Long-term stability of the French WISC-IV: an exploratory study

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Long-Term Stability of the French Wechsler Intelligence Scale for Children-fourth edition: an exploratory study*

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INTRODUCTION

- Intelligence is presumed to be an enduring trait. However, the long-term stability of WISC-IV - the latest version of the most frequently used test in the field of cognitive assessment - has rarely been investigated.
- Only a few numbers of data are available for U.S. samples, and none with a French-speaking Swiss children.
- The studies demonstrated good stability coefficient for Full Scale Intelligence Quotient (FSIQ), Verbal Comprehension Index (VCI) and Perceptual Reasoning Index (PRI); (Canivez and Watkins, 1999, 2001; Wechsler, 2003b; Ryan and al., 2010).

OBJECTIVES

The goal of this study was to explore the long-term-stability of the French WISC-IV composite scores with an average Test (T1) - Retest (T2) interval of 2.33 years:
- Mean differences between first and second testing were assessed for each standard score;
- Test - Retest stability coefficients were calculated;
- Individual change scores across first and second testing were analyzed.

METHOD

Sample
- 96 non clinical French-speaking children;
- Aged between 8 and 12 years old;
- None of them has doubled or skipped class;
- Representative of the Geneva population.

<table>
<thead>
<tr>
<th>N</th>
<th>Mean Age T1 (SD)</th>
<th>Mean Age T2 (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>50</td>
<td>8.50 (1.24)</td>
</tr>
<tr>
<td>Girls</td>
<td>46</td>
<td>8.56 (1.26)</td>
</tr>
<tr>
<td>Total sample</td>
<td>96</td>
<td>8.53 (1.25)</td>
</tr>
</tbody>
</table>

Material
- The 10 core subtests and the subtest Picture Completion of the WISC-IV were administered to all children.
- The standard indexes were calculated: Verbal Comprehension (VCI), Perceptual Reasoning (PRI), Processing Speed (PSI), Working Memory (WMI), and the Full Scale Intelligence Quotient (FSIQ).

RESULTS

1. Mean level of change: differences between first and second assessment

- Dependent t-tests for differences between means are not statistically significant, except for PSI (M1 = 105.74 and M2 = 110.06 ; t(95) = -3.72, p = .000).
- Results indicate that performances are higher at the second testing than at the first testing for PSI.

2. Rank order consistency: test-retest stability coefficients

- As expected, long-term stability of FSIQ (r = .788) and VCI (r = .801) appear to be the most stable scores yielded by the WISC-IV.
- Regarding the others composites PRI (r = .651), WMI (r = .651) and PSI (r = .647), their stability coefficient is moderate.
- Only FSIQ and VCI stability coefficient are above .70.

3. Individual difference in change

<table>
<thead>
<tr>
<th>Percentage of &quot;stable&quot; individuals (within +/- 2 SEM)</th>
<th>Percentage of &quot;instable&quot; individuals (&gt; 2 SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMI</td>
<td>70.8</td>
</tr>
<tr>
<td>FSIQ</td>
<td>68.8</td>
</tr>
<tr>
<td>PSI</td>
<td>67.7</td>
</tr>
<tr>
<td>PRI</td>
<td>66.7</td>
</tr>
<tr>
<td>VCI</td>
<td>64.6</td>
</tr>
</tbody>
</table>

(a) SEM : Standard Error of the Mean from WISC-IV Interpretive Manual (Wechsler, 2005)

- At individual level, the results show that 68.8% of the children are stable for FSIQ and 70.8% for IMT between both assessments.

CONCLUSIONS

- From 6-7 years, the cognitive performance of individuals are assumed to be stable in short term but also in long term. This assumption of the stability of intelligence is the source of the predictive value of the Intelligence Quotient (FSIQ).
- Mean level of change, rank order consistency (stability coefficients) and individual difference in change between first assessment to second assessment with a mean interval of 2.33 years were analyzed as indicators of long-term stability.
- Even if test-retest stability coefficient is moderate (r = .651), WMI can be considerate as a stable index. Indeed, WMI test-retest mean difference is not significant and 70.8% of children are stable at individual level.
- WMI and PSI are frequently used in a diagnostically perspective. These preliminary results from a group of non clinical children suggest that WMI have a satisfactory predictive value, but not PSI.

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