

**COMPARISON OF THE BENDER GESTALT RESULTS WITH THE  
INTELLIGENCE LEVELS IN THREE DIFFERENT GROUPS OF  
BRAIN - DAMAGED CHILDREN**

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It is not, of course, possible to study the mental functions of a healthy individual selectively under laboratory conditions, but it is possible to study them when they break down as a result of brain injury or disease. In such cases, in a way, nature designs the experiment and the result is open to scientific investigation. Neuropsychology has practical value for psychologist working in the clinical field by providing them with several advantages in studying mental disorders: Firstly, it provides valuable clues about the working of a healthy mind. Secondly, definite cerebral lesions often cause clearly definable mental disorders, which may provide valuable information about the presence and location of cerebral pathology. Thirdly, observation and analysis of the methods used by some individuals to compensate for particular functional disturbances could be important when planning education and rehabilitation programs. For these reasons, detection of disorders in higher neural integrative system is the goal of all clinical techniques and testing procedures. Evaluation of neuropsychological behavior by testing procedures is an attempt to measure disorders by methods more structured than observation. (M. Williams, 1970)

Tests are based upon a more structured foundation of controlled stimuli than observation. In a test situation a subject's response is limited due to the prearranged stimuli presented to him. The items used elicit only certain kinds of responses. But, since, perceptual and integrative disturbances involve complicated neuropsychological processes, a given test often fails to detect disorders. Sometimes deviations can be detected by changing the nature of response, or by altering the stimulus provoking the response. For this reason, it is essential to use a battery of tests. Since there does not necessarily exist a linear relationship between neurological and psychological processes, the neural pathology cannot always be detected by psychological techniques. Sometimes the opposite might be true. Where the health and the well-being of the individual is concerned, it is imperative to use every possibility in the clinical situation.

Psychologists' instruments have been included among the multidisciplinary approaches for sometime in the west. Recently, in our country also, there has started cooperative research with psychologists in some of the branches of medicine with possible diagnostic and prognostic purposes for the future. The tests used by the psychologists have the common feature of estimating divergencies between optimal and functional levels which balance each other in the normal subject without any brain damage. Standards of comparison are the subject's previous performance and/or group norms.

In this paper, 31 brain damaged children\* were studied as a sample for the application of psychology in the clinical situation. In this pilot study none of the results should be considered as conclusive.

## METHOD

### *Subjects :*

31 subjects were used in this study which were divided into three main brain-damaged groups: (A) Birth injury and cerebral

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palsy (3 birth injuries 10 cerebral palsies). (B) post natal brain anomaly (3 choreas, 1 brain tumor, 2 cerebral abscesses and 5 encephalitis). (C) Congenital brain anomaly (1 heredo-degenerative, 6 epileptics). Their ages varied between 4.5 - 14 yrs 15 were girls and 16 were boys.

*Procedure :*

The tests were given to the Ss separately in a comfortable room where they were alone with the tester. The first test used was the Bender-Gestalt test, followed by the KIT intelligence test. Those subjects that were older than seven years were also given the 2A and the 2B forms of the Cattell Culture Fair Test of Intelligence in two separate sessions. There was no time limit in the first two tests. It took about approximately 1.5 hours to apply the battery to each subject individually. With normals it usually takes less than an hour.

*Tests :*

*Bender's visuo motor Gestalt Test (1938) :*

Visually perceived configurations first used by Wertheimer in his experimentations with visual gestalten have been offered to children with the request that they be copied. The final product is a visual motor pattern which reveals modifications in the original pattern by the integrating mechanism of the individual who has experienced it. According to Bender, the gestalt function may be defined as that function of the integrated organism whereby it responds to a given constellation of stimuli as a whole: the response itself being a constellation, or pattern, or gestalt.

*KIT test of Intelligence (1960)*

The KIT : EXP set is made of 16 plastic symbolic objects and a felt strip divided into 15 parts. There are 6 items for each age group between the age levels 1-14 yrs. Items within the levels are arranged roughly in order of difficulty. According to T. Kahn, its initiator, this test avoids the stereotyped item forms found in a great

many intelligence tests, and calls for responses which are relatively free from the effects of specific cultures and cultural opportunities, and does not contain culturally-loaded items (particularly verbal) which might elicit culture-associated resentments.

*Cattell's Culture Fair Intelligence Test (1949) :*

This test is designed to give a single measure of intelligence, as the best modern basis for the general I. Q. score. However, the test may emphasize the reasoning factor a little, i.e., the ability to *apply* intelligence in new situations, relative to many conventional tests.

The 2A and the 2B forms of this test can be used for the age groups 7.5 - 14. The whole set is made of 96 items. The items are meaningless geometrical forms which are divided into four subtests : 1) series, 2) classifications, 3) matrices, 4) conditions. The time needed for the application of both forms is approximately 30 minutes. The IQs of the subjects are easily defined by using the norm tables provided.

## RESULTS \*

### 1. *Results obtained from normal subjects :*

The results of the Bender Gestalt test as applied to 800 normal Turkish children indicate similar trends as those of American children. There are more error scores for younger age groups and less for older age groups. As is seen from Table I, this test easily compares with Koppitz norms and can be used with Turkish children for the same purposes used in the West.

In Fig. 4 the distribution obtained from 3149 Turkish children for the KIT: EXP test is compared with the best fitting curve. As

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\* For Tables and Figures mentioned in this English version of this paper, the Tables and Figures given in the previous Turkish version should be consulted.

is seen from this figure its trend is approximately normal with a mean of 106.2 I. Q. But, the  $X^2$  - test was significant at  $p = .01$  level. For this reason, for the time being, it may only be used for research purposes.

The results of the Cattell test of intelligence is similar with the KIT test as is seen from Fig. 5. The mean score is 106.8, but the  $X^2$  is again significant at  $p < .01$  level. For this reason, this intelligence test can also be used for the time being, only as a research instrument rather than a tool for diagnostic purposes.

## 2. *Results obtained from brain-damaged children :*

As is seen from Tables II, III and IV, the mean scores obtained from different sub-groups of these brain-damaged children differ from each other considerably, but both the Bender-Gestalt and the mean IQ scores diverge from the normal scores obtained from Istanbul children, visibly. However, the mean scores do not seem to yield the whole story for each individual subject. Because, of the Group A, two Ss have normal IQ scores at least in one of the intelligence tests. The same is true of many of the subjects in different sub-groups.

Following is a summary of the general results obtained from these 31 brain-damaged children :

1. 2/3 of the brain damaged children scored an IQ within the normal range in at least one of the IQ tests. This indicates the high potential that they possess for being educated.

2. For the assessment of IQ levels of these children one single test of intelligence is obviously not sufficient. A battery of such tests should be used. The KIT test of intelligence seemed to be a useful tool to be included to such a battery.

3. All the intelligence levels of these children were lower in the older age groups than in the younger age groups. This indicates the necessity for earlier training in these brain-damaged groups.

4. The Bender scores in the brain-damaged children are higher, as expected, than the normals. But, even in these groups the scores are lower for the older age groups than the younger ones. This trend

is similar with normal children. This fact may be due to the relation of the development of perceptual ability to maturity, in contrast with the recession of IQ levels of the untrained child as he matures.

5. These results point to the need of individually planned education and rehabilitation programs for the brain damaged children. Psychological aids and instruments could be greatly useful in the design of such programs.

## CONCLUSIONS

In this paper, the necessity of a battery of tests in the clinical situation is emphasized, and the importance of checking the validity on our own population of the «imported» psychological instruments is indicated. The necessity of individual planning in the rehabilitation and education programs and the aid of psychological instruments in such activities is discussed.

Apart from personal tragedy, there is also the serious loss on the country's resources of skilled man power, due to disease connected with the brain-damage. The crippling and chronic disability they cause often starting infancy if yet cannot be wholly cured, at least, can be controlled through appropriate education and training programs, an approach widely applied in the developed countries of the West. The pioneering efforts of The Turkish Spastic Children's Society in this respect should be gratefully mentioned here.

The bridge between diagnosis and cure is research, and the advantages of multidisciplinary approach providing cross-stimulation of scientific minds is important.

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