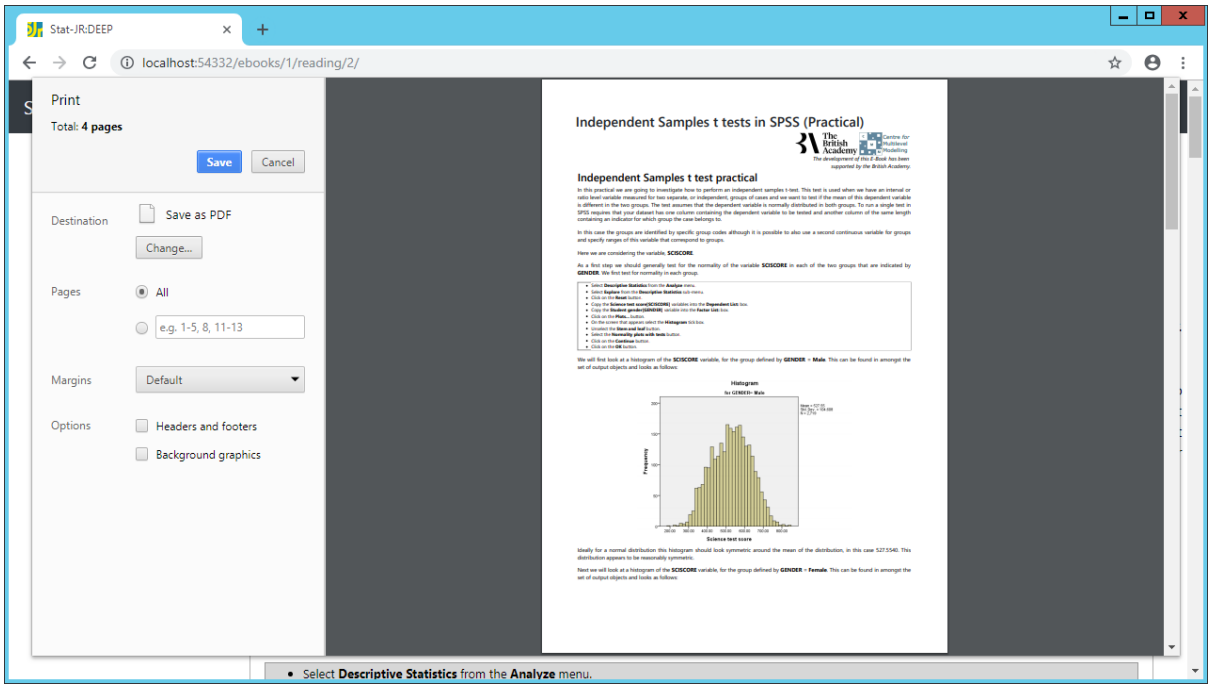

After selecting the eBook type a name into the "*New reading process name:*" box and click "*Start reading*". The purpose of reading processes is to enable multiple instances of an eBook to be run

independently at the same time, and this is therefore most useful if the eBooks in question contain user inputs that might results in the need for multiple different outputs. In our case the output will always be the same, so this is not required. The name and description chosen is only to aid the memory of the user, so what you type here does not matter.

After clicking the "*Start reading*" button the system will switch to the eBook and begin to re-run the referenced commands. Once this has completed we will eventually see the following:




You can now create a PDF file by printing the page to a PDF printer, this is done by right clicking in the window and selecting print … and then changing destination to *Save as PDF* as shown below:



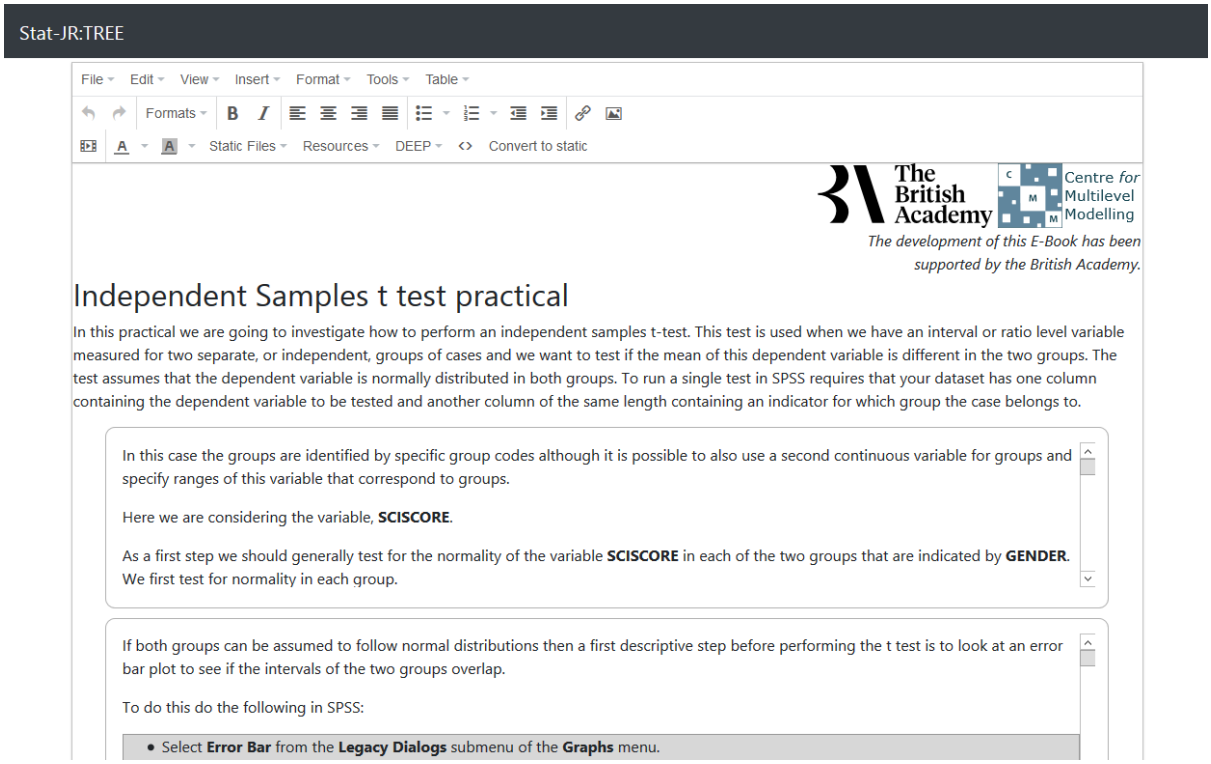
Depending on your existing printer settings you may wish to ensure that headers/footers are turned off and the paper size is appropriate. If you now open the generated PDF file it should match the file that was originally provided. You will see the file is 4 pages long.

Creating this document took only a few button presses but you may want to customise the document in several ways as we'll describe below. One thing that is probably likely is you will also want to run the equivalent Quiz eBook with a different dataset and/or inputs so that you have a different example for the concepts practical and for the quiz practical.

## Customisation

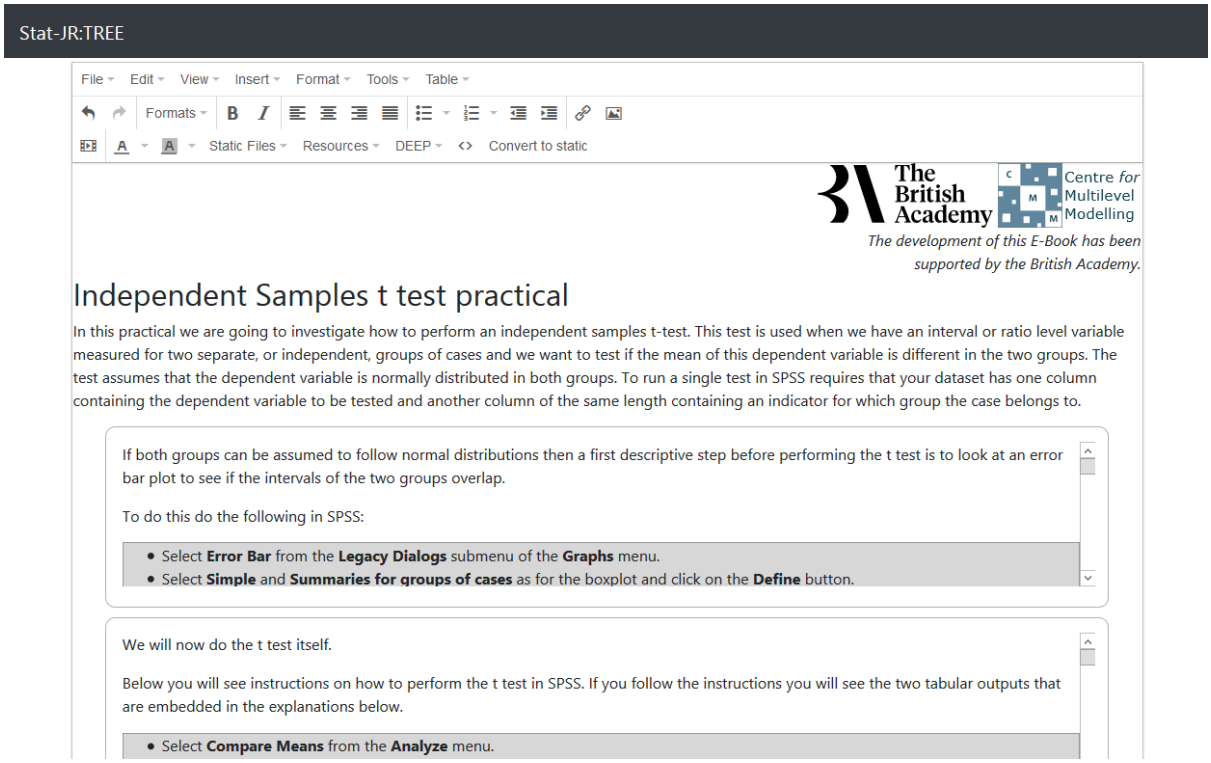
### 1. Exploring the example

To start with we will repeat the operations performed earlier in TREE so see if you can remember what you did and look back if you are unsure but stop BEFORE pressing the *Download as eBook* button. The screen should look as follows:



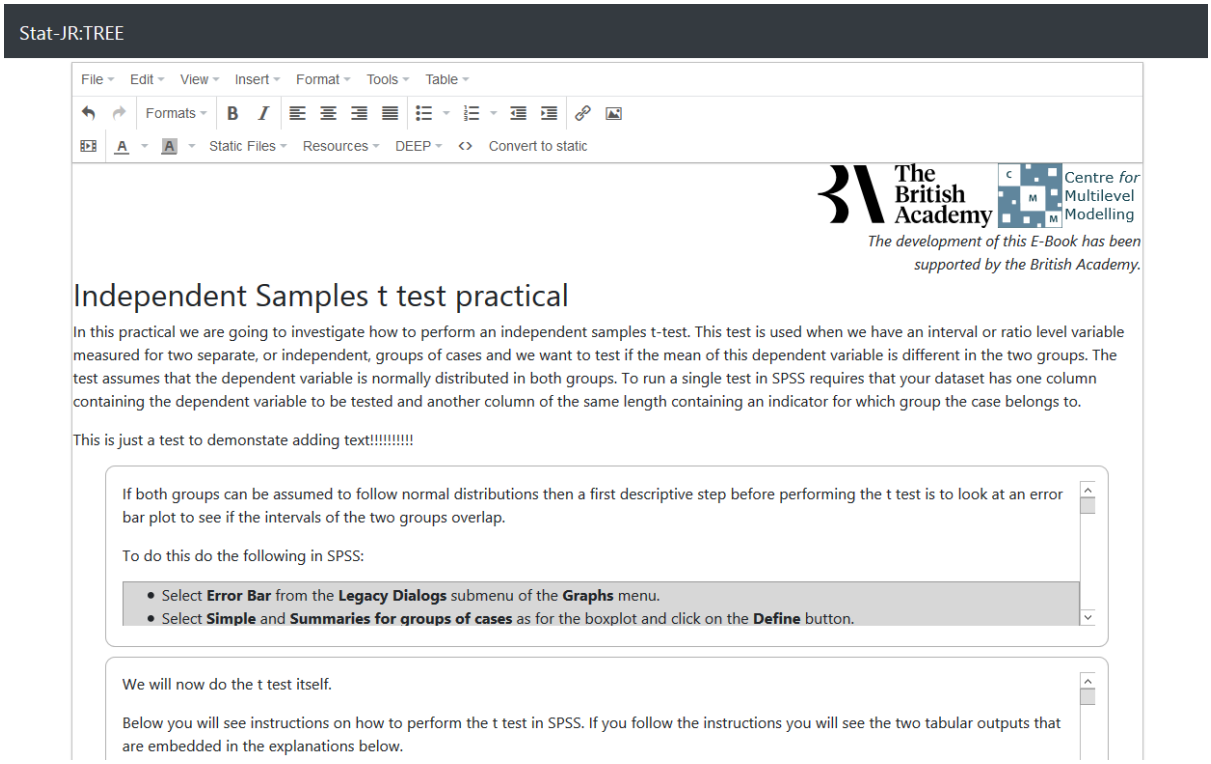

Here you will notice some introductory text and then some boxes – for this eBook and page there are 5 boxes and each one does a separate part of the practical. For this practical in order they do the following: in box 1 histograms and normality tests for each variable; in box 2 an error bar plot comparing the two groups; in box 3 a description of the summary statistics for the t test itself; in box 4 a description of the test itself and what it means and in box 5 a description of how one should report the outcome.

To customise the practical we have two routes – firstly we can remove whole chunks of the practical so for example if you don't want to do the histograms and normality tests as you have covered them elsewhere you can click on the first box to highlight it and then press the backspace (delete) button to remove it leaving the screen looking as follows:



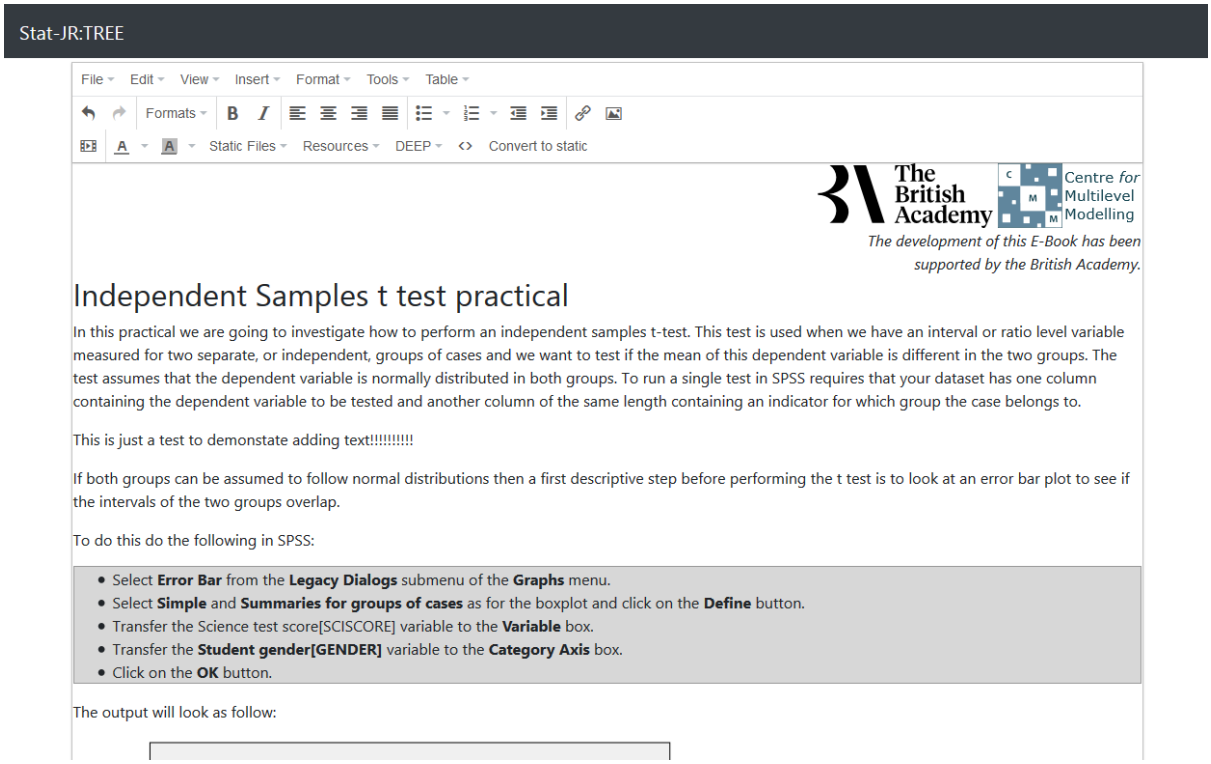

Here we now only have 4 boxes and if we were to download this eBook the histograms and normality test section would not appear in the PDF document constructed via DEEP.

We can also add text to the document so for example we might at the start want to say something about the dataset and here we just type some extra words:



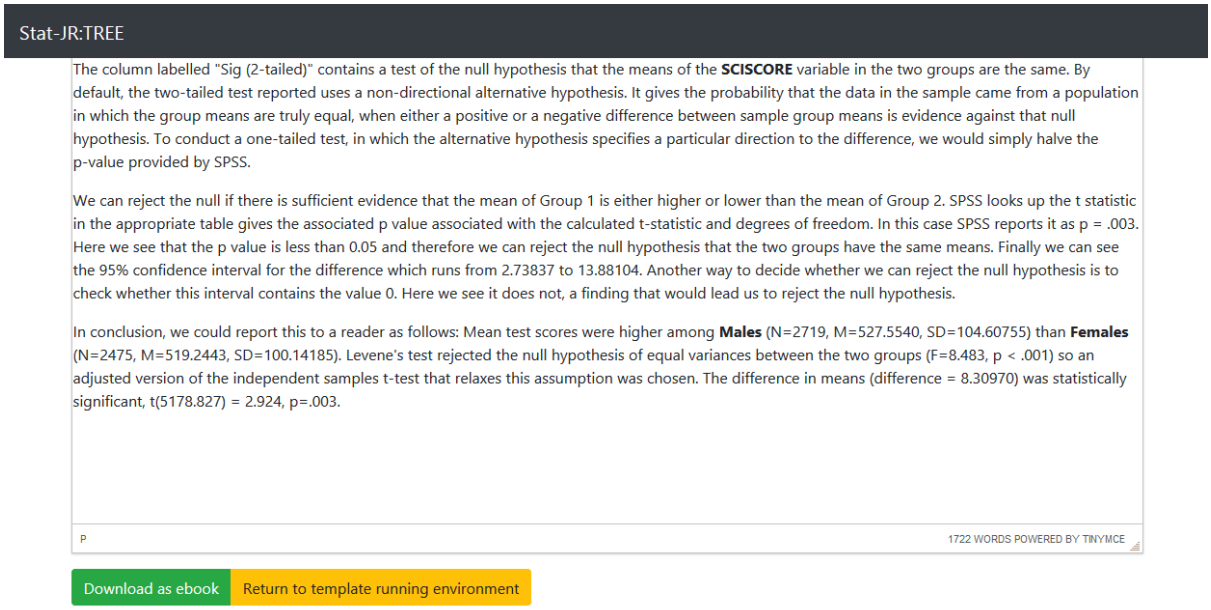

Here you will see I have added 1 sentence into the document outside the boxes. A word of warning here is that if you do this inside a box via this route then this will not work as DEEP will recreate the

boxes from scratch. The way around this is to click on the “Convert to static” button at the top of the output and this will simply convert the whole page to a static text object thus:

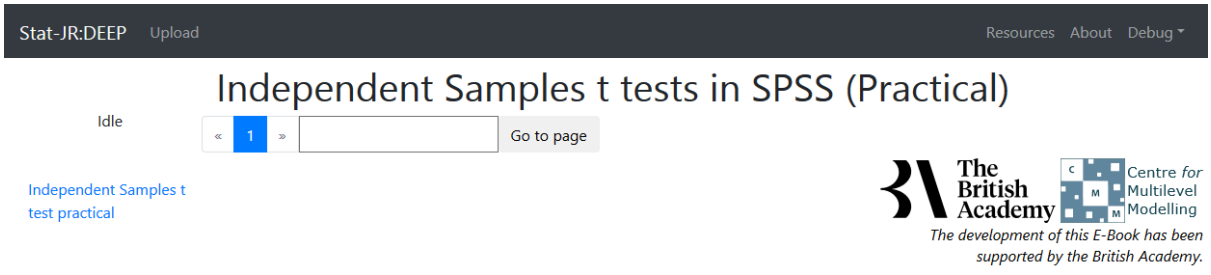



Here you’ll see the boxes have vanished and any changes you make to anything on this page will be saved when you *Download* the eBook.

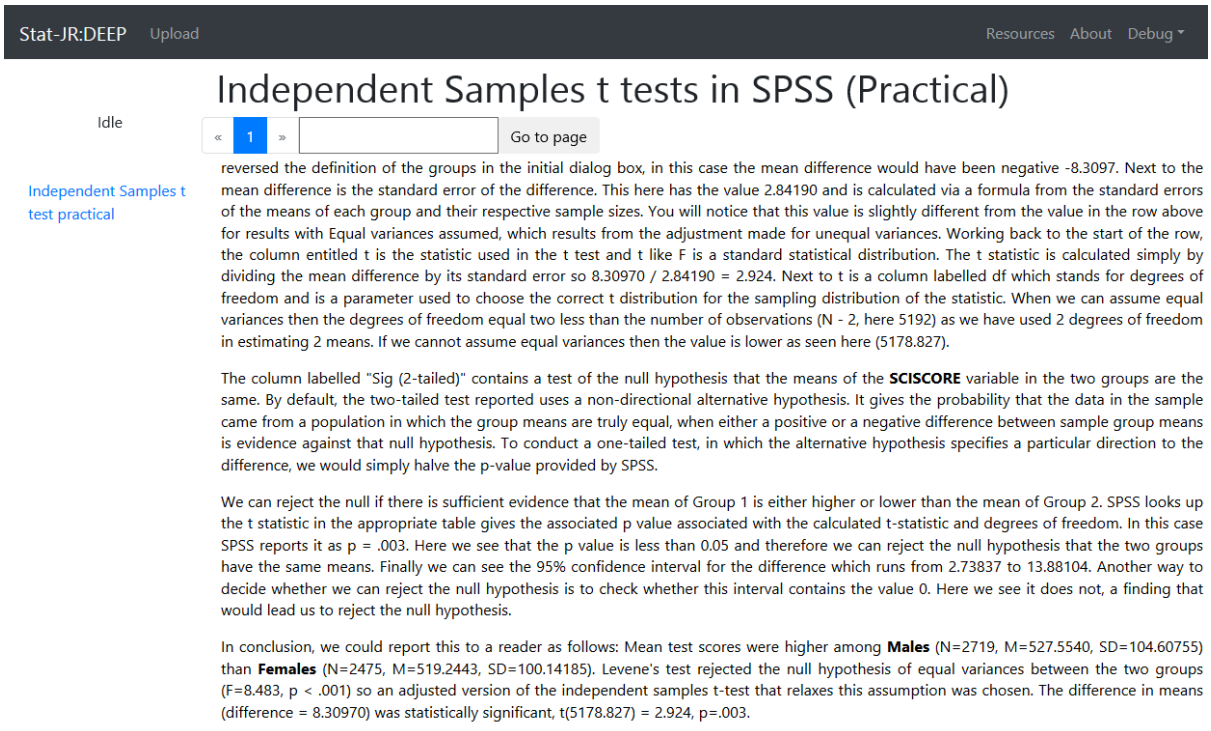
For example the conclusion text at the bottom of the page (scroll down) is a little suboptimal as it refers to Gender = Male and Gender = Female. We can edit this as follows:




Now if you *Download* the eBook and save it as *Ttest2.zip* you can look at it in DEEP. Note you should delete the current eBook in DEEP and then follow the previous instructions. The output will be as shown in the screenshots below:

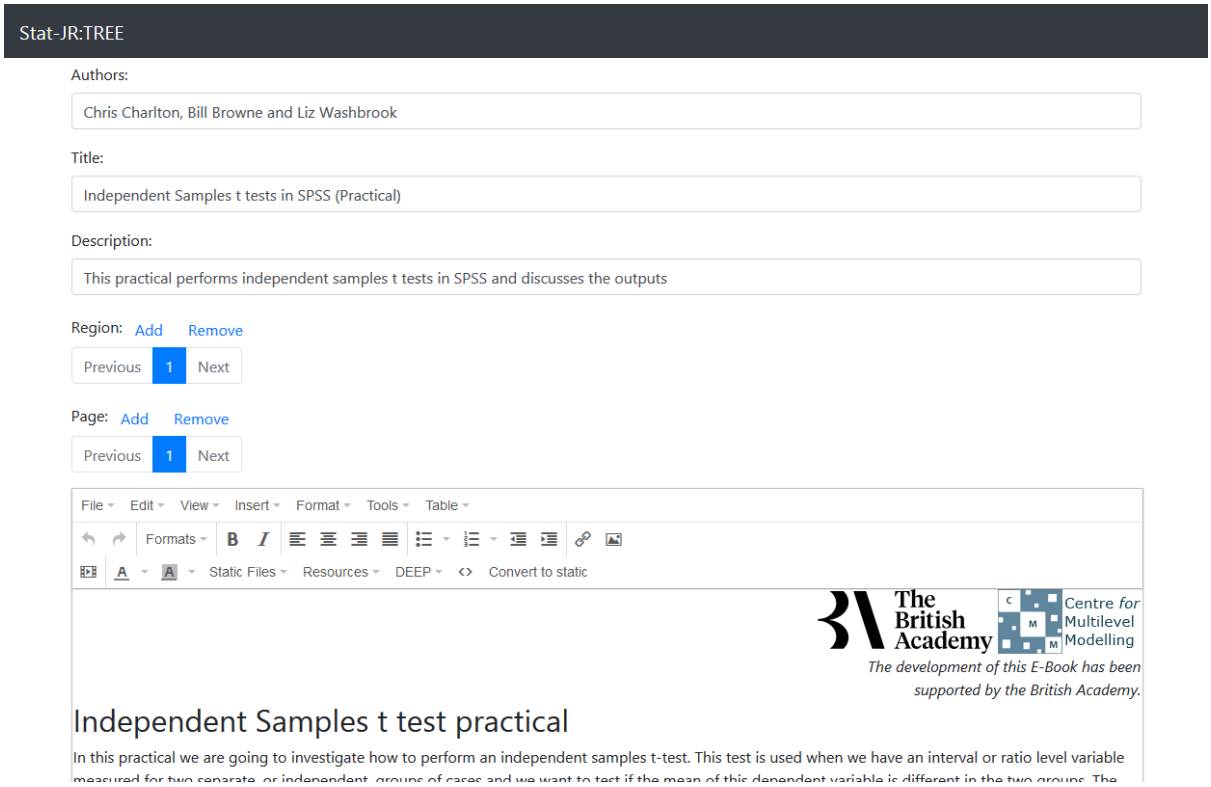



and scrolling down:

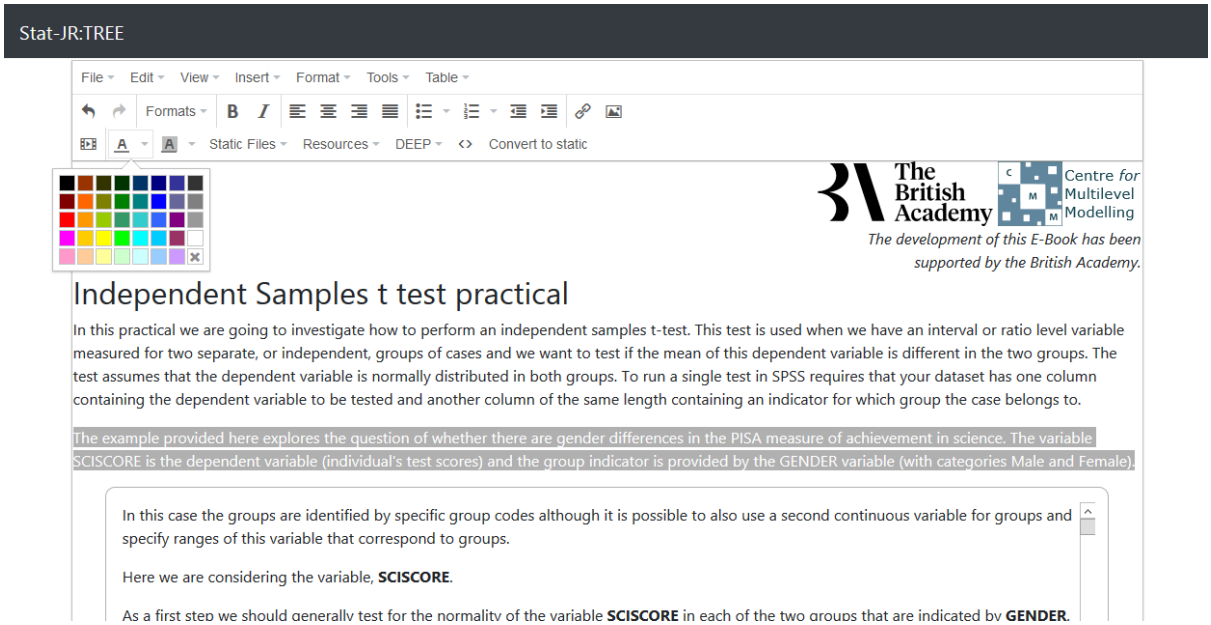



## 2. Reproducing the supplied PISA PDF

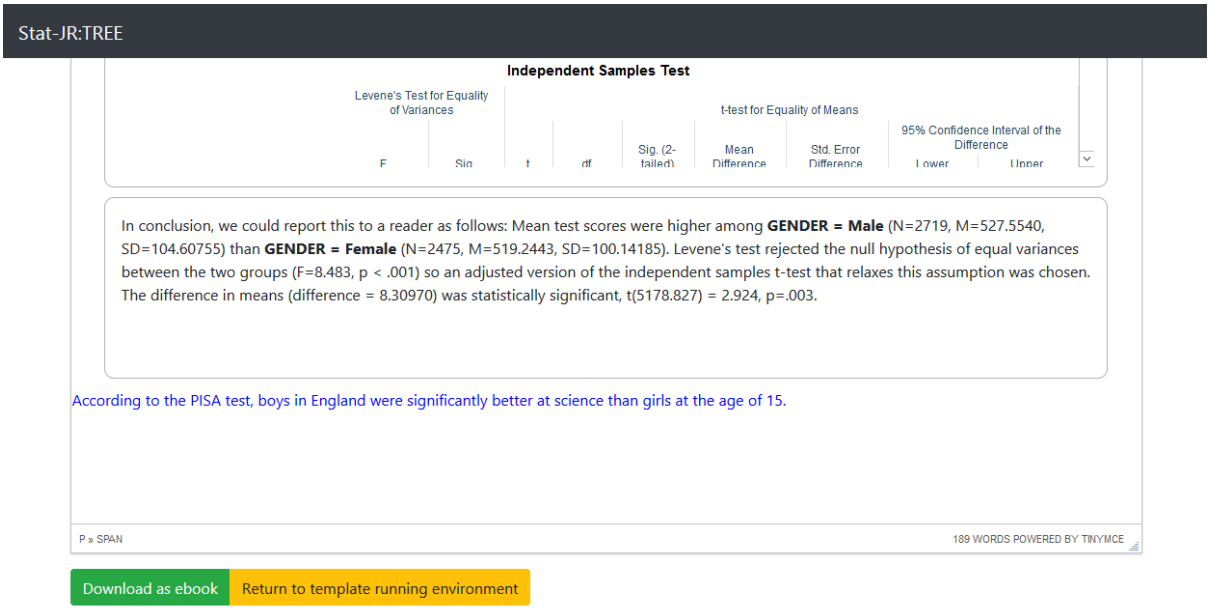
For each of the 26 generic eBooks that have been written we have constructed pdf files using the PISA data that you have been exploring here but adding in a paragraph of text at the start and end of the practical to put the material into context. To replicate this process is a very similar exercise as was done in customisation part 1. To start with repeat running the eBook in TREE to get to the eBook editor screen as you see at the bottom of page 3 and repeated here below:




If you have looked at the PDFs for the PISA materials you will note that we use blue font to indicate the contextual information. The font colour can be reached by clicking on the symbol indicated below and then the text can be added thus:




Scrolling to the bottom of the practical we have repeated the process to add some blue conclusions text thus:




If you now download this eBook and print the PDF from DEEP you should get an exact copy of the PDF supplied with the software. We do also supply an eBook that already contains this text.

## 3. Using your own dataset

Now that we have examined recreating and modifying the example materials we next describe how to apply the same eBook to your own data.

Firstly, it is necessary for the system to be able to find your data. To do this you need to save it to a Stata ".dta" file and place it in your Stat-JR personal data directory. This can be changed with the settings in TREE, however the default location is %USERPROFILE%\.statjr\datasets. Pasting this address into Windows explorer should take you directly to the folder. Once the data is in the correct location then either restart TREE if you closed it previously or, if you are still in the eBook editor click "*Return to template running environment*" button at the bottom of the screen followed by selecting "*Reload datasets*" from the "*Debug*" menu in the top right-hand corner.

To create an eBook using your new data use the "*Load*" option under the "*eBook*" menu as before to load the initial eBook, but this time select your data from the drop-down and choose an appropriate variable to use as your response.

Having done this the commands will be run with your data and you will be returned to the eBook editing screen. You will notice that some of the text and other outputs will be different to that seen before, to match the new data.

As the eBook contents have now changed you will need to do some editing before saving the final eBook. Start by adding your name to the authors box at the top of the page. The contents of the "Title" box is what appears in the eBook selection list within the DEEP interface, so it is also important that you change this to allow easy selection of your new eBook later.

Having changed the descriptive information regarding the template we can now move on to editing the contents. You will notice that the page consists of text interspersed with outputs within boxes. As mentioned in the last section these boxes contain dynamic text generated from the SPSS outputs and are not editable by default. The main text can be altered using a standard word-processing type interface, and extra SPSS outputs can be added if necessary from the Resources menu within the editor.

If you only change the static text then when you run the eBook in future all the outputs will be regenerated using the current version of your data. This allows you to make modifications to your data in the future and have the eBook automatically update to reflect this. There may however be cases where you wish to make changes to the dynamic text, in which case you can do so with the "Convert to static" button at the top of the editing box as illustrated earlier. After doing this the outputs will no longer reflect any changes in the underlying data. Another change is if you make all 3 pages static then when you load the eBook in DEEP SPSS will no longer be run in the background as all output values are already known.

When you are happy with the changes to your eBook save it as before (using a different name). You can then load this into the DEEP environment in the same was as in the first section and create a PDF.

## Appendix – Background to the PISA datafile

The datafiles supplied with the learning materials and used in this document is an extract from the Programme for International Student Assessment (PISA), a triennial international survey which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. In 2015 over half a million students, representing 28 million 15-year-olds in 72 countries and economies, took the internationally agreed two-hour test. Students were assessed in science, mathematics, reading, collaborative problem solving and financial literacy. Background information was collected in questionnaires administered to students and school principals and, in some countries, to parents.

The accompanying datafiles contain selected variables from the student questionnaire and derived test scores, from the samples from England (*PISA_England.dta*; used in the example materials provided) and from (South) Korea (*PISA_Korea.dta*; a supplemental file to allow for generation of a parallel set of learning materials by the user). Access to the underlying data are unrestricted, with documentation provided at http://www.oecd.org/pisa/data/2015database/ and the link to the full 72-country Student questionnaire data file at http://vs-web-fs-1.oecd.org/pisa/PUF_SPSS_COMBINED_CMB_STU_QQQ.zip.

The SPSS syntax file *PISA_extract.sps* (available from http://www.bristol.ac.uk/cmm/software/statjr/downloads/) creates the derived files from the input file CY6_MS_CMB_STU_QQQ.sav (contained in the zip file downloaded from the location given above). The variable *Region* identifies the country or region to which a record belongs, and can therefore be used to generate an equivalent derived datafile for any country selected by the user (by editing the corresponding line in the SPSS syntax file). For example, retaining records for which *Region* = 82611 selects the England sub-sample and those for which *Region* = 41000 selects the Korea sub-sample. The syntax file selects, renames, re-labels and recodes variables to produce the output datafiles for use with the learning materials. The output datafile is automatically saved in two versions: in SPSS format (with a .sav extension) which is the version that should be circulated to learners along with the pdfs of the learning materials; and in Stata format (with a .dta extension) which is used for generating the learning materials in the Stat-JR software (SPSS .sav datafiles cannot be read directly into the Stat-JR software).

It should be noted that certain features of SPSS datafiles do not transfer to Stata datafiles, so original SPSS files may require some modification before they are appropriate to use with the generated learning materials. Specifically, SPSS allows a range of codes to designate missing values and these all must be converted to “system missing” (denoted by .) in files that accompany the learning materials (using the SPSS syntax RECODE ALL (MISSING=SYSMIS) which for example is used in the file PISA_extract.sps). In addition, variable names must not exceed 32 characters and variable labels must not exceed 80 characters.

The table below provides details of the variables supplied in the accompanying datasets. References to further information are provided in the table (e.g. Ch. 16, pp.318-319), and refer to the PISA 2015 Technical Report (available at: http://www.oecd.org/pisa/data/2015-technical-report/). Three features of the PISA-supplied variables require explanation here.

*Item response theory (IRT) derived scales.* A number of scales provided in the dataset are PISA-derived variables based on IRT techniques (e.g. EMOSUPS, JOYSCIE). The resulting scales are weighted sums of the underlying items and are constructed to have a mean of 0 and a standard deviation of 1 across OECD countries (with equally weighted countries). The weights applied to items depend on average responses (item “difficulty”) and correlation with the underlying latent construct

(item “discrimination”). Full details of the methodology and weights used are provided in Chapter 16 of the PISA 2015 Technical Report, but perhaps the key to interpretation is to bear in mind that, for all IRT-scaled predictor variables ***“the average OECD student would have an index value of zero and about two-thirds of the OECD student population would be between the values of -1 and 1”*** (p.293).

*Plausible values.* PISA achievement tests rely on a large bank of question items, with individual students answering only partial subsets of all available items. An individual’s set of responses is then used to estimate their underlying latent achievement level, a process that involves some degree of uncertainty and error. To reflect this measurement uncertainty, PISA provides not just one estimate of a student’s “true” test score, but ten different “plausible values”, or equally reasonable estimates of an individual’s ability in, say, science. In advanced statistical analyses, the full set of plausible values can be employed to improve accuracy of inference. As the purpose of the data extraction here is to facilitate the teaching of introductory statistical concepts, we provide only the first plausible value for each test score, treating it as an observed value rather than an estimate constructed from a more complicated statistical model. See Chapter 9 of the PISA 2015 Technical Report for further details.

*Achievement scales.* The overall PISA science score was scaled to have a mean of 500 and a standard deviation of 100 across the population of 15-year olds in the OECD in 2006 (*PISA 2015 Results Volume I*, OECD, p.58). Other dimensions of achievement are scaled in a similar way. PISA guidance is that 30 PISA points are approximately equivalent to the progress made in a year of schooling, on average across the OECD (ibid, p.65). A score of 410 is required to reach “Level 2 proficiency” which is considered “the baseline level of science proficiency that is required to engage in science-related issues as a critical and informed citizen” (ibid, p.34 and p.68).

**Variable table**

| Variable name | Original PISA variable name | Description | Coding |
|---|---|---|---|
| GENDER | ST004D01T | Student gender | (1) Female; (2) Male |
| PARINTSCH | ST123Q01NA | My parents are interested in my school activities | (1) Strongly disagree; (2) Disagree; (3) Agree; (4) Strongly agree |
| PARSUPED | ST123Q02NA | My parents support my educational efforts and achievements | As above |
| PARSUPDIF | ST123Q03NA | My parents support me when I am facing difficulties at school | As above |
| PARCONF | ST123Q04NA | My parents encourage me to be confident | As above |
| EMOSUPS | EMOSUPS | Parental emotional support score | IRT derived scale from items: PARINTSCH; PARSUPED; PARSUPDIF; PARCONF [Ch. 16, pp. 317-318] |
| INFGGAS | ST092Q01TA | How informed are you about the following environmental issues…<br>The increase of greenhouse gases in the atmosphere | (1) I have never heard of this; (2) I have heard about this but I would not be able to explain what it is really about; (3) I know something about this and could explain the general issue; (4) I am familiar with this and I would be able to explain this well |
| INFGMO | ST092Q02TA | How informed are you about the following environmental issues…<br>The use of genetically modified organisms (GMOs) | As above |
| INFNUCL | ST092Q04TA | How informed are you about the following environmental issues…<br>Nuclear waste | As above |
| INFDEFOR | ST092Q05TA | How informed are you about the following environmental issues…<br>The consequences of clearing forests for other land use | As above |
| INFAIR | ST092Q06NA | How informed are you about the following environmental issues…<br>Air pollution | As above |
| INFEXT | ST092Q08NA | How informed are you about the following environmental issues…<br>Extinction of plants and animals | As above |

| Variable name | Original PISA variable name | Description | Coding |
|---|---|---|---|
| INFWAT | ST092Q09NA | How informed are you about the following environmental issues…<br>Water shortage | As above |
| OPTAIR | ST093Q01TA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>Air pollution | (1) Get worse; (2) Stay about the same; (3) Improve |
| OPTEXT | ST093Q03TA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>Extinction of plants and animals | As above |
| OPTDEFOR | ST093Q04TA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>The consequences of clearing forests for other land use | As above |
| OPTWAT | ST093Q05TA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>Water shortage | As above |
| OPTNUCL | ST093Q06TA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>Nuclear waste | As above |
| OPTGGAS | ST093Q07NA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>The increase of greenhouse gases in the atmosphere | As above |

| Variable name | Original PISA variable name | Description | Coding |
|---|---|---|---|
| OPTGMO | ST093Q08NA | Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?<br>The use of genetically modified organisms (GMOs) | As above |
| FUN_4 | ST094Q01NA | I generally have fun when I am learning broad science topics | (1) Strongly disagree; (2) Disagree; (3) Agree; (4) Strongly agree |
| LIKEREAD_4 | ST094Q02NA | I like reading about broad sciences | As above |
| HAPPY_4 | ST094Q03NA | I am happy working on broad science topics | As above |
| ENJKNOW_4 | ST094Q04NA | I enjoy acquiring new knowledge in broad science topics | As above |
| INTEREST_4 | ST094Q05NA | I am interested in learning about broad science | As above |
| JOYSCIE | JOYSCIE | Enjoyment of science score | IRT derived scale from items: FUN_4, LIKEREAD_4, HAPPY_4, ENJKNOW_4, INTEREST_4. [Ch. 16, pp. 310-312] |
| INT_BIO | ST095Q04NA | To what extent are you interested in…<br>Biosphere (e.g. ecosystem services, sustainability) | (1) Not interested; (2) Hardly interested; (3) Interested; (4) Highly interested |
| INT_FORCES | ST095Q07NA | To what extent are you interested in…<br>Motion and forces (e.g. velocity, friction, magnetic and gravitational forces) | As above |
| INT_ENERGY | ST095Q08NA | To what extent are you interested in…<br>Energy and its transformation (e.g. conservation, chemical reactions) | As above |
| INT_UNIV | ST095Q13NA | To what extent are you interested in…<br>The Universe and its history | As above |
| INT_DISEASE | ST095Q15NA | To what extent are you interested in…<br>How science can help us prevent disease | As above |
| INTSCI | INTBRSCI | Interest in science topics score | IRT derived scale from items: INT_BIO, INT_FORCES, INT_ENERGY, INT_UNIV, INT_DISEASE. [Ch. 16, pp. 310-312] |
| USEFUL_4 | ST113Q01TA | Making an effort in my school science subject(s) is worth it because this will help me in the work I want to do later on | (1) Strongly disagree; (2) Disagree; (3) Agree; (4) Strongly agree |

| Variable name | Original PISA variable name | Description | Coding |
|---|---|---|---|
| NEEDED_4 | ST113Q02TA | What I learn in my school science subject(s) is important for me because I need this for what I want to do later on | As above |
| CAREER_4 | ST113Q03TA | Studying my school science subject(s) is worthwhile for me because what I learn will improve my career prospects | As above |
| JOB_4 | ST113Q04TA | Many things I learn in my school science subject(s) will help me to get a job | As above |
| INSMOVSCI | INSTSCIE | Science instrumental motivation score | IRT derived scale from items: USEFUL_4, NEEDED_4, CAREER_4, JOB_4. [Ch. 16, pp. 313 & 315] |
| SCIEEFF | SCIEEFF | Science self-efficacy score | IRT derived scale from 8 items: How easy do you think it would be for you to perform the following tasks on your own?<br>Recognise the science question that underlies a newspaper report on a health issue.<br>Explain why earthquakes occur more frequently in some areas than in others.<br>Describe the role of antibiotics in the treatment of disease.<br>Identify the science question associated with the disposal of garbage.<br>Predict how changes to an environment will affect the survival of certain species.<br>Interpret the scientific information provided on the labelling of food items.<br>Discuss how new evidence can lead you to change your understanding about the possibility of life on Mars.<br>Identify the better of two explanations for the formation of acid rain. [Ch. 16, pp. 318-319] |
| SCIEACT | SCIEACT | Science activities index | IRT derived scale from 9 items: How often do you do these things?<br>Watch TV programmes about science<br>Borrow or buy books on science topics<br>Visit web sites about science topics |

| Variable name | Original PISA variable name | Description | Coding |
|---|---|---|---|
| | | | Read science magazines or science articles in newspapers<br>Attend a science club<br>Simulate natural phenomena in computer programs/virtual labs<br>Simulate technical processes in computer programs/virtual labs<br>Visit web sites of ecology organisations<br>Follow news of science, environmental, or ecology organizations via blogs and microblogging. [Ch. 16, pp. 318-319] |
| IMMIG | IMMIG | Immigration status | (1) Native; (2) Second-Generation; (3) First-Generation |
| CULTPOSS | CULTPOSS | Home cultural possessions score | IRT derived scale from 5 items recording presence in household of:<br>Classical literature<br>Books of poetry<br>Works of art<br>Books on art, music or design<br>Musical instruments [Ch. 16, pp. 300-305] |
| HEDRES | HEDRES | Home educational resources score | IRT derived scale from 7 items recording presence in household of:<br>A desk to study at<br>A quiet place to study<br>A computer you can use for schoolwork<br>Educational software<br>Books to help you with school work<br>Technical reference books<br>A dictionary [Ch. 16, pp. 300-305] |
| WEALTH | WEALTH | Family wealth score | IRT derived scale from 12 items recording presence in household of:<br>A room of your own<br>A link to the internet<br>Televisions<br>Cars<br>Rooms with bath or shower<br>Smartphones |

| Variable name | Original PISA variable name | Description | Coding |
|---|---|---|---|
| | | | Computers<br>Tablet computers<br>Ebook readers<br>3 country-specific wealth indicators (e.g. for England: a premium TV package, a HD TV, and a tablet computer) [Ch. 16, pp. 300-305] |
| HOMEPOS | HOMEPOS | Home possessions score | IRT derived scale from the 24 constituent items of CULTPOSS, HEDRES and WEALTH, plus item on number of books in home [Ch. 16, pp. 300-305] |
| ESCS | ESCS | Economic, social and cultural status index | Composite indicator based on three PISA-derived variables: HOMEPOS, HISEI (highest value for a parent on the International Socio-Economic Index of Occupational Status) and PARED (highest number of years a parent spent in education) [Ch. 16, pp. 339-342] |
| MATHSCORE | PV1MATH | Math test score | Test score scaled to *M*=500, *SD*=100 across the OECD |
| READSCORE | PV1READ | Reading test score | As above |
| SCISCORE | PV1SCIE | Science test score | As above |
| SCI_PHYS | PV1SSPH | Physical systems sub-score | As above |
| SCI_LIVING | PV1SSLI | Living systems sub-score | As above |
| SCI_EARTH | PV1SSES | Earth & space systems sub-score | As above |
| PAREDU | HISCED | Highest qualification of parent | Recoded from HISCED to (approx) equivalents used in England. HISCED categorises qualifications according to the International Standard Classification of Education (ISCED):<br>None, ISCED1, 2, 3C, 3B = (1) Low: GCSE or equiv<br>ISCED 3A, 4, 5B = (2) Medium: A-level or equiv<br>ISCED 5A, 6 = (3) High: University degree |