

Questions and answers for Chapter 6

1. Have a look at the datafile on the website. Can you find an example of a nominal, an ordinal and a continuous variable?

Gender is a good example of a nominal variable, as the value labels don't imply any order. Grade point average is a continuous variable. It has an order (51 is higher than 50), and a fixed distance between the scale points (the difference between 515 and 50 is the same as the difference between 34 and 33, 1%). Most of the variables in this dataset are ordinal, i.e. they are ordered but the scale points don't have a fixed distance from one another. An example is the variable 'attsc1 (School is Boring)'.

2. Can you have a look at the frequency distributions for the variables 'I like going to school' and 'school is boring'. What can you say about those two variables?

You should have the following output for the two variables:

like going to school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	disagree strongly	183	20.6	20.6	20.6
	disagree	151	17.0	17.0	37.6
	agree	267	30.0	30.1	67.7
	agree strongly	287	32.3	32.3	100.0
	Total	888	99.9	100.0	
Missing	9	1	.1		
Total		889	100.0		

school is boring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	agree strongly	121	13.6	13.6	13.6
	agree	233	26.2	26.2	39.9
	disagree	238	26.8	26.8	66.7
	disagree strongly	296	33.3	33.3	100.0
	Total	888	99.9	100.0	
Missing	9	1	.1		
Total		889	100.0		

So what can we say about these two variables? Firstly, 62.3% of respondents agree or agree strongly that they like school, while 60.1% either disagree or disagree strongly that school is boring. This means that the majority of respondents appear to have an overall positive attitude towards school, and about a third (agreeing strongly that they like school and disagreeing strongly that school is boring) are very positive. However,

that does leave a significant group of pupils who agree or agree strongly that school is boring and disagree or disagree strongly that they like school (just under 40%).

3. Can you compare the central tendency and spread of the two variables ‘I like going to school’ and ‘school is boring’? Which measures do you use, and what do they tell you?

Both variables are ordinal, so we need to use the median as our measure of central tendency. We can find the median in the first box of our output (provided we have asked SPSS to provide it by ticking the box, as discussed in the chapter):

		Statistics	
		like going to school	school is boring
N	Valid	888	888
	Missing	1	1
Median		3.00	3.00

In this case the median for both variables is 3, which corresponds to an ‘agree’ answer on ‘I like going to school’ and a ‘disagree’ answer on ‘school is boring’. This suggests that the average pupil has a moderately positive attitude to school, confirming the results in the frequency table.

4. Can you compare central tendency for grades in maths and English? What measure do

you use? What does this tell you?

Both these variables are continuous, so we can use the mean. We can find the mean in the first box of our output:

Statistics

		school grades English	school grades maths
N	Valid	575	575
	Missing	314	314
Mean		78.3472	75.9874

We can see that the mean for English is 78.3 and the mean for maths 76.0. These are both quite high scores, but on average pupils do somewhat better in English than they do in maths.

5. Can you compare the spread of the variables grades in maths and English. What measures do you use? What do they tell you?

To look at the spread of values for these two continuous variables we use the standard deviation. We can find the standard deviation in the first box of our output:

Statistics

		school grades English	school grades maths
N	Valid	575	575
	Missing	314	314
Mean		78.3472	75.9874
Std. Deviation		10.41636	12.21432

We can see that the standard deviation for English is 10.4, and for maths it is 12.2. This means that pupils' maths results vary more than do their English results. In other words, in maths, pupils are more likely to score either much higher or much lower than the mean than they do in English, where scores are more bunched together around the mean.