Al-Mustaqbal University College

Department of Anesthesia techniques

Third Stage

Lecture 5

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Non Parametric tests

- These tests all assume that underlying distribution of variables (and/or estimated variables like the residuals in a regression) follow some "parametric" distribution –
- the usual assumption is that the variables are distributed as a "normal“ distribution.
- We placed a great emphasis on checking whether a variable was distributed normally.

1. Binomial test

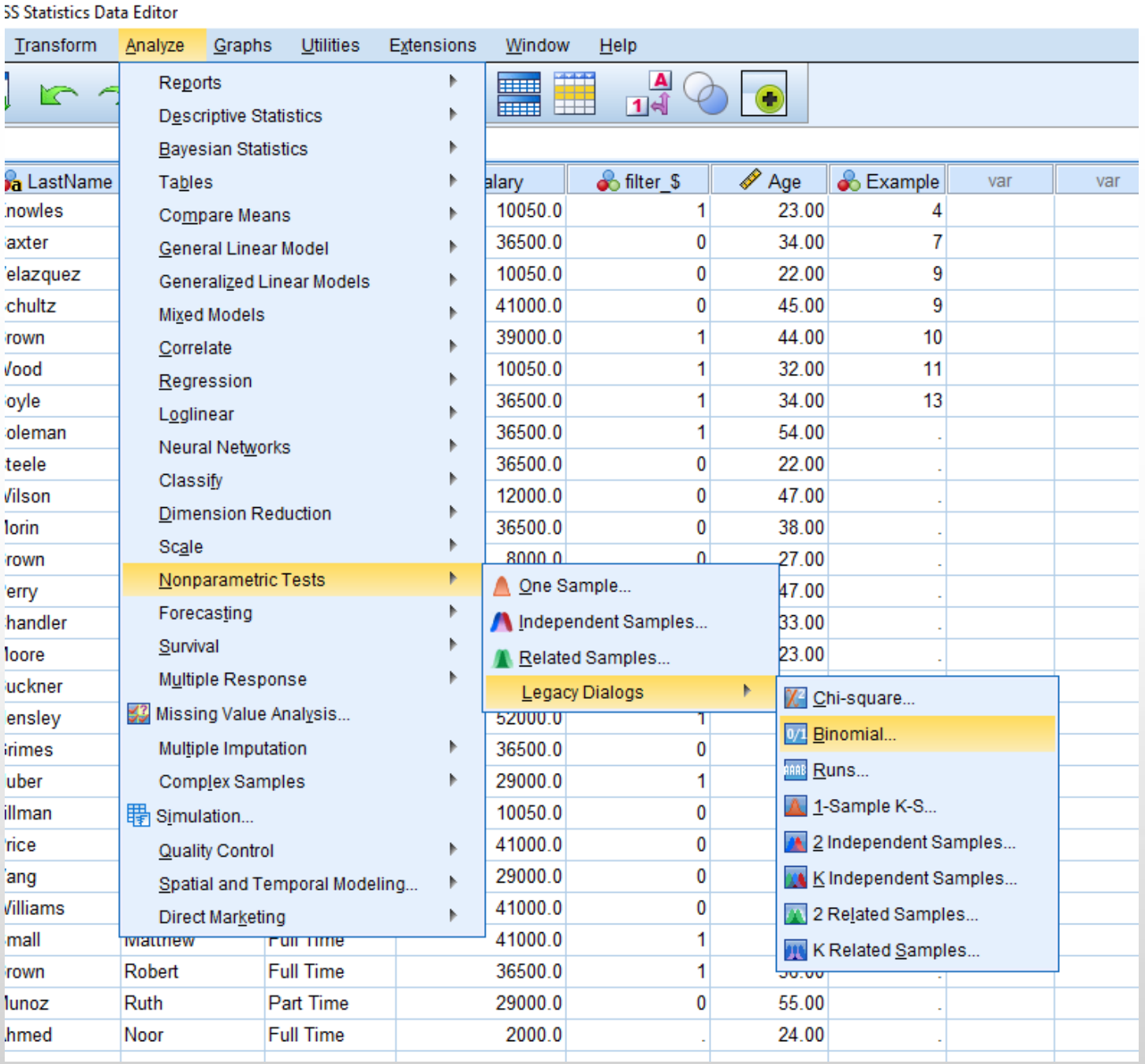
- Let's assume we have a variable whose distribution is binomial. That is, the variable can take on only one of two possible values, X and Z.
- The standard example is a coin toss
- The outcomes are distributed as binomial. There are two and only two possible outcomes (heads or tails) and if one occurs on a toss then the other cannot also occur on the same toss.

1. Binomial test

- The probability of a “tails” outcome and the probability of a “heads” outcome are the relevant parameters of the distribution.
- Once these are known, you can calculate the mean, standard deviation, etc.
- A variable like gender is distributed binomially. We want to test the parameters of the distribution – the probabilities of the variable gender taking on the value 0 (or “male”) versus the probability of it taking on the value 1 (or “female”).

1. Binomial test

- **Go to Analyze / Nonparametric Tests / Legacy Dialogs / Binomial.**
- **Place the variable *gender* into the area "Test Variable List"**
- **(note: you can place more than one variable into the list).**
- Look at the area "Define Dichotomy."
- **We have chosen "Get from data." This implies that the two possible outcomes are defined in the data**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Bayesian Statistics
Tables
Compare Means
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Generalized Linear Models
Mixed Models
Correlate
Regression
Loglinear
Neural Networks
Classify
Dimension Reduction
Scale
Nonparametric Tests
Forecasting
Survival
Multiple Response
Missing Value Analysis...
Multiple Imputation
Complex Samples
Simulation...
Quality Control
Spatial and Temporal Modeling...
Direct Marketing
One Sample...
Independent Samples...
Related Samples...
Legacy Dialogs
Chi-square...
Binomial...
Runs...
1-Sample K-S...
2 Independent Samples...
K Independent Samples...
2 Related Samples...
K Related Samples...
LastName
alary
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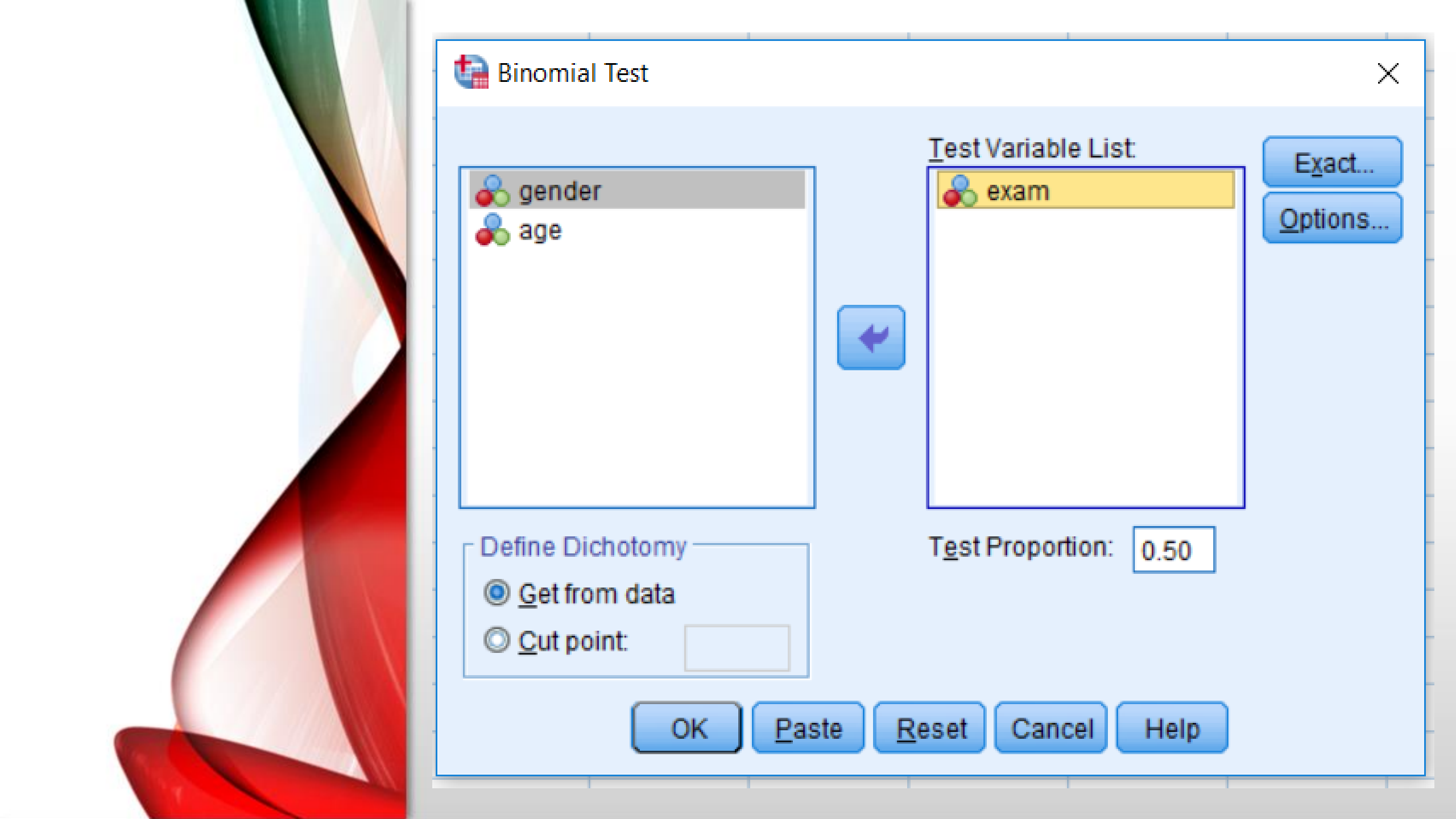
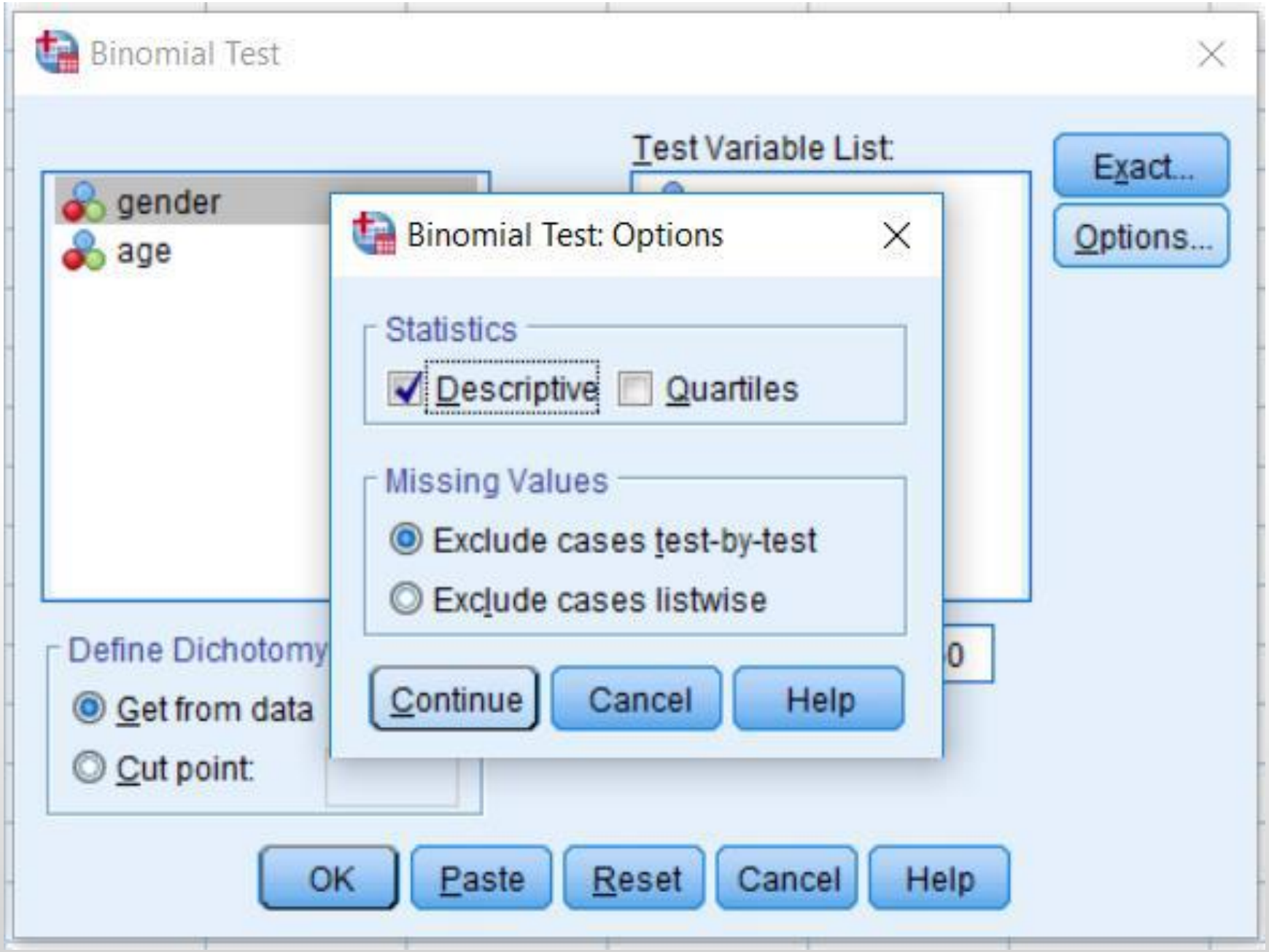
Age
Example
var
var

- Look at the box “Test Proportion.”
- We have chosen the default of 0.50. We are asking for a test that checks if the "Test Proportion" of .5 equals the probability of gender being equal to 0 (“male”) for any one
- observation.
- As the probabilities have to add to 1, it follows that we are testing if the probability of gender being equal to 1 (“female”)
- for any one observation =1- 0.50 = 0.50. Click on “OK.”


Binomial Test
gender
age
Test Variable List:
exam
Exact...
Options...
Define Dichotomy
Get from data
Cut point:
Test Proportion:
0.50
OK
Paste
Reset
Cancel
Help


Binomial Test
Test Variable List:
gender
age
Exact...
Options...
Binomial Test: Options
Statistics
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Exclude cases listwise
Continue
Cancel
Help
Define Dichotomy
Get from data
Cut point:
0
OK
Paste
Reset
Cancel
Help

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
exam	6	.50	.548	0	1

Double-click to activate

mial Test

		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
exam	Group 1	no	3	.50	.50	1.000
	Group 2	yes	3	.50		
	Total		6	1.00		

• We repeat the same procedure, but with a different “Test Proportion.” We use the proportion of .80. Click on "OK" after entering the hypothesis value of ".80" into the box "Test Proportion.“

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
exam	6	.50	.548	0	1

Binomial Test

		Category	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
exam	Group 1	no	3	.5	.8	.099[a]
	Group 2	yes	3	.5		
	Total		6	1.0		

a. Alternative hypothesis states that the proportion of cases in the first group < .8.


Thank You