COMPARISON OF BENDER-GESTALT AND WISC CORRELATIONS FOR PUERTO RICAN, WHITE, AND NEGRO CHILDREN

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PROBLEM

The discovery of significant relationships between Bender-Gestalt performance and intelligence test scores for children by Koppitz led her to suggest that the Bender-Gestalt measures many of the same functions as the Wechsler Intelligence Scale for Children (WISC). Furthermore, Koppitz wrote that "The Bender test can serve as a crude measurement of intelligence for all children age 5 to 10 years." However, a review of the data obtained from different population samples showed contradictions and indicated a need for caution in the use of the Bender as suggested by Koppitz until the relationship between these tests had been explored more fully. While significant correlations consistently were found for children from nonnormal groups, such correlations were not always significant when based on scores for normal children. Several studies also reported significant correlations for Negro children.

The present study examined the relationship between Bender-Gestalt performance and WISC IQs in a normal population composed of Puerto Rican, white, and Negro children. The primary purpose of the study was to investigate whether a positive relationship between Bender-Gestalt performance and intelligence test scores would be found for Puerto Rican children. Secondary aims were to determine the generalizability of previous results obtained with Negro children and to obtain additional information about the relationship between scores on these tests in normal children in order to clarify the prior contradictory findings in this area.

METHOD

Subjects. Ss were 123 Puerto Rican, 82 white, and 61 Negro children who were attending the first grade of a New York City public school. The entire WISC (including Digit Span and Mazes) and the Bender-Gestalt were administered to each child. Since almost all the Puerto Rican children were deficient in English, the tests were administered in Spanish by a bilingual psychologist.

RESULTS AND DISCUSSION

The Bender-Gestalt was scored by the Koppitz Developmental Bender Scoring System by three independent raters. Correlations between the test scores of the three raters ranged from .94 to .96. Product-moment correlations between the Koppitz scores and the WISC Verbal, Performance, and Full Scale IQs were computed for each of the three ethnic groups and are shown in Table 1. Because the Koppitz scoring system is based on the number of errors made in copying the designs, correlations with IQ scores yield negative values.

For the Puerto Rican group there was virtually no relationship between the Bender scores and the WISC IQs. Neither the correlation of the Bender with the WISC Performance IQ (—.02) nor the correlation of the Bender with the Full Scale IQ (—.20) achieved significance. The Puerto Rican group's Bender scores did show a small and significant correlation with the Verbal IQ (—.23), but the size of the correlation was such that no reliable predictions from the Bender scores could be made about a Puerto Rican child's relative ranking on the Verbal Scale.
TABLE 1. CORRELATIONS BETWEEN BENDER SCORES AND WISC IQs

<table>
<thead>
<tr>
<th>Test</th>
<th>Puerto Rican</th>
<th>White</th>
<th>Negro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal IQ</td>
<td>.23*</td>
<td>-.20</td>
<td>-.55**</td>
</tr>
<tr>
<td>Performance IQ</td>
<td>-.02</td>
<td>-.48**</td>
<td>-.59**</td>
</tr>
<tr>
<td>Full Scale IQ</td>
<td>-.20</td>
<td>-.43**</td>
<td>-.52**</td>
</tr>
</tbody>
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Note: Minus signs reflect the expression of Bender scores in terms of errors.

*p < .05; **p < .01

It is apparent that for the Puerto Rican child the Bender-Gestalt and the WISC do not measure the same abilities and that for these children the Bender-Gestalt cannot be used even as a crude nonverbal predictor of intellectual status. Moreover, caution should be used in interpreting the Bender score of a Puerto Rican child because it cannot be assumed that it has the same meaning as for a Negro or white child.

For the Negro children the Bender scores showed significant (p < .01) correlations with all three WISC scores. The Bender correlation with the Verbal IQ was -.55, with the Performance IQ -.59, and with the Full Scale IQ -.52. These correlational values are consistent with those obtained in studies by other investigators with Negro children, in which values ranged from -.44 to -.63.

The data for the white children showed significant correlations (p < .01) for the Bender with WISC Performance IQ (-.48) and for the Full Scale IQ (-.43), but did not show a significant correlation for the Verbal IQ (-.20). The correlations of the Bender and WISC Performance IQ and the Bender-WISC Full Scale IQ for the white group were not significantly different from the corresponding correlations in the Negro group. With the exception of Bender and WISC IQ correlations, the results of the white group support those of Henderson, et al. (3), who found significant Bender-WISC correlations for a sample of normal white children. The data for the white group—except for the Verbal IQ—also support the positive correlations between Bender and WISC scores observed in Negro children.

In the case of normal Negro and white children the Bender-Gestalt and WISC appear to have some factor or factors in common that result in the fact that both tests partially rank individuals similarly. However, with the Bender-WISC correlations from various studies that range from approximately -.43 to -.63, which accounts for approximately 18 to 40% of the total variance, the Bender would not be a suitable substitute for a complete intellectual assessment by the WISC. However, the results with our Negro and white samples (except for the Verbal IQ of the latter group) are consistent with Koppitz' suggestion that the Bender-Gestalt may be used as a crude measure of intelligence either for screening purposes or as an additional source of information when a child's intellectual status is uncertain.

TABLE 2. MEAN WISC IQs, MEAN KOPPITZ SCORES AND ASSOCIATED STANDARD DEVIATIONS

<table>
<thead>
<tr>
<th>Test</th>
<th>Puerto Rican</th>
<th>White</th>
<th>Negro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean SD</td>
<td>Mean SD</td>
<td>Mean SD</td>
</tr>
<tr>
<td>Verbal</td>
<td>77.30 10.92</td>
<td>111.31 16.36</td>
<td>93.57 13.61</td>
</tr>
<tr>
<td>Performance</td>
<td>91.01 11.83</td>
<td>104.31 14.41</td>
<td>95.51 12.07</td>
</tr>
<tr>
<td>Full Scale</td>
<td>82.27 10.37</td>
<td>108.30 15.69</td>
<td>94.10 12.45</td>
</tr>
<tr>
<td>Koppitz Score</td>
<td>11.88 3.63</td>
<td>6.94   3.24</td>
<td>9.39  4.35</td>
</tr>
<tr>
<td>Norm Equivalent*</td>
<td>5-5½</td>
<td>6-6½</td>
<td>5½-6</td>
</tr>
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</table>

*According to Koppitz (4)
An explanation for the lack of a significant relationship between the Bender Gestalt and the WISC Verbal IQ of the white children in the present study may be related to the above-average Verbal IQ (111) of the children, as seen in Table 2. The verbal skills of this particular group of white children appeared to have developed more rapidly than the perceptual motor skills measured by the Bender, possibly because language acquisition and verbal communication are prized more highly and reinforced by parents in this group. Thus, Table 2 shows that although the Verbal IQ of the white children was above average, their mean Bender score (6 - 6½) corresponded to the expected norm for first-grade children. Our present findings are supportive of the statement made by Koppitz that in cases in which verbal skills have outdistanced perceptual motor skills the Bender no longer could be used to predict a child's intellectual status. A similar explanation also might apply to the data obtained by Baer, whose normal sample had a mean IQ in the superior range.

A number of other observations may be made from Table 2. The differences in IQs among the three ethnic groups were all significant (p < .05), with the white scores above those of the other two groups and the Negro scores above those of the Puerto Rican children. These IQ differences reflect in part the social-class structure of the children who were attending the school. The white group included a large percentage of middle-class families, while the Puerto Rican and Negro groups came almost exclusively from working-class families. The WISC performance of Puerto Rican children also was influenced by cultural factors such as a passivity and lack of responsiveness to cognitive tasks as reported by other investigators, which further depressed their scores. It is interesting to note that although the Bender-WISC correlations were not significant for all three ethnic groups, nonetheless there is a clear and significant ranking of the mean Bender scores that follows the identical ranking pattern of the WISC scores. The WISC standard deviations differ significantly in only two instances: between the white and Puerto Rican groups for the Verbal IQ, where the white group was significantly (p < .01) more heterogeneous than the Puerto Rican group, and between the white and Negro groups for the Performance IQ, where the white group had a significantly (p < .01) larger standard deviation. None of the standard deviations of the Bender scores differed significantly from each other.

In summary, the most significant finding of this study is that Bender-Gestalt scores that had been shown to correlate significantly with WISC scores in both white and Negro populations did not show any significant relationship with the WISC for a group of normal Puerto Rican children. Precisely why the Bender-Gestalt and WISC fail to show any significant common variance for the Puerto Rican children cannot be answered by this study, which indicates the need for investigations that explore the organization of abilities in children of Puerto Rican background. Significant correlations for all WISC scores were found for a normal group of Negro first-grade children. For the present sample of normal white children WISC-Bender relationships were significant only for the Performance and Full Scale IQs. The lack of a correlation in the white group between these tests was attributed to the relative superiority of their Verbal score, which supported Kopitz' view that the Bender could not be used at all as an index of a child's intellectual status when development in verbal skills had outdistanced visual motor development.

**Summary**

Correlations between Bender-Gestalt scores and WISC IQs were obtained for three ethnic groups of 123 Puerto Rican, 82 white, and 61 Negro children in the first grade. The Bender-Gestalt test did not show any significant relationship with the WISC scores of the Puerto Rican children. Significant correlations (p < .01) between the Bender and all the WISC scores were found for the Negro group. For the white Ss, the WISC-Bender relationship was significant (p < .01) only for the
Performance and Full Scale scores. The absence of a significant correlation between the Bender and the WISC Verbal IQ in these children was attributed to the relative superiority of their Verbal scores.

**REFERENCES**


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**WAIS PERFORMANCE DIFFERENCES OF MALE AND FEMALE PSYCHIATRIC PATIENTS**

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**PROBLEM**

Various writers (e.g., 2) conceptualize psychopathology or behavioral disorders as failure to cope adequately with environmental demands, and level of intelligence generally is considered to be an important determinant of quality of coping behavior (4). Appreciable differences in intelligence levels between specified (e.g., male and female) groups of psychiatric patients may indicate that relatively high intelligence levels are less effective to reduce the observed incidence of behavior disorders among members of patient groups with higher intelligence levels than among members of the groups with lower intelligence levels. The finding of substantial intelligence differences between patient groups thus might have some implications with regard to the etiology of behavioral disorders. However, no study appears to have compared the WAIS IQ and subtest scores of male and female patients in a heterogeneous psychiatric population. Those comparisons were made in this study.

**METHOD**

The WAIS protocols of all (167 male and 112 female) patients who had come into contact with the Milwaukee County Mental Health facilities between January of 1960 and January of 1971 and who had completed all 11 WAIS subtests upon their initial contact were obtained from the clinic files.1 These patients were quite heterogeneous in type and severity of behavioral difficulty, with treatment that ranged from outpatient contacts to varying degrees of hospitalization. All except 4 male and 3 female patients were Caucasians. The mean age of male ($X = 31.8$, SD = 13.6) and female ($X = 31.5$, SD = 12.4) patients and the mean years of education of males ($X = 10.6$, SD = 2.3) and females ($X = 11.0$, SD = 2.4) were very similar.

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1The data used in this study were collected when the writer was at that facility in Milwaukee, Wisconsin.