GRASP
Project: Intraclass Correlation Coefficient Calculation with Confidence
Intervals
Component: Analytical Output
Analyst: Van Ness

Parameter Estimates

Parameter	Estimate	Standard Error	DF	t Value	Pr > |t|	Alpha	Lower	Upper	Gradient
beta0	2.7750	0.4007	19	6.92	<.0001	0.05	1.9362	3.6138	2.161E-6
g11	2.7994	1.0240	19	2.73	0.0132	0.05	0.6561	4.9427	-2.25E-8
s2	0.8250	0.2609	19	3.16	0.0051	0.05	0.2790	1.3710	3.599E-7

Additional Estimates

Label	Estimate	Standard Error	DF	t Value	Pr > |t|	Alpha	Lower	Upper
ICC	0.7724	0.09021	19	8.56	<.0001	0.1	0.6164	0.9284

The intraclass correlation coefficient is represented in this output by the estimate value for ICC given
in the Additional Estimates table. The lower and upper 90% confidence bounds for this estimate are
provided by the two final values in the same row of the Additional Estimates table.

Note that the data consist of pairs of measurements for 20 subjects. The intraclass correlation coefficient is
the ratio of the variance between pairs of measurements to the total variance, the latter being equal to the sum
of the variance between-pairs and the variance from within-pairs. It can also be interpreted as the correlation
between the values of individual measurements from the same pair of measurements. Finally, it can be construed as
a measure of the extent of dependence in the data due to taking multiple measurements on the same person.
Note that although the data in this example consists of pairs of repeated measurements, the technique is valid

for larger "groups" or "clusters" of measurements that are reasonably expected to be correlated for reasons
other than temporal proximity. Such clusters might include residents from the same skilled nursing facility
or students from a particular classroom or school district.

In the context of a test-retest reliability study, the 0.77 intraclass correlation means that measurements
taken on the same person at different time points are rather highly correlated. This attests to the
reliability of the measurement instrument. If a formal statistical inference is made regarding the
reliability of the measurement instrument for some population from which this sample of twenty was drawn
then the lower bound of the 90% confidence interval should be used to establish that the intraclass correlation
coefficient is greater than some value indicating acceptable reliability.