

## **I administered the WISC-IV to a student who scored 65 on each of the VCI, PRI, WMI, and PSI indexes, but his FSIQ was 57. Shouldn't it be 65? Also known as Regression to the Mean.**

Many people find this result counterintuitive, but it is correct. First, consider that the FSIQ is used to predict the student's true intelligence and does not correlate perfectly with it. Then consider that the index scores are composed of fewer subtests than the full scale IQ score and do not correlate perfectly with the FSIQ. In this case, if the student's true IQ is 57, then his or her index scores should be higher than 57 due to the effect of regression toward the mean. On the other end of the continuum, the opposite is true. If a student's FSIQ is 147, there is a greater probability that his or her index scores will be lower than the FSIQ.

This effect can be found in the composite score norms tables of many tests of cognitive ability, though the strength of the effect depends on several factors, including the number of subtests entering the composite, and the distance of the subtest scores from the mean, and the correlation among those subtests.

When a composite is made up of more subtests, the effect is larger. It is rarer to score about 2 standard deviations below the mean on each of the 10 subtests that compose the FSIQ than on each of the two or three subtests that compose an index score. This is why the effect is more pronounced for the FSIQ than for any of the four Indexes.

The further a score is from the mean, the larger the effect. This is because it is rarer to score about 2 standard deviations from the mean on all 10 core subtests than it is to score 1 standard deviation from the mean all 10 subtests. The effect is usually more pronounced at 2 standard deviations from the mean than at 1 standard deviation from the mean. In WISC-IV, the effect is largest at approximately 2 standard deviations above or below the mean. Beyond this point, the minimum and maximum possible scores constrain the effect.

The regression toward the mean effect is stronger when there is a lower correlation among the subtests that make up the composite score. That is why the effect is stronger in WISC-IV than it was in WISC-III. Though the inter-correlations among the 10 core subtests that constitute the WISC-IV FSIQ are high, they are not as high as those for the WISC-III subtests.

These slightly lower correlations are related to the greater diversity of construct coverage among the core subtests in WISC-IV. This expanded construct coverage improves clinical utility, but weakens the inter-correlations among the core subtests, which in turn, increases the effect of regression toward the mean.

The mean scores for the MR groups reported in the WISC-IV Technical Manual are FSIQ = 60 (Mild MR group) and FSIQ = 46 (Moderate MR group), respectively. These two clinical studies provide evidence in support of the psychometric integrity of the normative data in this range of the distribution.

In a separate study of 84 children selected from the combined MR sample groups, the WISC-IV Index and FSIQ scores were compared with previously obtained WISC-III scores (mean re-test interval = 6 months). As shown in the following table, the results of the WISC-IV are consistent with the WISC-III scores. The mean FSIQ scores are almost identical. The corrected correlations between the composite scores of the two versions range from .83 to .90. In addition, 68% and 81% of the WISC-IV FSIQ scores are within the 95% and 99% confidence interval of the WISC-III FSIQ scores, respectively. Such results are similar to the test-retest results reported in the WISC-III and WISC-IV manuals, and supply an additional line of evidence in support of the validity of the test scores in this portion of the IQ range.

Composite Score Consistency Between the WISC-IV and WISC-III Based on a Sample of Students with Mental Retardation											
VIQ/VCI	WISC-IV			WISC-III			Discrep ancy	d	<i>r</i>	<i>r<sup>c</sup></i>	
	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>					
	78	61.8	11.4	77	58.9	8.9					
PIQ/PRI		84	61.3	12.2	76	60.1	9.4	1.3	0.08	0.68	0.
FSIQ		72	56.0	11.3	84	56.0	8.6	0.0	0.00	0.71	0.

*r<sup>c</sup>* = corrected correlation

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