

WECHSLER-BELLEVUE SUBTEST SCORE CHANGES RESULTING FROM ELECTRIC CONVULSIVE THERAPY

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A group comprising thirty-two female patients confined to the Central State Hospital, Norman, Oklahoma, representing the functional pathology classified as schizophrenia-catatonias and -hebephrenias, were selected for studying the kind of psychological changes taking place during the course of electric convulsive therapy. These changes were measured by the Wechsler-Bellevue Form I, whose eleven subtest scores lend themselves to statistical manipulations such as the analysis of covariance. The patients, housed in the back wards because no previous therapy had helped their psychotic condition, were paired on the basis of age, education, and previous treatment. All patients were subjected to the same environment and all received a course of ten electric shocks at the rate of two a week. The Wechsler-Bellevue was administered before therapy began, after the fifth shock, and after the tenth shock.

The data gathered were interpreted to show to some extent how manifestations took place as shock therapy progressed, by indicating what specific mental abilities improved or depreciated during its course. The first point of interest is the distribution of the Wechsler-Bellevue I. Q. scores registered before, at the end of the fifth, and at the end of the tenth electric shock. The number of patients registering I. Q.'s of 35 and below before any electric convulsive therapy decreased by approximately 50% after the fifth shock. In general, however, this figure indicates that the distribution of I. Q.'s resembles more of a normal curve after the fifth and tenth shock than before shock. Neither in this study nor in others of a similar nature which have been reported in psychological literature was it statistically tenable to attribute the gains in I. Q.'s to the practice effects rather than to the treatment itself.

When the subtest score means were plotted, the scatter patterns took on very nearly the form which Rappaport hypothesizes to be representative of a schizophrenia record. It is to be kept in mind that his study did not include catatonics and hebephrenics, so that the slight deviation in patterns when comparison is made could be expected. On investigating the similarities of patterns, it was discovered that the pre-electric convulsive therapy pattern of the thirty-two subjects in this study tended to coincide with that of Rappaport's chronic group; whereas the after-the-fifth-shock pattern, with the exception of Object Assembly and Digit Span, tended to coincide with that of his acute schizophrenic group. It might be well to point out that Rappaport differentiates between acute and chronic schizophrenics as follows:

"The term Acute refers not merely to the recency of the onset of Schizophrenic symptoms, but also to the acute experiencing of the psychotic break with the recurrent turmoil, confusion, and general inefficiency. On the other hand, chronic cases have settled down with their psychosis, and show more or less blandness with reference to their delusions or bizarre behavior."

We could reason that electric convulsive therapy had a reversing effect on the patients' psychological life. That is, as electric convulsive therapy was administered up to the fifth shock, their chronic condition reverted to a former condition which may be labeled as the acute stage. An illustrative example of this manifestation was observed in one of the most severely withdrawn, mute catatonics who, at the end of the fifth shock, had completely snapped out of her stupor and exhibited outgoing and aggressive characteristics not unlike her preinstitutional behavior. This phenomenon of reversal is in keeping with our scatter pattern relationship of subtests. The shift was from chronic to acute.

An analysis of covariance and its extension to the use of *t* tables supports the contention that shock therapy has positive effects on psychological functioning for the mentally ill as a group but that there are individual differences in total scores in addition to individual differences in scatter patterns. It also indicates that the differences among the three trials are significant and could be attributed to the influence of shock on mental functioning.

A point of interest is the degree of improvement on the various subtests, on a percentage basis, with the progress of electric convulsive therapy. Although we are aware of the dangers involved in comparing percentages, it is done for the purpose of comparing changes on the subtest scores. It is to be noted that in comparing subtest scores, they all tended to increase from the pre-electric convulsive therapy test to the end-test of the series. The Picture Completion subtest led with the greater gain of more than 80%; whereas the Digit Symbol showed the least gain, about 2%. From the mid-test to the end-test there is a decrease of more than 10% on Digit Span, and a minute decrease on Vocabulary and Digit Symbol. However, these decreases are probably the result of the cumulative effect of the previous shocks.

It is possible that for some of this group the full course of shocks complicated their original psychosis and may have served to prolong or even hinder recovery, thus perhaps explaining why courses of shock therapy prior to this one were not of positive value. It has been observed in this study that some patients took on symptoms of organic brain disease, both clinically and psychometrically, during the period between the fifth and tenth shocks. That is, the clinical-organic behavior noted by the attending physician was coincident with the findings of a significant out-of-pattern relationship of Digit Symbol, Digit Span, and Block Design subtest scores to the other subtest scores, notably the verbal. This finding tends to support the theory that a prescribed number of shocks is not necessarily beneficial in treating all patients. That is, individual differences should be taken into account when the number of shocks is assigned. More specifically, it has not as yet been determined how many shocks should be included in a course.

It follows that further research in which the age, I. Q., and type of mental illness are taken into consideration, might be conducted for determining the number of shocks to be given to any one person. In general, and for the group as a whole, the highest peak of mental efficiency was recorded at the mid-point of the course of shocks. Since there appeared to be a regression in subtest scores for some of the patients after the fifth shock, it is further hypothesized that intensive psychotherapy with emphasis on resocialization should be applied at this point.

In conclusion, we wish to hypothesize that Wechsler-Bellevue scatter patterns for specific schizophrenic illnesses could be used to aid in diagnostic work; that the out-of-pattern relationship of Digit Span, Digit Symbol, and Block Design subtests to the verbal subtests may be interpreted as indices of organic brain damage; that electric convulsive therapy seems to have a reversing effect on a psychotic's psychological life, in terms of forcing him from a chronic condition to an acute condition; that individual differences among patients should be considered as criteria for determining the number of shocks to be included in any prescribed course of shocks; that the greatest gain in mental functioning usually occurs after the fifth shock; and that for future psychological studies, the Wechsler-Bellevue can become a statistically validated tool which will be valuable in predicting the prognosis of mental illness and in determining the type of therapy most conducive to improving specific mental abilities required for optimum readjustment.