Acknowledgments

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References


ABSTRACT

The constancy of IQs in Puerto Rican, white, and black children was compared. The Wechsler Intelligence Scale for Children (WISC) was administered in the first grade of a public school to 77 Puerto Rican, 44 white, and 48 black children. The WISC was readministered to these three groups at the end of the third grade. The Puerto Rican children showed significant increments (p < .01) in all retest IQs, whereas neither the white nor black groups showed any significant change. The increments shown by the Puerto Rican children were explained in terms of culturally determined responses to cognitive tasks. An English language handicap was found to be of no significance.

Decisions about a child’s education made as early as kindergarten or first grade are based on test results. These test results may show variations depending on the child’s ethnic background. Frequently, Puerto Rican children referred for psychological testing obtain poor scores on such tests as the Wechsler Intelligence Scale for Children (WISC). Although these low scores have generally been attributed to “bilingual factors” or “impoverished background,” they have nonetheless been treated as valid indices of the Puerto Rican child’s long-range academic potential. It generally has been assumed that the predictive value (generally considered good) of a WISC score is equal for children from different ethnic backgrounds, and few attempts have been made to test such an assumption.

1 This research was conducted as part of the Mount Sinai School Project which was supported by the Edith and Percy Straus Fund.
Several earlier studies suggested that intelligence levels of Puerto Rican children tended to increase with age (e.g., Morrison & Goodman, 1959; Talero & Brown, 1963). Unfortunately, because these studies suffered from methodological problems (e.g., lack of control groups, sample sizes of less than 20, poorly matched cross-sectional groups, exclusive reliance on nonverbal performance tests, incomplete administration of the WISC, use of non-Spanish-speaking examiners, psychiatric patients as subjects), it has never been clearly established whether significant increments in IQ scores in fact occurred. The purpose of the present study was to eliminate these methodological flaws and investigate the changes, if any, that occur in the IQs of Puerto Rican children in comparison with those observed in white and black children when the groups were retested after an interval of several years.

Method

Subjects

The subjects were 77 Puerto Rican, 44 white, and 48 black children who were enrolled in the first grade of a public school in New York City. The Puerto Rican and black children came almost exclusively from working-class families whereas the white children came largely from middle-class Jewish homes. No attempt was made to match the subjects for social class differences as this study was not primarily concerned with the level of IQ scores in the three ethnic groups but rather with the relative degree of change manifested in these test scores with increased maturity.

Procedure

The entire WISC (including digit span and mazes) was administered to each child during the first 4 months of the first grade and readministered during the last 4 months of the third grade. The average time that elapsed from the first to the second test administration was 2½ years. Because almost all the Puerto Rican children had difficulty with English, the WISC was administered to them in Spanish by a bilingual examiner.

Results

The data were analyzed by t tests, first, for correlated means for comparisons of first and third grade and, second, for uncorrelated means for comparisons among three ethnic groups.

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**Table 11.1**

Mean IQs and Standard Deviations of Puerto Rican, White, and Black Children (N = 116)

<table>
<thead>
<tr>
<th></th>
<th>Verbal</th>
<th>Performance</th>
<th>Full scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 1</td>
<td>Grade 3</td>
<td>Difference</td>
</tr>
<tr>
<td>Puerto Rican (n = 77)</td>
<td>M</td>
<td>77.77</td>
<td>87.76</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>11.96</td>
<td>11.66</td>
</tr>
<tr>
<td>White (n = 44)</td>
<td>M</td>
<td>109.27</td>
<td>110.22</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>15.74</td>
<td>16.34</td>
</tr>
<tr>
<td>Black (n = 48)</td>
<td>M</td>
<td>96.08</td>
<td>95.81</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>14.65</td>
<td>11.66</td>
</tr>
</tbody>
</table>

* p < .01.

** p < .001.

Table 11.1 shows the results of the WISC verbal, performance, and full scale IQ means obtained by the Puerto Rican, white, and black children in the first and third grades. In addition, a Scheffé test was performed to test for possible significances of the comparisons among means. The results are given in Table 11.2.

In the first grade, the Puerto Rican children's mean IQs (verbal, 77.77; performance, 90.89; full scale, 82.69) were all significantly below those of the white children (verbal, 109.27, p < .001; performance, 106.40, p < .001; full scale, 108.72, p < .001), as well as significantly below those of the black children (verbal, 96.08, p < .01; performance, 95.60, p < .05; full scale, 94.37, p < .05). The black children's mean scores in the first grade were all significantly below those of the white children (p < .01). All the IQ means of the black and white children fell within the range 90–109. The Puerto Rican children's mean IQs fell below this range, except for the performance mean (90.89).

**Table 11.2**

Scheffé Test for Comparing Differences between Ethnic Groups, Types of Tests, and Repetition of Tests

<table>
<thead>
<tr>
<th></th>
<th>Verbal tests</th>
<th>Performance tests</th>
<th>Total tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 1</td>
<td>Grade 3</td>
<td>Grade 1</td>
</tr>
<tr>
<td>PR × W</td>
<td>sig.</td>
<td>sig.</td>
<td>sig.</td>
</tr>
<tr>
<td>PR × B</td>
<td>sig.</td>
<td>sig.</td>
<td>n.s.</td>
</tr>
<tr>
<td>W × B</td>
<td>sig.</td>
<td>sig.</td>
<td>sig.</td>
</tr>
</tbody>
</table>

* PR = Puerto Rican students; W = white students; B = black students; sig. = p < .05, n.s. = no significant difference.
By the end of the third grade, the Puerto Rican children showed significant increases in all their scores. Their verbal mean IQ showed a significant ($p < .001$) increment of 9.99 points, their performance mean IQ showed a significant ($p < .01$) rise of 3.55 points, and their full scale mean IQ showed a significant ($p < .001$) increase of 7.41 points. None of the mean IQs of either the white or black groups manifested any significant change at the end of the third grade.

The performance mean IQ of the Puerto Rican group in the first grade was found to be significantly higher ($p < .001$) by 13.22 points than the verbal mean IQ. By the end of the third grade, the performance mean IQ of the Puerto Rican group was still significantly ($p < .01$) higher than their verbal mean IQ, although the difference (6.68 points) between the two means was much smaller than in the first grade. No significant differences emerged between the mean verbal and mean performance IQs of the white and black children in either the first or third grade.

Table 11.3 shows the distribution of full scale IQs for the three ethnic groups in the first and third grades. In the first grade 72% of the Puerto Rican children had IQs below 90. By the end of the third grade this figure had decreased significantly ($p < .01$) so that 48% of the Puerto Rican children placed below 90. Neither the white group (12–12%) nor the Black group (39–39%) showed any change between the first and third grades in the percentage of full scale IQs classified below 90. The Puerto Rican group showed a significant ($p < .01$) increment in the percentage of IQs that fell in the 90–109 range—from 26% in the first grade to 47% in the third grade. In both the black group (48–50%) and the white group (31–34%), there was no significant change in the percentage of full scale IQs classified in the 90–109 range. The percentage of scores that fell above 109 for the Puerto Rican group showed no significant change from the first (1%) to the third grade (4%). Neither the white (57–54%) nor the black group (12–11%) showed any significant change from the first to the third grade in the percentage of scores falling above 109.

<table>
<thead>
<tr>
<th>IQ</th>
<th>Puerto Rican</th>
<th>White</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Above 109</td>
<td>1</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>90–109</td>
<td>26</td>
<td>47</td>
<td>31</td>
</tr>
<tr>
<td>Below 90</td>
<td>72</td>
<td>48</td>
<td>12</td>
</tr>
</tbody>
</table>

**Discussion**

The major finding of this study is that IQ scores of public school Puerto Rican children did not remain constant but rather showed large significant increments over a period of several years, whereas the IQs of white and black children did remain constant during the same period. Gains for the Puerto Rican children were particularly dramatic in verbal areas although the performance areas also showed improvement.

One explanation for the Puerto Rican group’s gains that was frequently given by the clinician in interpreting test scores was based on the language factor. It might have been assumed that as these children acquired competence in English, their test scores would rise accordingly. However, lack of English comprehension could not be used to explain the results obtained in the present study given that the Puerto Rican children were tested in Spanish in both the first and the third grades. It was significant that after 2½ years in school, the Puerto Rican children’s English was still sufficiently inadequate for a valid administration of the WISC in English. This apparent tendency to cling to the native language was consistent with Brown’s (1960) findings.

The test behavior of the Puerto Rican children suggested that the results obtained might be explained by attitudinal and motivational factors embedded in Puerto Rican cultural patterns. When tested in the first grade, most of this Puerto Rican population, unlike the white or the black children, were consistently described by the examiner as quiet, uncommunicative, and unresponsive. It was noted that quite frequently the Puerto Rican children would make no response at all when test questions were posed. These observations supported the findings of Hertzig, Birch, Thomas, and Mendez (1968) who reported that the Puerto Rican children in their study usually met demands for cognitive functioning with passive and silent unresponsiveness. The increments in the IQ scores of Puerto Rican children found in the present study could therefore be explained in terms of such response tendencies. As these ethnically determined behavioral patterns weakened with the Puerto Rican children’s continued and prolonged exposure to different ethnic influences and behavioral styles, the children grew less passive and increasingly responsive to the test items and their intelligence test scores began to rise. Although Hertzig et al. (1968) hypothesized that the behavioral response to cognitive tasks observed in their Puerto Rican children would be resistant to change as would, by implication, any test scores affected by such response, the results of the present study did not support such a hypothesis. Rather, these results suggested that Puerto Rican children showed a considerable potential for intellectual growth and development as they became adjusted to their public school environment.
These ethnically determined patterns of responses were probably causing the differences in levels of the verbal and the performance tests obtained among the three ethnic groups. The consistent superiority of the performance scores over the verbal scores shown by the Puerto Rican children supported the finding of Hertzig et al. (1968) that Puerto Rican children were much more likely to make responses to performance than to verbal items.

The change from first to third grade in the Puerto Rican children's distribution of full scale IQs was significant only in the lower and middle IQ ranges. It may be that the Puerto Rican group's IQs will continue to increase until adolescence when their distribution might more closely approximate that of the standardization group. Evidence in support of this hypothesis comes from some of the earlier studies. Morrison and Goodman (1959) found the largest IQ increment in their adolescent groups. Talento and Brown (1963), although observing much less growth in their younger groups than in the present study, reported that whereas no members of their two younger groups achieved scores above 109, 26% of their adolescent group did so.

A number of important implications emerged from this study. Obviously, an IQ score obtained by a young Puerto Rican child, even when a test has been administered in Spanish, should be interpreted with great caution. It is highly doubtful that all Puerto Rican children with low IQs should be placed routinely in the traditional "slow" classes. For the great majority of these children, intellectual deficits are only apparent and a reflection of ethnically acquired modes of responding to the highly verbal, cognitive demands of the typical school. Furthermore, repeated testing throughout childhood and adolescence appears to be required to determine which of these youngsters is genuinely lacking in ability. Finally, it may be necessary to innovate new teaching techniques for these children. Perhaps some of the effort devoted to increasing English language fluency might be directed toward the development of group techniques which might promote identificatory learning through role playing in order to expedite the adjustment process of Puerto Rican children. Other teaching innovations should take into account the relative superiority of the Puerto Rican child's achievement when presented with performance or action-oriented tasks.

References


