

Internal Consistency Reliability in SPSS

Background

In psychology studies, we often measure constructs using scales—a series of several questions that all ask about aspects of the same construct. For example, to measure extraversion, you might ask people to rate the following scale items from 1 (strongly disagree) to 5 (strongly agree):

1. I see myself as talkative
2. I see myself as quiet
3. I see myself as outgoing

Whenever you use a scale in a scientific study, you'll need to report its internal consistency reliability (α) in your Method section.

Reversing Items

Before computing the reliability for a scale, you'll need to make sure your items are all properly reversed, if necessary. "Reversing" items means that you need to make sure all items are scored such that higher numbers represent higher levels of the construct. For example, in the sample extraversion scale above, higher responses to item #2 would indicate that people saw themselves as LESS extraverted (because they're agreeing that they're quiet). So, before computing reliability for the extraversion scale, you will need to reverse item #2. (If you've already reversed the scoring for item #2 in your survey when you collected the data, you do not need to reverse it again!)

To reverse an item, the formula is:

$$(\text{Reversed Score}) = (\text{Scale Max}) + (\text{Scale Min}) - (\text{Original Score})$$

So, imagine that you have the three extraversion items in your dataset:

	e1	e2	e3
1	4.00	2.00	3.00
2	5.00	3.00	4.00
3	2.00	5.00	3.00
4	4.00	2.00	4.00

We need to reverse item e2. It was rated on a scale from 1 to 5. So, using the above formula, we'll use the following syntax:

```
compute e2r = 5+1-e2.  
execute.
```

Whenever you reverse a variable, *always* create a new variable (e.g., e2r). Don't simply overwrite the old variable. You ***never*** want to overwrite your original data. ***Always*** add new variables instead.

Computing Reliability

The syntax for computing internal consistency reliability is:

```
reliability variables= var1 var2[ var3 ...].
```

So, for our extraversion example, the syntax would be:

```
reliability variables=e1 e2r e3.
```

Notice that we **ONLY** include the properly scored items (e.g., e2r). We do **NOT** include the original item for items we reversed (e.g., we do **NOT** include e2).

Reading the Output

Among other tables, you will see one that looks similar to this:

Cronbach's Alpha	N of Items
.837	3

Cronbach's Alpha is the internal consistency reliability of your scale.

What if I have more than one scale?

For example, what if you have items measuring both extraversion and agreeableness?

	e1	e2	e3	a1	a2	a3
1	4.00	5.00	3.00	2.00	3.00	4.00
2	5.00	5.00	4.00	5.00	4.00	3.00

In this case, you will need to compute reliability for extraversion and agreeableness separately! The syntax, assuming that all variables are already properly coded (such that higher numbers represent higher levels of the variable) is:

```
/reliability variables=e1 e2 e3.
```

```
/reliability variables=a1 a2 a3.
```

What if my alpha is very low (e.g., .30) or even negative?

This may indicate that you forgot to reverse one of your items. Double check your survey to see how all of the questions were scored. For example, if your reversed items (e.g., "I see myself as quiet") were *already* properly coded on the survey (e.g., agree=1 and disagree=5), then you do **not** need to reverse them again in your syntax. But if *all* the items in your survey shared the same scale (e.g., always agree=5 and disagree=1), then you will need to make sure that you reverse items as needed in your syntax.