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IDENTIFICATION AND VOCATIONAL TRAINING OF THE INSTITUTIONALIZED DEAF-RETARDED PATIENT. PART I, THE DIAGNOSTIC STUDY.

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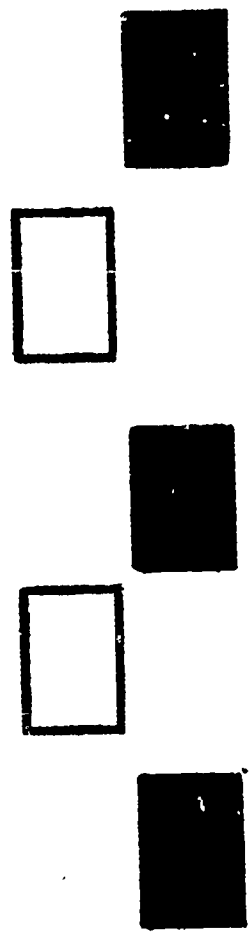
In planning vocational rehabilitation, 169 institutionalized deaf retardates (aged 10 to 40) were studied. The 106 males and 63 females were divided into two groups with the median age, 22 years, used as a cutoff point. All received various tests and evaluations. Results indicated that IQ scores ranged from 58 (verbal) to 61 (performance) on the Wechsler with females scoring somewhat lower than males. If sex is disregarded, the older group scored higher than the younger one. The personality tests showed more anxiety in younger patients, with females exhibiting more anxiety and depression than males. No significant relationship between intellectual function and the other diagnostic measures was found. However, patients with the least psychopathology were functioning at the highest intellectual level. No relationship was found between performance IQ and age, sex, age at admission, or length of hospitalization. Achievement tests revealed a mean grade level of 1.9 on arithmetic and 1.7 on reading, with older females performing best. There was wide variability on speech and audiology tests, but younger patients generally performed better on all but the articulation tests, where older females received better scores. (JB)



IDENTIFICATION AND VOCATIONAL TRAINING OF THE INSTITUTIONALIZED DEAF-RETARDED PATIENT

The Diagnostic Study

Research Report Number 43
Department of Mental Health
Lansing, Michigan

IDENTIFICATION AND VOCATIONAL TRAINING

of the

INSTITUTIONALIZED DEAF-RETARDED PATIENT*

Part I
The Diagnostic Study

Department of Mental Health
Lansing, Michigan
December, 1964

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PREFACE

The Deaf-Retarded Project, as it has come to be labeled by those associated with it, has been truly interdisciplinary in all its aspects. The final report of the study is yet to come but, because of the complexity of the entire program and the extensive data accumulated, this initial report was prepared to cover the important details of the assessment or diagnostic phase which was carried out during the first eighteen months of the project. It includes a description of all the diagnostic instruments used and the results obtained with these instruments for a population of 169 deaf-retarded patients who were examined. Because the report is intended to describe the diagnostic work, few interpretations are offered; these will be part of the final report of the entire study.

So many people participated in the work and in preparing this report that individual efforts are no longer identifiable. Rather, the following list of names is offered to recognize the contributions of all those people who participated in some phase of the project. Acknowledgement is made, however, for the contributions of Dr. E.J. Rennell, Superintendent, and Mr. Frederick Chesher, of the Coldwater State Home and Training School, and Dr. W.L. Harrigan, Superintendent of the Mt. Pleasant State Home and Training School, who through their interest and cooperation made it possible to carry out the assessment of patients at their institutions, and Mrs. Donna Mierzejewski, who fulfilled a difficult role editing the many drafts of the report.

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TABLE OF CONTENTS

TABLE OF CONTENTS

PART I

THE DIAGNOSTIC STUDY

Introduction

This paper is a report of the eighteen month assessment or diagnostic phase of a four year study concerned with the identification and vocational training of institutionalized, mentally retarded patients who are further handicapped by a total or partial hearing loss. The overall study attempts to contribute to an understanding of the multiple-handicapped patient - a problem, the importance of which, is emerging with increased urgency in hospitals for the mentally retarded not only in Michigan but throughout the country.

With respect to deafness, Schlanger has reported that the prevalence of patients with hearing loss among institutionalized mentally retarded patients ranges from none to as high as over fifty percent.[1] Johnston and Farrell found, in the Educational Department at the Fernald School, that of 270 children tested, sixty-six (twenty-four percent) showed significant hearing loss which is approximately five times the percent which prevails among Massachusetts public school children in similar age groups.[2] They also found the degree of impairment shown by the affected children was much greater than that shown in children with hearing impairment drawn from a public school population. Schlanger and Gottsleben tested 498 retarded patients, 210 under twenty years of age, and 288 over twenty years of age and found only four percent with normal hearing while thirty-five percent had a demonstrable hearing loss.[3] These investigators cautioned that the hearing loss of many patients goes undetected because of other prominent abnormalities. They suggest hearing loss should be considered as contributing in some measure to educational and social retardation, particularly among upper grade retarded children.

Kodman, Siegenthaler and Bradley all report that hearing loss is common in the institutionalized mentally retarded relative to the general population

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1 Schlanger, B.B., The Effects of Listening Training on the Auditory Thresholds of Mentally Retarded Children, West Virginia University, Morgantown, West Virginia, September, 1961, Cooperative Research Project 973 (8936).

2 Johnston, P.W., and Farrell, M.J., "Auditory Impairments Among Resident School Children at the Walter E. Fernald State School," American Journal of Mental Deficiency, Vol. 58, 1954, p. 640-643.

3 Schlanger, B.B., and Gottsleben, R.H., "Testing the Hearing of the Mentally Retarded," Journal of Speech and Hearing Disorders, Vol. 21, No. 4, 1956, p. 487-493.

which shows a prevalence approximately one-fourth as great.[4] These studies also suggest that as much as twenty-five percent of the mentally retarded show at least mild hearing loss.

While such studies support the importance of a program for the deaf-retarded, the actual impetus for this particular study came from an earlier effort at the Lapeer State Home and Training School with a group of young, similarly handicapped patients. Mrs. Patricia Bachman, speech therapist, was responsible for this early work and through her efforts others became interested in the project. The results were considered promising and it was decided to extend it and to include patients from all Michigan state institutions for the retarded. The central purpose of the first part of the study was to survey the deaf and hard-of-hearing patients in these Michigan hospitals in order to identify and assess their physical, psychological and educational characteristics. Subsequently, the project was to ascertain the vocational habilitation needs of the patients and to implement a training program aimed at meeting these needs.

The goals of the overall investigation may be stated somewhat more definitively as follows:

1. Provide definitive diagnostic measurements for that group of institutionalized patients who were previously characterized as mentally retarded and deaf or hard-of-hearing.

2. Provide the information essential to the planning of a training program which would include considerations of vocational habilitation.

3. Provide measurable results of those training techniques and procedures most productive with specifiable groups of patients.

Methods and Procedures

The Sample

Table I summarizes age and sex of the study population. Of the 169 patients constituting the study population, 106 were males and sixty-three females. The

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[4] Kodman, F., Powers, T.R., Philip, P.P. and Weller, G.M., "An Investigation of Hearing Loss in Mentally Retarded Children and Adults," American Journal of Mental Deficiency, Vol. 63, 1958, p. 460-463.

Siegenthaler, B.M. and Krzywichi, D.F., "Incidence and Patterns of Hearing Loss Among an Adult Mentally Retarded Population," American Journal of Mental Deficiency, Vol. 64, 1959, p. 444-449.

Bradley, E., Evans, W.E. and Worthington, A.M., "The Relationship Between Administrative Time for Audiometric Testing and the Mental Ability of Mentally Deficient Children," American Journal of Mental Deficiency, Vol. 60, 1955, p. 346-353.

patients ranged in age from ten to forty and their mean age was twenty-three. Males were somewhat older than females with means of twenty-four and twenty-two, respectively. The range in length of hospitalization was from six months to nearly thirty years and the mean was eleven and a half years. Males tended to have been hospitalized somewhat longer than females. Most of the patients in the study population had participated in the school program during their hospitalization. The projected training program was to include patients of all ages regardless of the fact that school programs usually do not provide basic academic training for retarded persons beyond approximately twenty years of age. Because of this policy it was believed it would be useful to separate the sample described here into two age groups, i.e., those patients who were older and would not normally be included in the school program and those who were younger and would generally be considered as eligible for academic training.

The actual breakdown in two groups was achieved by computing the median age for the entire group and taking all patients at or above the median age for one group and all below for the other. The median age was twenty-two, so the age groups discussed in this report will be those twenty-two and over and those under twenty-two years of age. Of the males, fifty-six were twenty-two years of age and over while fifty were under twenty-two years of age. Among females, thirty were twenty-two years of age and over and thirty-three were under twenty-two. Within age groups, males were approximately twenty-one months older than females in the group over twenty-two years of age and some seven months older in the group under twenty-two years. The difference in mean age between the groups under and over twenty-two years was approximately twelve and a half years for the total group and for females. The males showed a slightly larger difference.

Assessment Battery

Evaluation of the physical, psychological and educational characteristics of deaf-retarded patients, which is required in order to develop an appropriate training program, is particularly difficult because of a paucity of valid methods of assessing their abilities and capacities. Usual methods of assessment are often not directly applicable. Tests of general intelligence assume that subjects can respond to the usual procedures involved in test administration. Yet this assumption is difficult to satisfy in the case of deaf-retardates. Methods of assessing the personality attributes of individuals are even less likely to be applicable to deaf-retarded persons. This criticism applies equally to objective tests of personality, projective techniques and observer ratings. Even such apparently objective assessment procedures as those used in the measurement of hearing ability are difficult to apply in the case of the deaf-retarded. Tests of hearing are particularly troublesome because patients tend to be frightened by the equipment and because it is difficult for the examiner to distinguish between response failures due to failure to hear and those due to failure to understand directions. In short, the severe communication problems of the deaf-retarded impose limitations on the adequacy of the standard instruments available for assessing most characteristics of the deaf-retarded.

In addition to, or because of, their communication problem, these patients have quite likely suffered significant social deprivation and such deprivation further complicated the problem of evaluation since most instruments assume similar

socialization experience and a common culture. The test battery selected was based on an attempt to obtain required information while minimizing the effects of problems of this kind.

The set of instruments and examinations finally adopted was designed to measure those characteristics some knowledge of which were considered essential to planning a vocational habilitation program geared to these patients' requirements. The schedule included psychological tests and evaluations of physical status, academic achievement, audiological and speech deficits, levels and types of emotional adjustment and other personality characteristics. Some instruments were standard procedures but administered by pantomime and makeshift signing and others, largely rating scales, were constructed for the project. The instruments in all parts of the assessment are discussed here and samples of those constructed for the project are appended to the report.

Academic Achievement

Grade scores for each of the three basic school subjects - arithmetic, reading and spelling - were obtained from the administration of the Wide Range Achievement Test.[5] The examiner was instructed to exert every effort to obtain scorable responses from each patient, individually tested, and was restricted only to the order of the tests which, beginning with arithmetic followed by reading and spelling was considered the most conducive to motivating the patients to optimum performance. The Wide Range Achievement Test was selected because of its simplicity, ease of administration and clinical adaptability.

Physical Examination

The schedule for the physical examination was derived from the routine procedures currently in use in the various state hospitals in Michigan for the mentally ill and mentally retarded. (See Exhibit 1) The major purpose of the schedule was to identify the extent of and type of multiple-handicaps suffered by these patients. A second purpose was to identify patients with physical disorders which would preclude their participation in a program of habilitation.

Speech and Hearing Evaluations

Audiometric testing was conducted in an I.A.C. two-room unit, Model 402 C-T. The testing equipment included a Model 15-C Beltone two-channel audiometer. All stimuli could be monitored and switched directly to any speaker, earphone or bone conduction oscillator from this panel. In addition, a microphone attached to the control panel provided a speech circuit. A high fidelity speaker was located in each of two corners of the Test Room and a ceiling-mounted microphone permitted intercommunication.

Preliminary trials with a representative sample of the patients not included in the study population indicated a wide range of responsivity to the

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5 Jastak, J. and Bijou, S., Wide Range Achievement Test. New York: Psychological Corporation, 1946.

testing conditions and procedures. Therefore, appropriate adaptations and modifications of conventional hearing test procedures based on clinical judgment as to which approach would most likely be successful with the patient were made for use in the present investigation.

The audiometric evaluation included speech audiometry and pure-tone audiometry via both air and bone conduction. In general, with few exceptions, speech audiometry preceded pure-tone audiometry. This sequence was adopted because pretest experience with these patients suggested that speech testing flowed more easily from the rapport-establishing period and it offered a quicker overall index to both the degree and pattern of the patient's hearing loss.

Speech Audiometry - Speech audiometry, assessed via freefield through bilateral speakers, consisted of having the patient repeat spondee words such as "baseball", "sidewalk" and "railroad". The examiner spoke loudly to the patient and, when he was certain that he was being understood, eliminated the possibility of lip reading by covering the lower part of his face and diminished the intensity until the patient was responding bilaterally and accurately to fifty percent of the words. This constituted the Speech Reception Threshold (SRT) of the patient. Normal hearing for this procedure would be a threshold of ten decibels or softer. If the patient was unable to respond to adult spondee words, children spondee words were utilized. If the patient was still unable to respond either because of the difficulty of the words or because his own dysarticulation interfered, the examiner then monitored his speech intensity in order to achieve a threshold of hearing commands. This procedure became the basis for the threshold score of speech recognition. The decisiveness of result was noted.

The threshold test was followed by an evaluation of speech discrimination (SD) also assessed freefield binaurally through bilateral speakers. In this procedure, the intensity was set at a most comfortable loudness level for the patient which was defined as about forty decibels above the speech reception threshold. In cases where no response was obtained on the speech reception threshold, speech discrimination was not attempted. The examiner asked the patient to repeat a phonetically balanced (PB) word list consisting of fifty monosyllabic words. He used a carrier phrase such as "Say the word - boy", "Say the word - path" and so on. If the patient could handle the adult PB list, this was used. The errors were multiplied by two and the total subtracted from 100 to get the discrimination score in percent.

If the adult PB list was not successful because of its complexity or the patient's dysarticulation, the child's PB word list was presented. If this also proved to be unsuccessful, the discrimination testing was terminated.

Pure-Tone Audiometry - Pure-tone audiometry consisted of air and bone conduction testing at the frequencies of 1,000, 2,000 and 500 cps in each ear. The examiner talked to the patient in the testing room and explained to him by voice, gesture and pantomime that he was to raise his hand when he heard a tone. The examiner then placed an earphone over each ear of the patient and, with a colleague remaining in the testing room, proceeded to the control room from which he introduced a tone of 1,000 cps at an intensity of sixty dB and signalled through the window for the patient to raise his hand if he heard the tone. If there was

no response at that intensity level, the tone was raised to an intensity of 100 dB and the procedure repeated. (One thousand cps was the frequency used initially because experimentation has indicated this is the frequency at which hearing is most accurate). Response at either sixty or 100 dB was accepted as an appropriate intensity level at which to begin testing. The examiner's colleague also aided in the preliminary conditioning process until the patient was able to raise his hand when he heard the signal and lower his hand when he no longer could hear the sound. With some patients, conditioning was never achieved. Patients for whom conditioning was successful were then left alone in the testing room for the remainder of the audiometric examination.

The pure-tone by air conduction (through earphone) was then presented in the right ear at the appropriate intensity level and gradually diminished until the patient was responding to about fifty percent of a given signal and this was interpreted to be his threshold. Decisiveness of results was noted. The procedure was repeated for 2,000 cps and then for 500 cps. The left ear was similarly tested.

The pure-tone bone conduction procedure was similar except that a bone conduction oscillator was placed on the right and then the left mastoid.

Classification of Hearing Difficulty - A five-point scale of hearing difficulty was constructed for this study. Based on the results of both speech audiometry and pure-tone testing, five categories of progressive difficulty in hearing were established. The total decibel loss score for each individual was rounded to the nearest multiple of five for convenience in classifying. The classification was as follows:

Category	Decibel Loss (multiples of five)
I - Normal limits for speech	0 - 15
II - Mild loss	20 - 40
III - Moderate loss	45 - 60
IV - Severe loss	65 - 80
V - Total loss	85 - 100

Speech and Articulation Evaluations - Patients with hearing losses extending over a long period of time usually demonstrate difficulties in speech and articulation. For this reason, it was necessary to evaluate the extent and type of speech productivity. The Templin-Darley Screening Test for articulation was selected as the procedure to test efficiency of speech productivity because of its simplicity, reliability and the fact that it is directed to an elementary school population.

The Templin-Darley Test, administered to each patient individually, required that the object depicted in each of fifty pictures be named. If the patient hesitated the examiner said the word and had the patient repeat if after him. Each of fifty phonemes represented in the object naming was analyzed in

terms of omission, distortion, substitution or no response. The fifty phonemes (single sounds and blends) were included in the following fifty words:

bird	feather	matches	frog	stairs
music	smooth	watch	three	sky
rabbit	zipper	jar	shredded wheat	sled
arrow	sheep	engine	planting	sweeping
leaf	dishes	presents	clown	twins
valentine	fish	bread	glass	queen
thumb	television	trees	flower	splash
bathtub	yellow	dress	smoke	sprinkling can
teeth	onion	crayons	snake	string
there	chair	grass	spider	scratch

In determining the level of efficiency of speech production of these fifty phonemes, each patient was credited with a score of two percent for each phoneme produced adequately. A perfect performance would, therefore, result in a score of 100 percent. Any score less than 100 percent represents a loss in efficiency of production.

Upon completion of the articulation test, the patient was encouraged to speak freely and spontaneously allowing the examiner to judge which of the following categories of intelligibility of connected speech was most characteristic of the patient: (1) readily intelligible, (2) intelligible if listener knows topic, (3) intelligible now and then, and (4) completely unintelligible. In addition, the voice quality of the patient and other salient characteristics were noted.

Speech assessment also included classification of the patient according to the American Medical Association guides to impairment.[6] Here the dimensions of audibility, intelligibility and functional efficiency of speech were evaluated by the examiner using the procedure outlined in the guide. Impairment on each dimension was classified in one of five percentage categories as follows:

Class	Percent Impairment (multiples of five)
I	0 - 10
II	15 - 35
III	40 - 60
IV	65 - 85
V	90 - 100

A final overall evaluation of impaired functioning stemming from combined speech and hearing deficits was also made in accordance with the AMA guides and was stated as a single percentage of impairment of the whole man.

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6 "Guides to the Evaluation of Permanent Impairment: Ear, Nose, Throat and Related Structures," Journal of the American Medical Association, Vol. 177, No. 7, 1961.

Psychological Tests

The psychological appraisal of deaf-retarded patients was designed to include assessment of intellectual functioning, personality, a description of the nature of concept formation and a behavioral account of the patient during test administration. It was planned to assess these dimensions on the basis of a variety of tests that take into account the sensory deficits of this population, their lack of communication, and their overall retardation which could be adapted to permit effective administration as well as useful comparison with available norms. The tests comprising the initial battery were as follows:

The Wechsler Scales: WAIS and WISC[7] - These were chosen because of their wide usage in special education and clinical settings and their inclusion of both verbal and non-verbal sub-sections. These scales also provide many clues regarding personality attributes and type of psychopathology.

The WAIS was administered to all subjects whose age was sixteen or more and the WISC to all others. In general, the tests were administered and scored according to the standard procedure described in the manuals. In those instances where oral communication was impossible, certain of the performance sub-tests were administered in pantomime, e.g., block design, object assembly, etc. The order of presentations for the WAIS and WISC was as follows:

WAIS	WISC
Object Assembly	Picture Arrangement
Block Design	Object Assembly
Picture Arrangement	Mazes
Picture Completion	Block Design
Digit Symbol	Digit Span
Digit Span	Similarities
Arithmetic	General Information
Information	Picture Completion - optional
Comprehension	Vocabulary - optional
Similarities	
Vocabulary	

These sequences were used to permit subjects to begin with those sub-tests least dependent upon verbal and communicative skills and which offered maximum interest and chance of success to this population. Scoring was accomplished as outlined in the respective test manuals. Examiners were instructed to administer at least three performance sub-tests before concluding the subject was unresponsive or unproductive.

The Goodenough "Draw-A-Man" Test[8] - This non-verbal test was chosen because of its simplicity of administration and its high correlation with both the Binet

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7 Wechsler, D., Wechsler Adult Intelligence Scale. Wechsler Intelligence Scale for Children. New York, Psychological Corporation, 1955 and 1949.

8 Goodenough, F., The Measurement of Intelligence by Drawings. New York: World Book, 1926.

and Wechsler scales in the lower levels of intelligence. This test, too, serves as an excellent point of departure for additional analysis of personality attributes.

Here the task presented to the subject was to draw a person. If the standard request was not usable, the examiner attempted to get the subject to imitate a drawn circle and square. If successful, the examiner used gestures to communicate the idea of drawing the whole figure of a person by pointing to himself. If this did not produce a response, the examiner exposed card 3BM of Thematic Apperception Test series to the subject for five seconds after telling him he would be shown a picture and be expected to draw a person. If the subject hesitated, he was urged to draw or make a picture just like the one he was shown. The subject was urged a second time, if necessary, but no further effort was made. After the first figure drawing was obtained the subject was asked to draw a person of the opposite sex. A mental age was obtained by scoring the male figure according to the original Goodenough criteria.

The Hutt Adaptation of the Bender-Gestalt Test[9]- This test seemed highly suitable for this population because it offers a test of both intellectual functioning and personality based on visual-perceptual material and is relatively uninfluenced by variations in verbal ability and cultural experience.

The procedure used is essentially the same as that described in the test manual except that the language used in the elaboration phase was simplified and the concept of "changing" the production emphasized. This was done to avoid any implication that previous performance was inadequate and should be "improved" upon. A mental age was obtained for each of the basic productions of the copy phase using the age norms from Bender's original monograph.[10]

The Hanfmann-Kasanin Test of Concept Formation[11]- While this procedure is more an experimental device than a test method it was hoped that its unstructured nature would permit pertinent modification for the particular population.

The procedure followed was essentially that described in the test manual. Examiners were encouraged to explore and experiment and to use the testing situation as a semi-structured observation period. Because of the lack of useful responses this test was abandoned part way through the program of assessment.

Behavior Ratings

Additional data about a patient's behavior and general psychological functioning were obtained from a series of ratings made by examiners based upon their observations during the testing period and from the test findings proper. These

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9 Hutt, M.L. and Briskin, G.J., The Clinical Use of the Revised Bender-Gestalt Test, New York: Grune and Stratton, 1960.

10 Bender, L., Bender Visual Motor Gestalt Test, American Orthopsychiatric Association, New York, 1938.

11 Hanfmann, E. and Kasanin, J., "Conceptual Thinking in Schizophrenia," Nerv. and Ment. Dis. Monog., No. 67, New York, 1942.

rating instruments, used as a means of amplifying and supplementing the formal test scores, can be briefly described as follows:

Rating of Patient Behavior and Attitudes Observed During Psychological Examination (See Exhibit 2) - This scale, devised by Hutt, permits examiners to rate deaf-retarded subjects on a number of dimensions thought to be relevant to the validity and general significance of a particular test procedure. An individual rating for each test administered was filled out by the examiner directly after each testing session. This resulted in a total of three rating scales for each subject to whom all tests were administered.

Schizophrenia-Organicity Indices (See Exhibit 3) - This is a check list of indices of both schizophrenia and organic impairment which can be observed in a patient's responses to the Bender-Gestalt figures. The greater the number of indices of either schizophrenia or organicity, the greater the likelihood of the existence of such a condition in the subject being rated. A description of the various discrimination factors can be found in Hutt and Briskin, The Clinical Use of the Hutt Adaptation of the Bender-Gestalt Test.[12] The ratings were made by the examiner as part of his analysis of the HABGT record. Results of this rating scale were similar for kinds of patients and, therefore, are not presented in this report.

Hutt's Need for Communication Scale (See Exhibit 4) - This scale is a check list of those characteristics of figure drawings hypothesized to be associated with the strength of an individual's need to communicate. It involves twenty-four elements of the head (Scale A) and fourteen of the extremities (Scale B) which are rated separately and as a combined score (Scale A and B). The scale is applied separately to male and female figures and was generally scored at the same time as the Goodenough. For further details of the scoring procedure see the rating form in the appendix.

Hutt's Revised Bender-Gestalt Scoring Scheme for Nineteen Factors (See Exhibit 5) - This is a rating scale devised by Hutt which is based on nineteen of the test dimensions described in Hutt and Briskin, The Clinical Use of the Hutt Adaptation of the Bender-Gestalt Test. Each of the factors represents a type of psychopathological functioning in the subject's response to the Bender-Gestalt figures and to the extent that a greater degree of each factor exists there is presumed to be a greater degree of pathological dysfunction in the subject's performance. The ratings were made by each examiner as part of the analysis of the HABGT record. The dimensions and scoring instructions are described in the aforementioned volume and on the rating form included in the appendix.

The Summary Rating Scale (See Exhibit 6) - This rating form, designed by Hutt, allows the examiner to rate a particular subject on eighteen dimensions that can be either directly observed in, or inferred from, the total psychological testing situation. Some of the dimensions are the same as those used in the "Rating of Patient Behavior and Attitudes Observed During Psychological Examination."

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[12] Hutt, op. cit.

However, in the summary rating they are intended to apply to the subjects overall responses to the testing situation rather than to a particular test. Those dimensions common to the two scales are, for the most part, those having to do with work habits and effectivenss of communication. The remainder are concerned with intellectual and personality factors. Definitions of the dimensions are provided on the rating form included in the appendix. The Summary Rating Scale was completed by each examiner after completing all other ratings and the scoring of all tests.

The Psychiatric Evaluation (See Exhibit 7) - The psychiatric examination was primarily for the purpose of identifying the severely regressed and psychotic patient. A schedule was constructed consisting of a number of scales designed to provide a basis for evaluating the extent of maladjustment in the social, temperamental and emotional patterns of behavior. The psychiatric examination schedule also provided for an evaluation of mental status and a description of the patient's characteristic pattern of adjustment.

It was originally intended that the psychiatric evaluation be made by a psychiatrist based on the direct examination of the patient but, because this proved to be impossible, the psychiatric evaluation followed completion of all other tests and examinations and was an evaluation based upon these records.

Later, since most of the information available to the psychiatrist was from psychological assessment, it was decided that if a high correlation could be found between ratings by psychologists and psychiatrists completing the "psychiatric evaluation schedule," psychologists would complete the psychiatric ratings. An attained correlation of .74 ($P < .05$) permitted this change to ratings by psychologists. In other words, the term "psychiatric rating" here refers to psychologists judgments on a set of characteristics initially selected for evalution by psychiatrists.

Results of the Assessments[13]

Academic Achievement

Results of achievement tests are given in Table II. Arithmetic achievement was remarkably stable for all sub-groups of the total population. The mean grade level was 1.9 for patients of all ages, when the sexes were combined and for all males and all females, however, younger males were superior to older males while older females were superior to younger females.

The total group of patients had a mean grade level of 1.7 on reading achievement with the older group achieving a slightly superior score. Older females again obtained the highest achievement score as was the case with arithmetic

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[13] The reader will note considerable variation in the N's given in the tables in this section. This variation is due to the inability of some of the patients to complete some tests.

and, while not so marked, the same differences were found within sex groups with regard to the results for the older and younger patients, i.e., younger males were slightly superior to older males, older females were superior to younger females.

Spelling achievement was similar among all age and sex groups with the exception of the older females who again showed a relatively superior performance.

It should be noted that none of the academic achievement scores resulted in a mean grade level of more than 2.8 and no grade levels exceeded two except for the older females and the males under twenty-two years of age in arithmetic.

Physical Examination

A summary of the findings with these 150 patients examined by the medical staff is given in Table III. Fifty-three patients had at least one handicap in addition to retardation and deafness. Thirty-two patients had no handicap beyond their retardation and deafness. Approximately sixty percent of the patients had one or two additional handicaps, approximately fifteen percent had three or four, and a few patients had more than four additional handicaps.

The kind of handicap manifested by these patients ranged from skin eruptions to chronic disorders involving one of the physical systems. There was nothing unique in the type of handicap which would differentiate this group from the general population, if their hearing, speech and retardation problems are excepted.

Speech and Hearing Evaluations

Speech Audiometry

Speech audiometry, evaluated as described earlier, included four sets of results, speech reception threshold, speech discrimination, pure-tone air and bone conduction and a classification of hearing difficulty based on the examiner's judgment. Results for the total group and for each age and sex group are given in Tables IV through XIII.

There were 169 patients tested in the speech and hearing evaluations but forty-one of these were unable to respond to any testing while some others could be tested only on parts of the overall evaluation. This latter group constitutes the "no score attained" group in the tables and accounts for the differing N's among tables.

The speech reception threshold results shown in Table IV indicate there was wide variability within groups but, in general, younger age groups performed best and females were better than males. In speech reception testing the lower the score the greater the patient's ability to recognize and repeat spondee words.

Speech discrimination (Table V) resulted in a similar pattern with regard to the relative position of the age and sex groups. However, there was an exception with younger females who had poorer discrimination scores as a group than the females over twenty-two years of age.

Pure-tone test results shown in Table VI are expressed as a group mean of the average hearing loss in decibels over the three frequencies tested for the best ear. These results indicate that on air conduction testing younger patients had the least hearing loss and females as a total group had less loss than males. Young females had the most sensitive hearing of any group. Bone conduction data, arrived at similarly to the method for air conduction, support the finding that younger patients performed better than older patients but sex differences found on other tests were not maintained.

The audiologist's classification of hearing loss, based on speech audiometry and pure-tone testing, yielded the same sort of differences among the age and sex groups as those found in other tests. Again the younger patients and especially younger females tended toward milder hearing deficit. These results are shown in Table VII.

It is interesting to note, although patients were initially referred for testing by cottage personnel who believed them to have a hearing defect, thirty-seven of them were classified as having normal hearing. Another thirty-two had mild hearing loss on this schema. This accounts for over half the population on whom test results were obtained and for about forty percent of the total population referred. There were forty-one or approximately twenty-four percent of all patients referred who did not respond to hearing tests at all.

In summary, results on audiometric tests were in general agreement in identification of relative quality of performance among age and sex groups.

Speech Articulation

The Templin-Darley test of speech efficiency was used as one measure of speech articulation and results are given in Table VIII. Scores are in terms of percent efficiency.

Younger males had higher scores than older males but older females showed better results than younger females, a reversal of results on speech audiometry. Females as a total group were somewhat better performers than males. It should be noted that there is wide variation within groups, however.

The Templin-Darley was also used to evaluate the intelligibility of connected speech demonstrated by these patients. Mean scores on this four point classification, shown in Table IX, indicate that younger patients and females as a total group have somewhat better intelligibility scores. However, older females have somewhat better intelligibility than the young females. This is an interesting result in relation to the audiometric testing which indicated that while younger females had better hearing than their older counterparts they did have poorer discrimination.

Inspection of the proportion of cases in each classification indicates that forty patients, approximately thirty percent of the total group tested, spoke in a readily intelligible manner and another thirty-three, or twenty-five percent, were intelligible if the listener was aware of the topic under reference. These seventy-three patients constitute forty-three percent of all patients referred for testing.

The AMA five category classification based on percent of speech impairment was the final measurement of speech articulation. Results, given in Table X indicate that younger males have considerably better articulation than older males but females as a group are less impaired than males. Younger females also have somewhat better results than older females, a reversal from the picture found on other measures of speech articulation. Some forty percent of all patients referred showed little impairment in articulation while twenty-seven percent were almost totally impaired.

Combined Speech and Hearing

Finally the audiologist made a judgment of the total impairment of each patient based on the AMA scale of impairment in relation to the "total man." These results, shown in Table XI, indicate that younger males were less impaired than older males but older females were less impaired than younger females. The total impairment judgment, then, in regard to the whole person, appears to give more weight to the articulation tests than to the results on audiometric testing. That is, this classification gives similar results to those found on articulation tests where older females were relatively better performers than younger females.

Again, it may be noted that thirty-seven percent of the testable group of patients were impaired only mildly or not at all. This is approximately twenty-one percent of all patients referred for testing by hospital personnel.

Relationships Among Tests

Further analyses of speech and hearing test results were made by comparing results on selected measures. A comparison was made between the results on the Templin-Darley classification of intelligibility of connected speech and the AMA classification of intelligibility of speech. The contingency coefficiency was .83 indicating similar results were obtained on both measures.

Patients with results on pure-tone air conduction tests but with no response on the speech reception threshold were investigated with regard to their results on both parts of the Templin-Darley and on the AMA classification of speech intelligibility. These results, shown in Table XII, also indicate the high relationship between the Templin-Darley and the AMA scores on intelligibility. But, more important perhaps, this entire group of patients all were classified as having very low levels of intelligibility on both measures. On these tests where a high score indicates low intelligibility, the mean score on the Templin-Darley speech intelligibility was 3.84 out of a possible four and on the AMA measures the mean score was 4.74 out of a possible five. These results compare with a mean of 2.39 on the Templin-Darley and 3.22 on the AMA measure for the total group of patients. The mean percent efficiency of articulation score for the group with no SRT response was 21.05 compared with 53.23 for the total group.

The same group of patients was categorized by age and sex classifications as shown in Table XIII. Thirteen percent of the patients who responded to air conduction testing did not obtain a measure on the speech reception threshold.

The proportion held for both males and females. However, a higher proportion of younger females than older females failed to achieve an SRT. The reverse was true for males where the older group had a higher proportion of patients with no SRT. This result for females, while based on very small numbers, reinforces the recurring finding that younger females have poorer results on most measurements taken in the assessment program with the exception of results on speech audiometry. They are more disturbed, less advanced academically and functioning at a lower intellectual level than all other groups. Whether these results are all measures of lack of total potential or are somehow causally related is worthy of further investigation. Hearing test results suggest this group has relatively superior capacity for hearing sound but relatively little capacity for speech articulation or reception. This may be a reflection or a result of their intellectual impairment and/or their poor adjustment.

The pure-tone data were also analyzed to determine which patients had evidence of an air-bone gap in order to identify those most likely to benefit from a hearing aid or who might have a correctable medical condition. In pure conductive hearing loss, the thresholds by bone conduction are usually close to normal and the air-bone gaps are large. In the present situation the group defined as having a conductive hearing loss is that set of patients who had an air-bone gap measured as follows: The average of the difference between decibel losses at each of three frequencies on air conduction and bone conduction was computed for each ear. If the bone conduction loss was approximately forty decibels less than the air conduction loss in either ear, regardless of whether the bone conduction loss was near normal or not, the patient was considered to have an air-bone gap; i.e., a conductive hearing loss.

All patients who had responded to air and bone conduction tests and did not have an air-bone gap were considered to have a sensori-neural hearing loss. There were thirty patients identified with a conductive loss and seventy-five with a sensori-neural loss.

These two groups were compared on their results on the two parts of the Templin-Darley and on the AMA intelligibility measure. No difference in means was found between groups on any of these articulation tests.

Intellectual Functioning

Summaries of the three scored measurements of intelligence are presented in Table XIV which gives Wechsler results on verbal, performance and full-scale IQ and the IQ's obtained with the Modified Goodenough and the revised Bender-Gestalt tests.

It must be kept in mind when evaluating these data that they represent the level of intellectual functioning as it was reflected in test performance. Examiners were also asked to rate each subject on the extent to which the highest IQ obtained on any of the tests was below the subject's capacity, were correction or compensation made for his emotional and physical handicaps. The ratings suggested that most of the subjects were considered to have higher potential than their current test results would indicate.

On the Wechsler there was a remarkable similarity between verbal and performance IQ's. The mean IQ on the full scale was fifty-nine for the sixty-eight patients who were able to complete the test. This compares with a mean IQ of sixty-one for the 108 who were able to complete the performance scale, and a mean IQ of fifty-eight for the seventy-two patients who finished the verbal scale. Note, however, the varying N's on the verbal and performance scales which reflect the particular disability this population possesses in the verbal domain. When sex is disregarded, there is little difference between the younger and older age groups in the results on the Wechsler IQ. When sex differences are taken into account, females were found to be somewhat lower than males on all parts of the Wechsler. Younger males tended to have higher Wechsler scores than older males, while older females were higher than younger females.

Results on the Modified Goodenough were comparable with Wechsler scores for all age groups, although females of all ages obtained lower IQ's than they did on the performance part of the Wechsler.

Bender IQ's were characteristically higher than either Wechsler or Goodenough results by some ten to twelve points with means falling in the low seventy IQ range with the exception of young females. The Bender IQ reflects the best level of performance an individual is capable of since only his best reproduction is scored. These findings corroborate the impression of most of the staff that the younger female patients show greater evidence of retardation and/or impaired functioning.

The additional use of the median as an appropriate and representative measure of central tendency for some of the tests used to assess intelligence, was considered warranted due to the large number of subjects who did not achieve a scorable level of response. When only scorable records are used, the mean scores tend to be over-estimates of the level of functioning of the total population since they disregard the large number of patients who perform at a level below the "bottom" or "floor" of the test. Accordingly, in such instances, the unscorable cases were placed in the lowest class-interval of the frequency distribution and the median computed. This permits a type of representation of these cases which, while not completely accurate, gives a more descriptive picture of the general way in which patients performed. Results on these computations are given in Table XV.

With regard to the Wechsler IQ's, it is apparent that there were a significant number of scores in the lowest step-intervals since the median was found to be close to the bottom of the test. This is particularly true of the verbal and full scale scores which often resulted in failure with this verbally handicapped population. The slight age and sex differences noted establish, however, a pattern that is repeated elsewhere, i.e., a slightly superior score for the younger males and the older females on both verbal and performance. On the Goodenough, younger males and older females had a higher IQ than older males.

The same pattern emerges even more strongly for females on IQ's obtained from the Bender-Gestalt record. However, there is little difference between younger and older males. Again the older group is slightly superior when sex is disregarded.

Table XVI provides an indication of the extent of communication difficulty encountered during testing. The examining clinicians rated the behavior of each patient during administration of each of the three intelligence tests on five point scales relative to Ease of Establishing General Communication and Ease of Making Test Directions Understandable. (See Exhibit 2) The three separate test ratings on each item were summated with possible total scores of three to fifteen. The results suggest that moderate difficulty was encountered in overall communication with the patient, and that patients were seen as having moderate difficulty in understanding directions associated with the administration of the tests. In both cases older patients were seen as having more difficulty. Sex differences were negligible regardless of age groups.

The last two indices of intelligibility, summarized in Table XVII, represent the Examiner's Estimate of IQ and his judgment of the degree of current intellectual impairment. (See Exhibit 6) Interestingly enough, the clinical estimates of intelligence support the finding that the younger males score slightly higher than younger females. The Examiner's Estimate of Intelligence also shows the older females as slightly higher than their younger counterparts. In contrast to all other indices, the older males were seen as superior to older females. On the measure of degree of current intellectual impairment, the same judgments were made although the difference is very slight. The younger males were less impaired than younger females and older males were less impaired than older females. Both older men and women were less impaired than their younger counterparts. In any event, the test results indicated the older females had higher levels of performance than the older males while the raters tended to suggest the opposite.

Psychopathology

Four of the psychopathology dimensions had sub-group means which were different at a statistically significant level. ($P \leq .05$) Table XVIII gives a list of these dimensions and the comparisons which were found significant. Note that variables from the Psychiatric Rating Scale, in this case anxiety, were rated on a seven point scale while variables on the Summary Rating Scale were rated on a five point scale. In each case a low rating means a low degree of maladjustment. Comparisons between scales will not be meaningful in this table. The Nineteen Factor Scale has a total possible score of 190 and the higher the score the greater the maladjustment.

The rating of anxiety from the Psychiatric Rating Scale indicates that patients under twenty-two years of age were more anxious than the older group. This age distinction was also observed among males but not among females. The age difference is consistent with the examiners' impressions that the older patients are more "institutionalized," a syndrome characterized by apathy, resignation, withdrawal and an overall absence of active coping behavior. The failure to find this age difference among female patients is also in accord with the psychologists' impression that female patients at any age, all other things being equal, are considerably more disturbed emotionally than male patients.

Again, on the rating of overt anxiety from the Summary Rating Scale, older patients of both sexes were found less anxious.

The rating of degree of depression from the Summary Rating Scale reveals that the total group of females were perceived as more depressed than the total group of males. All sex and age group comparisons are consistent in this regard as can be seen in Table XVIII. Females, in general, impressed the examiners as being more emotionally disturbed than males, as was indicated above.

The Bender-Gestalt Nineteen Factor Scale, a more objective measure of psychopathology, reveals some differences that contrast with the previous observations. Here the younger females were found to be more profoundly disturbed than any other age group regardless of sex, but there was essentially no difference between older and younger males. On the other hand, examiners' ratings of anxiety suggested that women, in general, were more disturbed and anxious than males but that there were significant differences among age groups only for males. This reversal may stem from the nature of the two dimensions and the means by which they are measured. The Nineteen Factor Scale is designed to measure a more general type of personality dysfunction while the rating of anxiety from the Psychiatric Rating Scale depends more on readily observable manifestations of tension and impaired functioning. Thus, it is possible for a group such as the older women to appear more upset and disturbed than their Nineteen Factor Scale would indicate to be the case.

In considering the Nineteen Factor sub-group means, two possibilities are apparent. One, that the younger females become less disturbed as they age or, two, that the nature of the female population admitted in recent years has changed in the direction of more severe impairment. The opinion of the clinical staff at the institution and the growth of community programs for some retarded support the latter contention.

Despite significant differences between some of the means which have been discussed, it must be noted that the vast majority of the ratings of all kinds tend to cluster around the midpoint of each scale, and differences were rarely more than a half of a step-interval. The overall similarity of the ratings may have been the result of a number of factors. Raters may have hesitated in assigning extreme values. Such a tendency might arise from the fact that this population was unfamiliar to those doing the rating. Raters were, perhaps, also likely to give similar ratings for traits that seemed, logically related. The experimental nature of the scales within their lack of precise definition dimensions undoubtedly was a factor here. Finally, raters may have varied in the frame of reference from which they approached the rating task.

Relationships Between Selected Variables

Prior discussion of results has focused on descriptive comparisons among age and sex groups on all measurements taken in this diagnostic appraisal. Young females were generally identified as a unique group in that their adjustment, speech efficiency and intellectual function tended to be low relative to other groups.

This section of the report focuses on a different approach to analysis of diagnostic data, namely, the relationships between certain relevant results for the total group of patients in the sample. Two broad sets of relationships were segregated for presentation in this analysis. First were those between intellectual function and other diagnostic measures, exclusive of hearing and speech. Second were those between hearing and speech and other diagnostic measures including intellectual function.

Intellectual Function and Other Diagnostic Measures

Table XIX gives the significant correlations between intellectual function as measured by the Wechsler Performance Scale and other variables. The Wechsler Performance results were selected as the one standard measure best representing intellectual function of the group. Further, these performance scores correlated .75 with the Examiner's Estimate of IQ, .38 with the Goodenough IQ and .49 with the IQ derived from the Bender-Gestalt. All of these correlations are significant at .05 or better.

As can be inferred from Table XIX, no significant relationship was found between intellectual function and most of the other diagnostic measures. Those found on the achievement tests are not surprising in that they indicate higher achievement is associated with higher intellectual function.

Personality variables indicate that ratings of general adjustment and behavioral disorganization as well as absence of psychopathology as measured by the Nineteen Factor Scale are all positively related with intelligence. That is, the patients with the least psychopathology are functioning at the highest intellectual level. The findings with respect to degree of depression and intellectual functioning are consistent with clinical knowledge for other populations which indicate depression to be a clinical manifestation among people with relatively high intellectual capacity.

Chronic maladjustment, as measured here, appears to be inconsistent in its relationship with IQ. That is, other measures of adjustment, particularly overall measures, indicate that persons tending toward the normal end of these scales tend to function at a higher intellectual level than those with poor adjustment. This inconsistency may be due to the nature of the scales used. Examiners were asked to rate patients on an item labeled Chronic Maladjustment and also on an item labeled Transient Maladjustment. Results on these two items indicate examiners rated all patients to have some maladjustment in this institutional setting. Patients who were identified as severely maladjusted on other measures were rated as poorly adjusted on both the transient and chronic items of the Summary Rating Scale. All patients were judged as having a significant amount of maladjustment on the item referring to chronicity which may account for the positive relationship with intelligence. Also examiners may have reflected their tendency to see patients with relatively high intellectual capacity as misplaced in an institution for the retarded and, therefore, to conclude that this entitled them to a higher degree of chronic maladjustment. The finding that a relatively high IQ is associated with relatively high chronic maladjustment is then an artifact derived from the rating situation.

No relationship was found between performance IQ and the following: age, sex, age at admission or length of hospitalization. These results do not reflect the often held opinion that long hospitalization or hospitalization at an early age have a depressing effect on intellectual functioning. However, this result may be due to the fact that relationships here are with performance rather than verbal measures of intellectual function. It may be that performance measures are more refractory to the privations of institutional living.

Speech and Hearing and Other Diagnostic Measures

The results of these comparisons are given in Table XX. Comparison of the audiologist's classification of impairment for hearing speech (based on all available hearing data) with intellectual measures and with achievement measures indicate that patients tending toward normal hearing of speech also tend toward higher IQ scores and toward greater evidence of achievement in arithmetic. Reading achievement, on the other hand, shows no relationship with extent of hearing impairment. These findings are consistent with the correlation found between the Speech Reception Threshold and measures of IQ, arithmetic achievement and the lack of correlation with reading achievement.

The indicated relationships between both measures of hearing for speech and IQ test performance may reflect the possible depressing effect on actual intellectual function resulting from the inability to hear speech.

Failure to find a relationship between hearing for speech and reading achievement may be explained by the fact that the retarded, in general, tend to have trouble learning to read and their already poor capacity in this verbal area may not be further depressed by their hearing problem.

Pure-tone air conduction results are not correlated with the other diagnostic measures. It is concluded that hearing loss measured in decibels, that is, loss of hearing for sound, has no relationship with or effect on IQ or achievement for these retarded patients. Hearing for speech, however, is related to demonstration of arithmetic achievement and intellectual function.

When the estimated impairment of the patient took into account both speech and hearing problems, i.e., "Impairment of the Total Man," significant negative correlations were found between the extent of impairment and both types of achievement score. As would be expected, reading and arithmetic achievement were depressed when the total impairment score was high. It was also noted that performance IQ was not related to impairment while the Examiner's Estimate of IQ was negatively related. Possibly the examiners were including speech and hearing impairment and overall verbal ability in their estimate of IQ by responding to communication difficulties with the patients as evidence of impaired intellectual function.

Use of the Results

This concludes the report of the diagnostic phase of the project. The information provided herein is intended to contribute to an understanding of institutionalized retarded patients further handicapped by hearing loss. However, the diagnostic data had the additional purpose of providing a means for selecting groups of patients from the total sample for intensive academic and vocational training. During the two years which followed that program was undertaken in an experimental framework, the results of which will be reported in a second monograph.

APPENDIX

Exhibit 1

MEDICAL-PHYSICAD EXAMINATION
(Deaf-Retarded Project)

Patient's Name_____ Date_____ Case Number_____
(Last) (First) (Middle) (Year) (Month) (Day)

Hospital_____ Examining Physician_____

A. General:

Height_____ (Feet) (Inches) Weight_____ (Pounds)

Sex Male ( ) Female ( ) Color_____ (White, Negro, Other)

B. Skin:	None	Mild	Moderate	Severe	Remarks:
Eruptions	____	____	_____	_____	
Pigmentations	____	____	_____	_____	
Scars	____	____	_____	_____	

C. Skeletal System:	None	Mild	Moderate	Severe	Remarks:
Axis Deformity	____	____	_____	_____	
Scoliosis	____	____	_____	_____	
Lordosis	____	____	_____	_____	
Pain	____	____	_____	_____	
Limitation Of Movement	____	____	_____	_____	

D. Extremities:	None	Mild	Moderate	Severe	Remarks:
Deformity	____	____	_____	_____	
Limitation Of Movement	____	____	_____	_____	
Pain	____	____	_____	_____	

E. Respiratory System:	Normal	Abnormal	Remarks:
Nose	_____	_____	
Chest	_____	_____	

F. Circulatory System:	Normal	Abnormal	Remarks:
Blood Pressure	_____	_____	
Heart Rate and Regularity	_____	_____	
Palpation	_____	_____	
Percussion	_____	_____	
Auscultation	_____	_____	
Peripheral	_____	_____	

G. Digestive System:	Normal	Abnormal	Remarks:
Mouth	_____	_____	
Pharynx	_____	_____	
Abdomen and Pelvis	_____	_____	

H. Genito-Urinary System:	Normal	Abnormal	Remarks:
Male			
Penis	_____	_____	
Scrotum and Testes	_____	_____	
Prostate	_____	_____	
Female			
External genitalia	_____	_____	
Vagina	_____	_____	
Cervix	_____	_____	
Uterus	_____	_____	
Masses (tenderness, mobility)	_____	_____	

Research Section, D.M.H., 9-61

Exhibit 1 (continued)

I. Endocrine Glands:	Normal	Abnormal	Remarks:
Pituitary			
Thyroid			
Adrenals			
Testes-Ovaries			

J. Cerebrospinal System:	Normal	Abnormal	Remarks:
Motor Function			
Tone			
Strength			
Paralysis			
Atrophy			
Abnormal Movement			
Tremor			
Athetosis			
Clonus			
Other			
Coordination			
Finger to Nose			
Heel to Knee			
Romberg			
Other			
Reflexes			
Biceps			
Triceps			
Radioperiostral			
Patellar			
Achilles			
Abdominal			

J. Cerebrospinal System: (Continued)	Normal	Abnormal	Remarks:
Reflexes:			
Cremasteric			
Plantar (Babinski)			
Hoffman			
Clonus			
Chaddock			
Oppenheim			
Rossilino			
Sensory Function			
Touch			
Pain			
Heat			
Cranial Nerves			
I			
II			
III			
IV			
V			
VI			
VII			
VIII			
IX			
X			
XI			
XII			

Research Section, D.M.H., 9-61

Exhibit 1 (continued)

Remarks:	K. Chronic Conditions:	None	Mild	Moderate	Severe
	Asthma	____	____	____	____
	Allergies	____	____	____	____
	T.B.	____	____	____	____
	Chronic Bronchitis	____	____	____	____
	Sinus Attacks	____	____	____	____
	Rheumatic Fever	____	____	____	____
	Hardening of the Arteries	____	____	____	____
	High blood pressure	____	____	____	____
	Heart trouble	____	____	____	____
	Stroke	____	____	____	____
	Trouble with vericose veins	____	____	____	____
	Hemorrhoids or piles	____	____	____	____
	Gallbladder or liver trouble	____	____	____	____
	Stomach ulcer	____	____	____	____
	Other chronic stomach trouble	____	____	____	____
	Kidney stones or other symptoms	____	____	____	____
	Arthritis or rheumatism	____	____	____	____
	Prostate trouble	____	____	____	____
	Diabetes	____	____	____	____
	Thyroid trouble or goiter	____	____	____	____
	Convulsive seizures	____	____	____	____
	Repeated back symptoms	____	____	____	____
	Tumor or cancer	____	____	____	____
	Chronic skin trouble	____	____	____	____
	Hernia or rupture	____	____	____	____

Remarks:	K. Chronic Conditions: (Continued)	None	Mild	Moderate	Severe
	Bowel Incontinence	____	____	____	____
	Bladder Incontinence	____	____	____	____
	Other	____	____	____	____

Remarks:	L. Impairments:	None	Mild	Moderate	Severe
	Vision, even with glasses	____	____	____	____
	Cleft palate	____	____	____	____
	Club foot	____	____	____	____
	Speech	____	____	____	____
	Cerebral palsy	____	____	____	____
	Paralysis of any kind	____	____	____	____
	Others	____	____	____	____

Remarks:	M. Permanent Stiffness or deformity	Left	Right
	Fingers	____	____
	Hand	____	____
	Arm	____	____
	Toes	____	____
	Foot	____	____
	Leg	____	____
	Back	____	____

Remarks:	N. Missing:	Left	Right
	Fingers	____	____
	Hand	____	____
	Arm	____	____
	Toes	____	____
	Foot	____	____
	Leg	____	____

Research Section, D,M.H., 9-61

Exhibit 2

PATIENT'S NAME_____ DATE_____ CASE NUMBER_____
(Last) (First) (Middle) (Year) (Month) (Date)

BIRTHDATE_____ SEX Male ( ) Female ( ) AGE_____ HOSPITAL_____
(Year) (Month) (Day) (Years) (Months)

NAME OF TEST_____ AMPLIFICATION USED Yes ( ) No ( ) EXAMINING PSYCHOLOGIST_____
(Last) (First) (Middle)

RATINGS OF PATIENT BEHAVIOR AND ATTITUDES OBSERVED DURING PSYCHOLOGICAL EXAMINATION
(Deaf-Retarded Project)

1. EASE OF ESTABLISHING GENERAL COMMUNICATION

5 Impossible or almost impossible to communicate
4 Very difficult -- communications likely unreliable
3 Difficult -- somewhat unreliable
2 Fairly good -- reasonably reliable
1 Good to very good -- quite reliable

2. EASE OF MAKING TEST DIRECTIONS UNDERSTANDABLE

5 Impossible -- doesn't understand what is required
4 Very difficult -- understands very little
3 Difficult -- understanding somewhat unreliable
2 Fairly good -- reasonably reliable
1 Good to very good -- definitely understands directions

3. RAPPORT

5 Impossible to establish any kind of reliable rapport
4 Very difficult to establish rapport
3 Difficult to establish rapport, but some established
2 Fairly good rapport established
1 Good to very good rapport established

4. WORK HABITS -- PERSISTENCE

5 Very poor or gives up at slightest frustration
4 Quite poor or only little tolerance of frustration
3 Only fair or persistence is variable
2 Fairly good or persists much of the time
1 Very good or persists until asked to stop or until failure becomes quite obvious

5. WORK HABITS -- EFFORT

5 Little or no application even to initial stages of task
4 Quite poor even to initial stages of task
3 Only fair, needs special motivation to apply self, then does
2 Fairly good effort expended in initial stages
1 Very good or definitely good effort

6. INTEREST -- INVOLVEMENT

5 Shows no interest in task
4 Shows very little interest in task
3 Shows moderate interest in task
2 Shows fairly considerable interest in task
1 Shows very high interest in task

7. INTERPERSONAL -- LIKING FOR EXAMINER

5 Very hostile or aloof
4 Fairly hostile or aloof
3 Moderately friendly toward examiner
2 Definitely friendly
1 Easily or quickly friendly

8. INTERPERSONAL -- DEPENDENCE UPON EXAMINER

5 Extremely dependent upon E for support, etc.
4 Markedly dependent
3 Moderately dependent
2 Occasionally dependent, somewhat independent
1 Essentially independent of E for support

9. KINESIS -- GENERAL MOTOR ACTIVITY

E Very markedly hyperkinetic or restless
D Somewhat hyperkinetic
C Stable or fairly stable, motorically
B Somewhat lethargic, sluggish, or stuporous
A Very markedly lethargic, sluggish, or stuporous

10. EMOTIONAL TONE

E Manic or euphoric quality of emotional behavior
D Hypomanic or slightly euphoric
C Stable emotional mood
B Moderately depressed mood
A Very depressed mood

11. QUALIFYING NOTES: (Add any comment to elucidate any of the ratings, when this seems necessary.)

NOTES REGARDING RATINGS:

1. Use a separate rating sheet for each examinee and for each examination.
2. Rate S directly after administration of examination.
3. Compare S against the general population of individuals of S's approximate age, as you would imagine them.
4. Try to rate each trait in terms of specific behavior you have observed during the particular test. Avoid halo effect.
5. Where none of ratings apply, rate on the scale value which best fits the individual, then add any clinical notes to explain the qualifications you would like to express. Do not omit any rating for any individual for any test!

MLH: 8-61

Exhibit 3

PATIENT'S NAME _____ SEX Male ( ) Female ( ) DATE _____ CASE NUMBER _____
(Last) (First) (Middle) (Year) (Month) (Day)

HOSPITAL _____ EXAMINER _____

SCHIZOPHRENIA-ORGANICITY INDICES (RBGT)
Adapted from Hutt & Briskin, The Clinical Use of the Revised Bender-Gestalt Test, pp. 89-90

SCHIZOPHRENIC INDEX

1. Essential Discriminators. Give two points for each of the following, as defined on page 90, when present. SCORE

a.	Confused or symbolic sequence	____
b.	First figure placement, abnormal	____
c.	Space - very uneven use	____
d.	Collision tendency	____
e.	Pronounced shift of stimulus cards	____
f.	Severe angulation difficulty	____
g.	Severe rotation	____
h.	Retrogression present in two or more figures	____
i.	Fragmentation, especially discrete	____
j.	Simplification	____
k.	Marked cohesion or isolated decrease in size, i.e., atypical decrease on one or two figures	____
l.	Doodling	____ Total ____

2. Associated Discriminators. Give one point each. SCORE

a.	Perseveration, type A	____
b.	Marked decrease in curvature	____
c.	Crossing difficulty	____
d.	Marked inconsistency, direction of movement	____
e.	Marked progressive increase in size	____
f.	Excessive use of margin	____
g.	Frank elaboration of sexual symbols	____ Total ____

Schizophrenic Index (1+2) Total ____

ORGANIC INDEX

1. Essential Discriminators. Give two points for each of the following, as defined on page 89, when present. SCORE

a.	Rotation, severe	____
b.	Overlapping difficulty	____
c.	Simplification	____
d.	Fragmentation	____
e.	Retrogression	____
f.	Collision, actual or tendency	____
g.	Perseveration, type B	____
h.	Impotence	____
i.	Marked, persistent closure difficulty	____
j.	Motor incoordination	____
k.	Severe angulation difficulty	____
l.	Cohesion or isolated decrease in size	____ Total ____

2. Associated Discriminators. Give one point each. SCORE

a.	Sketching difficulty	____
b.	Marked reduction in size	____
c.	Sequence - irregular to confused	____
d.	Compensatory angulation, especially figure 2	____
e.	Crossing difficulty	____
f.	Sketching	____
g.	Impulsivity	____ Total ____

Organic Index (1+2) Total ____

MLH:10-14-61

Exhibit 4

HUTT'S NEED FOR COMMUNICATION SCALE
(Based on Figure Drawings)

PATIENT'S NAME _____ SEX Male ( ) Female ( )
(Last) (First) (Middle)

CASE NUMBER _____ HOSPITAL _____

DATE _____ EXAMINER _____
(Year) (Month) (Day)

GENERAL SCORING DIRECTIONS

1. Score separately the male figure and the female figure. If only one figure is scorable, prorate the total score by doubling the total score obtained on one figure only.
2. Obtain seven (7) scores in all, as follows:
   1. Score on Scale A, Male
   2. Score on Scale B, Male
   3. Total Score, A - B, Male
   4. Score on Scale A, Female
   5. Score on Scale B, Female
   6. Total Score, A - B, Female
   7. Grand Total, Total Scores, Male and Female
3. The subject is to be credited with a score of one (1) point for successfully meeting the conditions presented in each of the lettered items below.

Scale A (Total Maximum points - 24)

	Scores	
1. General Face (Maximum points - 3)	Male	Female
a. Any representation of a face	____	____
b. Oval rather than circular face (Height greater than width)	____	____
c. More than mere oval; i.e., some indication of a chin, or a jog where the ear should be, or a space for forehead	____	____
Total Points	____	____
2. Eyes (Maximum points - 5)	Male	Female
a. One or both eyes present	____	____
b. Height of eye smaller than width (Score of eye is represented by a line)	____	____
c. Any indication of a pupil	____	____
d. Any indication of an eyebrow	____	____
e. Any indication of lid or lashes	____	____
Total Points	____	____
3. Expression (Maximum points - 2)	Male	Female
a. Any indication of facial expression: i.e., line for grin, cheek line (Score very liberally)	____	____
b. Any indication of furrow on forehead	____	____
Total Points	____	____
4. Mouth (Maximum points - 4)	Male	Female
a. Present, any indication	____	____
b. Two dimensions	____	____
c. Any indication of shape of lips	____	____
d. Any indication of teeth or lips	____	____
Total Points	____	____
5. Ear (Maximum points - 3)	Male	Female
a. Present, any indication	____	____
b. Shape, approximately like ear	____	____
c. Any indication of lobes	____	____
Total Points	____	____
6. Nose (Maximum points - 3)	Male	Female
a. Present, any indication	____	____
b. Two dimensions indicated	____	____
c. Nostrils, any indication (if present score automatically for 6-b also)	____	____
Total points	____	____
7. Chin (Maximum points - 2)	Male	Female
a. Any indication (score liberally a la Goodenough examples)	____	____
b. Some shaping indicated, distinct	____	____
Total points	____	____
8. Hair (Maximum points - 2)	Male	Female
a. Present (scribble or lines)	____	____
b. Some detail shown (more than a scribble)	____	____
Total points	____	____
TOTAL POINTS SCALE A	____	____

Scale B (Total Maximum points - 14)

	Scores	
1. Arms (Maximum points - 3)	Male	Female
a. Present	____	____
b. Two dimensions	____	____
c. Expressive (elbow joint indicated or arms at 30 degrees or more from body)	____	____
Total points	____	____
2. Hands (Maximum points - 7)		
a. Present, any indication	____	____
b. More than crude representation	____	____
c. Fingers present	____	____
d. Number correct, either hand	____	____
e. Two dimensions shown	____	____
f. Any indication of joint or nail	____	____
g. Expressive (clenched fist or thumb differentiated from other fingers or holding objects)	____	____
Total points	____	____
3. Legs (Maximum points - 4)		
a. Present	____	____
b. Two dimensions shown	____	____
c. Foot differentiated from leg	____	____
d. Joint indicated (at knees, as in kneeling or bent leg)	____	____
Total points	____	____
TOTAL POINTS SCALE B	____	____
GRAND TOTAL POINTS SCALES A-B	____	____

MLH:10-12-61

Exhibit 5

PATIENT'S NAME_____ SEX Male ( ) Female ( ) CASE NUMBER_____
(Last) (First) (Middle)

HOSPITAL_____ DATE_____ EXAMINER_____
(Year) (Month) (Day)

HUTT'S REVISED BENDER-GESTALT SCORING SCHEME FOR NINETEEN FACTORS
(Revised and corrected as of 12-16-60)

A Basic Principles (See book, Clinical Use of the RBGT for further definitions)

1. Each factor is given equal weight, if totals are to be obtained.
2. If a group of records is to be scored, score all records for a single factor before proceeding to the scoring of the next factor.
3. Each factor is given a maximum weight of 10 points. The highest possible score is 190 points. Minimal score for a factor is 1.
4. A high score is indicative of greater psychopathology; a low score is indicative of a lower degree of psychopathology.
5. Non-scorable factors in a record are to be prorated on the basis of the total score for the other factors in that record.
6. Write the appropriate score for each factor in the box placed directly beneath the factor name.

B. Scores of Each Factor (Based on copy phase only)

FACTOR	SCORE	DEFINITION AND CRITERIA
I. SEQUENCE		A deviation in sequence is defined as a shift in either the lateral direction from the vertical direction of the preceding figures, or a shift to the vertical direction from the lateral.
	10.0	Confused. Jumbled or lack of any apparent plan in sequence.
	7.0	Irregular. More than 2 shifts in sequence, but no obvious confusion is present.
	4.0	Overly methodical. No deviation from a fixed sequence. No allowance made by S for the nature of the stimulus, the amount of space left on the page or the like.
	1.0	Methodical. A regular sequence in which no more than 2 deviations occur.
II. POSITION OF FIRST FIGURE	10.0	Exceptional. Placement within bottom 1/3 of page or at edge of bottom portion of page.
	7.75	Extreme corner. Placement within 1/2 inch of top or side edge of paper.
	5.5	Center of page. Placement of figure so that its center is within 1 inch of center of page.
	3.25	Near edge or near center. Not extreme corner (as above) but within 1 inch of any margin; or center of Figure A is more than 1 inch from center of page but below upper 1/3 or above lower 1/3 portion of page.
	1.0	Normal. At least 1 inch from top or side edge of page and figure is within upper 1/3 of page.
III. USE OF SPACE	10.0	Excessive or constricted. 2 or more figures exceed or are less than limits for either width or height as indicated in table attached.
	1.0	Normal. Less than 2 figures violate limits as indicated.
IV. CHANGE IN SIZE	10.0	Consistent increase or decrease. Five or more of the figures exceed limits for height or width as indicated in table attached.
	7.75	Tendency toward consistent increase or decrease. The limits for size are violated on 3 or 4 figures.
	5.50	Violation of size limits on less than 3 of the figures.
	3.25	Mixed increase or decrease. Violation of limits involving 2 to 4 figures but no more than 2 increases or 2 decreases.
	1.0	No significant changes in size.

PATIENT'S NAME_____ CASE NUMBER_____

FACTOR	SCORE	DEFINITION AND CRITERIA
V. COLLISION	10.0	Actual collision on more than two pairs of figures.
	8.5	Actual collision involving two pairs of figures.
	7.0	Actual collision involving only one pair of figures.
	5.5	Tendency toward collision: more than 2 pairs.
	4.0	Tendency toward collision: 2 figures.
	2.5	Tendency toward collision: 1 pair of figures.
	1.0	None of above.
VI. COHESION		Reduction by 1/4 or more of either horizontal or vertical axis of a figure.
	10.0	Cohesion present on 5 or more figures.
	7.0	Cohesion present on 3 or 4 figures.
	4.0	Cohesion present on 1 or 2 figures.
	1.0	No cohesion present.
VII. ROTATION OF PAPER	10.0	Rotation of paper for all figures.
	5.5	Rotation of paper for single figure or figures.
	1.0	No rotation.
VIII. CLOSURE DIFFICULTY		Scored on basis of frequency of occurrence of failure to join properly parts of a figure or parts of adjoining figures: A, 4, 6. Do not count more than 2 closure failures on a single figure.
	10.0	More than 9 closure difficulties present.
	7.75	6 to 9 closure difficulties.
	5.50	3 to 5 closure difficulties.
	3.25	1 to 2 closure difficulties.
	1.0	None.
IX. CROSSING DIFFICULTY		Count as crossing difficulty only actual indications of difficulties on figures 6 and 7. Note: 2 crossing difficulties may occur on 7. If figure 6 is drawn as 2 tangential curves, do not count as a crossing difficulty.
	10.0	3 or more crossing difficulties present.
	7.0	2 present.
	4.0	1 present
	1.0	None present.
X. CURVATURE DIFFICULTY	Revised See Def.	Defined as increase or decrease of curvature by more than half of relative size of stimulus figure. To score: Use accompanying values for each type of phenomena for each figure (on Figures 4, 5, and 6), then total these scores for all figures.
		3.33 increase or decrease in number of loops; 2.58 flattening or spiking; 1.83 marked increase or decrease in size of curve; 1.08 irregular in smooth flow of curve; .33 normal
XI. CHANGE IN ANGULATION		Score, according to criteria, for each figure (2, 3, 5, 6, and 7) separately, then total.
	2.0	Increase or decrease by 15 degrees or more.
	.20	None (on each figure)
XII. ROTATION OF FIGURE	10.0	Severe. 80 to 180 degrees.
	7.0	Moderate. 15 to 79 degrees.
	4.0	Mild. 5 to 14 degrees.
	1.0	None. (Note: Give score for maximum degree of rotation occurring on any of the figures.)
XIII. REGRESSION		Substitution of a more primitive Gestalt for the original; i.e., substitution of loops for circles, dashes for dots, or dots for circles.
	10.0	More than 2 present.
	7.0	2 present.
	4.0	1 present.
	1.0	None present.

MLH:10-10-61

PATIENT'S NAME_____ CASE NUMBER_____

FACTOR	SCORE	DEFINITION AND CRITERIA
XIV. FRAGMENTATION		Destruction of the Gestalt by breaking it into component parts, or by gross separation of the 2 parts of Figures A, 4, and 7.
☐	10.0	More than 2.
	7.0	2.
	4.0	1.
	1.0	None.
XV. SIMPLIFICATION		The use of a "substitute" figure which is simpler to draw or execute -- other than by FRAGMENTATION -- or by making symmetrical figures out of asymmetrical ones.
☐	10.0	More than 2.
	7.0	2.
	4.0	1.
	1.0	None.
XVI. OVERLAPPING DIFFICULTIES		Score only on figures 6 and 7. Difficulty in overlapping that is independent of CROSSING DIFFICULTY (i.e., shown by sketching or redrawing at point of crossing). It is indicated by simplification of either figure at point of overlap: In Figure 6, by making 1 part of curve disproportionate; in Figure 7, by failure to reproduce portion of figure at point of overlap or by destruction of figure at that point.
☐	10.0	Present on both figures.
	5.5	Present on 1 figure.
	1.0	None.
XVII. ELABORATION, ETC.		Score separately on each figure, then total.
☐	1.11	For any indication of elaboration or doodling on a figure.
	.11	For no indication on a figure.
XVIII. PERSEVERATION		Score separately on Figures 1, 2, 3, and 5, then total.
☐	2.5	If present on an indicated figure.
	.25	If not present.
XIX. REDRAWING	1.11	Scored if present for each figure.
☐	.11	Scored if not present, for each figure.

REVISED BENDER-GESTALT - COPY PHASE

FACTOR	SCORE	FACTOR	SCORE
1. Sequence	____	10. Curvature	____
2. Position	____	11. Angulation	____
3. Space	____	12. Rotation, Figure	____
4. Size, change	____	13. Retrogression	____
5. Collision	____	14. Fragmentation	____
6. Cohesion	____	15. Simplification	____
7. Rotation, paper	____	16. Overlapping	____
8. Closure	____	17. Elaboration	____
9. Crossing	____	18. Perseveration	____

19. Re-Drawing ____

TOTAL SCORE ____

ESTIMATED MENTAL AGE, RBGT ____yrs; Range, M.A., est. ____ to ____

MLH:10-10-61

Exhibit 6

PATIENT'S NAME_____ (Last) (First) (Middle) DATE_____ (Year) (Month) (Day) SEX Male ( ) Female ( ) CASE NUMBER_____

BIRTHDATE_____ (Year) (Month) (Day) AGE_____ (Years) (Months) EXAMINING PSYCHOLOGIST_____ HOSPITAL_____

MICHIGAN PROJECT FOR THE DEAF-RETARDED

SUMMARY RATING SCALE
Based on Total Psychological
Examination Schedule: Tests and Observations

1. DEGREE OF CURRENT INTELLECTUAL IMPAIRMENT
(Check one. This is an estimate and represents the degree to which you believe the highest obtained I.Q. on any of the tests is below the individual's capacity were his emotional or physical handicaps corrected or compensated for. The steps on the scale are defined as follows:
5. Very severe, 26 or more points
4. Severe, 16 to 25 points
3. Moderate, 6 to 15 points
2. Slight, not more than 5 I.Q. points
1. None

2. EASE OF ESTABLISHING GENERAL COMMUNICATION (GENERAL)
5. Impossible or almost impossible
4. Very difficult
3. Moderately difficult
2. Fairly good
1. Good to very good

3. RELIABILITY OF GENERAL COMMUNICATION
5. Varies widely, highly inconsistent
4. Quite inconsistent
3. Moderately inconsistent
2. Slightly inconsistent
1. Quite inconsistent

4. WORK HABITS -- PERSISTENCE
5. Very poor or gives up at slightest frustration
4. Quite poor or only little tolerance of frustration
3. Only fair or persistence is variable
2. Fairly good or persists much of the time
1. Very good or persists until asked to stop or until failure becomes quite obvious

5. INTEREST -- INVOLVEMENT
5. Shows no interest in task
4. Shows very little interest in task
3. Shows moderate interest in task
2. Shows fairly considerable interest in task
1. Shows very high interest in task

6. EMOTIONAL TONE -- DEGREE OF DEPRESSION
5. Very severely depressed
4. Severely depressed
3. Moderately depressed
2. Slightly depressed
1. No depression evident

7. EMOTIONAL TONE -- DEGREE OF EUPHORIA
5. Very marked euphoria
4. Marked euphoria
3. Moderate euphoria
2. Slight euphoria
1. No euphoria present

8. LEVEL OF OVERT ANXIETY
5. Very severe anxiety shown
4. Severe anxiety
3. Moderate anxiety
2. Slight anxiety
1. No anxiety manifest

9. LEVEL OF LATENT ANXIETY
(Inferred from clinical observation)
5. Very severe
4. Severe
3. Moderate
2. Slight
1. None

10. AMOUNT OF OVERT HOSTILITY
5. Very severe hostility manifest
4. Severe hostility
3. Moderate
2. Slight
1. None

11. AMOUNT OF LATENT HOSTILITY
(Inferred from clinical observations)
5. Very severe
4. Severe
3. Moderate
2. Slight
1. None

12. DEGREE OF EMOTIONAL MALADJUSTMENT -- CHRONIC
5. Very severely disturbed
4. Severely disturbed
3. Moderately disturbed
2. Slightly disturbed
1. Good adjustment

13. DEGREE OF EMOTIONAL ADJUSTMENT -- TRANSIENT
5. Very severely disturbed
4. Severely disturbed
3. Moderately disturbed
2. Slightly disturbed
1. Good adjustment

14. MOTOR DEXTERITY
5. Very poor motor control
4. Fairly poor motor control
3. Fair motor control
2. Fairly good motor control
1. Good to very good motor control

15. USE OF LANGUAGE
5. Cannot make self understood in language (verbal)
4. Can get very few ideas communicated
3. Can communicate fairly well in language
2. Can communicate well, only very slight handicap
1. No language handicap discernible

16. LIKEABILITY(How well do you, as the examiner like this individual?)
5. No liking at all; may even dislike him
4. Some small liking for him; but feelings are mixed and negative
3. Neutral; do not dislike or like
2. Definitely like him a little
1. Definitely like him a great deal

17. Estimated level of present development _____ to _____
(Give clinical estimate WITHIN 6 months, if possible, or at least WITHIN 1 year; thus, 6 yrs. 0 mos. to 6 yrs. 6 mos.)

18. Estimated, present I.Q. _____ to _____
(Give estimated I.Q. limits within 10 points, if possible, using units of 5 or 10 in defining these limits; thus, 70 to 80, or 75 to 85.)

MLN:10-62

Exhibit 7

PATIENT'S NAME_____ SEX Male ( ) Female ( ) DATE_____ CASE NUMBER_____
(Last) (First) (Middle) (Year) (Month) (Day)

HOSPITAL_____ EXAMINER_____

PSYCHIATRIC EVALUATION (SOCIAL ADJUSTMENT)

	Aggressive Tendencies		Schizoid Tendencies
Extremely Maladjusted	5. Extremely aggressive and antisocial. Acts out strong hostile, antisocial impulses. May be psychopathic and very dangerous.	Extremely Maladjusted	5. Extremely withdrawn and asocial. Requires constant strict supervision.
Severely Maladjusted	4. Severely aggressive, frequently acting out hostile, antisocial impulses. May be psychopathic. Frequently disobeys social rules or laws. Requires strict supervision and can be or is potentially dangerous to others or self.	Severely Maladjusted	4. Markedly withdrawn and asocial. Usually requires strict supervision.
Moderately Maladjusted	3. Aggressive, unstable, unpredictable. Sometimes acting out fairly strong hostile impulses, e.g., violent temper tantrums. Possibly psychopathic. Sometimes disobeys social rules or laws. Requires some general supervision with strict supervision during episodes. During outbreaks can be possibly dangerous to others or self.	Moderately Maladjusted	3. Withdrawn, unstable, unpredictable, and sometimes has periods of withdrawal. Requires some general supervision, particularly during periods of withdrawal.
Mildly Maladjusted	2. Aggressive, occasionally acting out hostile, antisocial impulses, e.g., temper tantrums. Occasionally may break social rules or laws, but usually not dangerous.	Mildly Maladjusted	2. Withdrawn, or occasionally withdrawn, but does not require supervision.
Somewhat Maladjusted	1. Adjustment within normal range. Tends to be somewhat aggressive.	Somewhat Maladjusted	1. Adjustment within normal range. Tends to be somewhat withdrawn.
Not Maladjusted	0. Adjustment within normal range with no apparent difficulty in social adjustment.	Not Maladjusted	0. Adjustment within normal range with no apparent difficulty in social adjustment.

Research Section, D.M.H., 9-61

PATIENT'S NAME_____ SEX Male ( ) Female ( ) DATE_____ CASE NUMBER_____
(Last) (First) (Middle) (Year) (Month) (Day)

HOSPITAL_____ EXAMINER_____

PSYCHIATRIC EVALUATION (TEMPERAMENT)

	Level of Hyperactivity		Level of Hypoactivity
Extremely Hyperactive	5. Extremely hyperactive and unstable. Totally incapable of functioning.	Extremely Hypoactive	5. Extremely hypoactive. Totally incapable of functioning.
Severely Hyperactive	4. Severely hyperactive. Highly unstable, may have short periods of stability, but usually severely hyperactive. Incapable of concentrated functioning except for very brief periods.	Severely Hypoactive	4. Severely hypoactive, may have short periods of some activity but usually severely hypoactive. Incapable of functioning except for very brief periods.
Moderately Hyperactive	3. Moderately hyperactive and unstable. May alternate between periods of normal activity and periods of hyperactivity or may generally exhibit moderate degree of hyperactivity. Functioning, particularly on tasks requiring accuracy of concentration, impaired by hyperactivity.	Moderately Hypoactive	3. Moderately hypoactive. Placid, may alternate between periods of normal activity and periods of hypoactivity or may generally exhibit a moderate degree of hypoactivity. Functioning usually at a very slow pace.
Mildly Hyperactive	2. Mildly hyperactive tending to be somewhat unstable. May show periods of normal activity level with occasional episodes of hyperactivity. Functioning, particularly on tasks requiring accuracy or concentration, somewhat impaired by activity level.	Mildly Hypoactive	2. Placid, tends to be sluggish. May show periods of normal activity level with occasional episodes of hypoactivity or may generally exhibit a mild degree of hypoactivity and sluggishness. Functioning, particularly on speeded tasks, somewhat impaired. Generally, functioning at a slow pace.
Somewhat Hyperactive	1. Somewhat hyperactive, but within normal range of activity level. No apparent impairment of functioning.	Somewhat Hypoactive	1. Somewhat hypoactive but with normal range of activity level. No apparent impairment of functioning.
Not Hyperactive	0. Functions within normal range of activity level with no apparent impairment of functioning.	Not Hypoactive	0. Functions within normal range activity level with no apparent impairment of functioning.

Research Section, D.M.H., 9-61

Exhibit 7 (continued)

PATIENT'S NAME _____ SEX Male ( ) Female ( ) DATE _____ CASE NUMBER _____
(Last) (First) (Middle) (Year) (Month) (Day)

HOSPITAL _____ EXAMINER _____

PSYCHIATRIC EVALUATION
(EMOTIONAL ADJUSTMENT)

	Level of Behavioral Disorganization		Level of Depression
Extremely Disturbed	5. Psychotic. In general, no contact with reality. Functioning completely impaired.	Extremely Disturbed	5. Psychotic. In general, no contact with reality. Totally unresponsive and unproductive. Requires constant supervision.
Severely Disturbed	4. Severe neurotic manifestations. In general, maintains contact with reality, but functioning severely limited.	Severely Disturbed	4. Severe neurotic depression. Functioning severely impaired. Marked absence of interest. Contact with reality maintained, but seriously unresponsive and unproductive. Requires constant supervision.
Moderately Disturbed	3. Some neurotic manifestations. Emotional maladjustment seriously interferes with functioning. Subject to severe disturbance under mild stress.	Moderately Disturbed	3. Marked depression. Functioning impaired with occasional show of interest, responsiveness and productivity. Needs general supervision.
Mildly Disturbed	2. Some interference with efficient functioning. Some mild neurotic manifestations leading to severe disturbance under moderate to severe stress.	Mildly Disturbed	2. Some depression, less marked. May function quite normally except in specific stress situations when need for supervision may be required.
Somewhat Disturbed	1. Emotional adjustment generally within normal range with some disturbance following extreme stress.	Somewhat Disturbed	1. Functions within normal range except in extremely stressful situations.
Not Disturbed	0. Emotional adjustment generally within normal range.	Not Disturbed	0. Adjustment and reactivity generally within normal range.

Research Section, D.M.H., 9-61

Exhibit 7 (continued)

PATIENT'S NAME _____ SEX Male ( ) Female ( ) DATE _____ CASE NUMBER _____
(Last) (First) (Middle) (Year) (Month) (Day)

HOSPITAL _____ EXAMINER _____

PSYCHIATRIC EVALUATION

Orientation:	Yes	No	Remarks:
Time			
Place			
Person			

Speech Pattern:	Never	Rare	Occasional	Frequent	Constant	Remarks:
Normal						
Overproductive						
Underproductive						
Coherent						
Incoherent						
Relevant						
Irrelevant						
Spontaneous						
Forced						

Motoric Reactivity:	Never	Rare	Occasional	Frequent	Constant	Remarks:
Normal						
Apathetic						
Stuperous						
Overactive						

Affective Reactivity:	Never	Rare	Occasional	Frequent	Constant	Remarks:
Cooperative						
Demanding						
Irritable						
Suspicious						
Apathetic						
Disturbed						
Destructive						
Assaultive						

Hallucinations:	Never	Rare	Occasional	Frequent	Constant	Remarks
Auditory						
Visual						
Olfactory						
Tactile						
Taste						

Delusions:	Never	Rare	Occasional	Frequent	Constant	Remarks
Spontaneous						
Elicited						

Research Section, D.M.H., 9-61

Exhibit 7 (continued)

PATIENT'S NAME _____ SEX Male ( ) Female ( ) DATE _____
(Last) (First) (Middle) (Year) (Month) (Day)

CASE NUMBER _____ HOSPITAL _____ EXAMINER _____

PSYCHIATRIC EVALUATION
(PATTERNS OF ADAPTATION)

Current Pattern Of Adaptation	Characteristic Pattern Of Adaptation						
	Never	Rarely	Occasionally	Frequently	Almost Constantly	Constantly	Remarks
_____ I. Emotionally well adjusted.	____	____	_____	_____	_____	_____	_____
_____ II. Exhibits adaptive difficulties reflecting transient episodes of emotional maladjustment.	____	____	_____	_____	_____	_____	_____
_____ III. Exhibits adaptive difficulties so severe as to constitute a neurotic reaction.	____	____	_____	_____	_____	_____	_____
_____ IV. Exhibits difficulties in adaptation so severe as to constitute a psychotic reaction.	____	____	_____	_____	_____	_____	_____

Research Section, D.M.H., 9-61

TABLE I

CHARACTERISTICS OF SAMPLE POPULATION

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Number	50	56	106	33	30	63	83	86	169
Mean Age	17.28	30.34	24.18	16.22	28.68	22.15	16.86	29.76	23.42
Standard Deviation	2.89	4.94	7.67	2.74	4.44	7.23	2.87	4.82	7.56

TABLE II

ACADEMIC ACHIEVEMENT (GRADE LEVEL) IN BASIC SUBJECT BY AGE AND SEX

Subject	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Arithmetic									
Number	35	33	68	22	18	40	57	51	108
Mean Grade Level	2.2	1.6	1.9	1.4	2.4	1.9	1.9	1.9	1.9
Standard Deviation	1.5	1.4	1.5	1.1	1.6	1.4	1.4	1.5	1.5
Reading									
Number	32	32	64	22	18	40	54	50	104
Mean Grade Level	1.6	1.3	1.5	1.2	2.8	2.0	1.5	1.9	1.7
Standard Deviation	1.1	1.3	1.2	1.2	2.3	1.9	1.2	1.8	1.5
Spelling									
Number	31	32	63	21	18	39	52	50	102
Mean Grade Level	1.5	1.5	1.5	1.4	2.0	1.7	1.5	1.7	1.6
Standard Deviation	.8	1.3	1.1	.8	1.4	1.1	.8	1.4	1.1

TABLE III

RESULTS OF PHYSICAL EXAMINATION		
Number of Physical Disabilities*	Number	Percent
No apparent disability	32	21.3
One disability	53	35.3
Two disabilities	40	26.7
Three disabilities	18	12.0
Four disabilities	4	2.7
Five disabilities	2	1.3
Six disabilities	1	.7
	150	100.0

* In addition to presumed mental deficiency and deafness.

TABLE IV

SPEECH RECEPTION THRESHOLD (SRT) BY AGE AND SEX

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Number*	33	36	69	22	17	39	55	53	108
Mean	31.67	40.56	36.30	21.36	35.59	27.56	27.55	39.00	33.15
Standard Deviation	22.73	20.36	22.01	17.78	24.72	22.24	21.58	21.96	22.49

* No scores obtained on twenty patients.

TABLE V

SPEECH DISCRIMINATION (SD) BY AGE AND SEX

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Number*	26	18	44	16	8	24	42	26	68
Mean	82.38	77.89	80.54	87.25	92.25	88.92	84.24	82.31	83.50
Standard Deviation	21.33	21.44	21.49	15.21	13.47	14.84	19.37	19.86	19.81

* No scores obtained on sixty patients.

TABLE VI

HEARING LOSS, PURE-TONE, IN DECIBELS TAKEN AS AVERAGE LOSS AT THREE FREQUENCIES IN BEST EAR

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Air Conduction									
Number*	33	38	71	24	19	43	57	57	114
Mean	37.64	52.50	45.59	31.92	45.05	39.49	35.23	51.35	43.29
Standard Deviation	26.89	27.06	27.99	28.06	27.57	28.77	26.79	26.56	29.41
Bone Conduction									
Number*	30	36	66	23	19	42	53	55	108
Mean	22.87	31.72	27.70	21.43	35.26	27.69	22.24	32.95	27.69
Standard Deviation	19.19	18.52	18.96	15.77	13.91	17.18	17.52	17.37	19.71

* Patients who could not respond to speech and hearing testing are omitted.

TABLE VII

AUDIOLOGIST CLASSIFICATION OF HEARING LOSS BY AGE AND SEX

Classification*	Age and Sex									
	Males			Females			Total			
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages N	All ages %
I - Normal Limits (0-15 dB)	11	6	17	13	7	20	24	13	37	28.91
II - Mild Loss (20-40 dB)	9	14	23	6	3	9	15	17	32	25.01
III - Moderate Loss (45-60 dB)	11	14	25	4	4	8	15	18	33	25.78
IV - Severe Loss (65-80 dB)	3	3	6	1	5	6	4	8	12	9.37
V - Total Loss (85-100 dB)	3	9	12	2	0	2	5	9	14	10.93
Number	37	46	83	26	19	45	63	65	128	100%
Mean	2.41	2.89	2.68	1.96	2.37	2.13	2.22	2.74	2.48	
Standard Deviation	1.22	1.29	1.28	1.23	1.21	1.12	1.67	1.29	1.29	

* Decibel loss in multiples of five.

TABLE VIII

SPEECH EFFICIENCY BY AGE AND SEX (TEMPLIN-DARLEY)

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Number	37	46	83	26	19	45	63	65	128
Mean Percent	62.00	43.70	51.86	51.69	61.37	55.78	57.75	48.86	53.23
Standard Deviation	32.09	35.67	35.80	31.44	36.83	34.16	37.30	32.48	35.45

TABLE IX

INTELLIGIBILITY OF CONNECTED SPEECH BY AGE AND SEX (TEMPLIN-DARLEY)

Classification	Age and Sex									
	Males			Females			Total			
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages N	All ages %
I - Readily intelligible	16	10	[illegible]	5	9	14	21	19	40	31.25
II - Intelligible if topic known	11	7	18	12	3	15	23	10	33	25.78
III - Intelligible sometimes	4	11	15	3	2	5	7	13	20	15.63
IV - Unintelligible	6	18	24	6	5	11	12	23	35	27.34
Number	37	46	83	26	19	45	63	65	128	100%
Mean	2.00	2.80	2.45	2.39	2.16	2.29	2.16	2.62	2.39	
Standard Deviation	1.09	1.26	1.20	1.04	1.27	1.13	1.09	1.24	1.19	

TABLE X

PERCENT OF SPEECH IMPAIRMENT BY AGE AND SEX (AMA GUIDE)

Percent of Impairment*	Age and Sex									
	Males			Females			Total			
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages N	All ages %
I - 0-10%	15	9	24	4	9	13	19	18	37	28.90
II - 15-35%	8	4	12	3	1	4	11	5	16	12.50
III - 40-60%	4	3	7	12	1	13	16	4	20	15.63
IV - 60-85%	3	12	15	2	3	5	5	15	20	15.63
V - 90-100%	7	18	25	5	5	10	12	23	35	27.34
Number	37	46	83	26	19	45	63	65	128	100%
Mean Class	2.43	3.57	3.06	3.04	2.68	2.89	2.68	3.32	3.00	
Standard Deviation	1.54	1.52	1.64	2.09	1.75	1.49	1.16	1.65	1.58	

* In multiples of five.

TABLE XI

AUDIOLOGIST JUDGMENT OF TOTAL SPEECH AND HEARING IMPAIRMENT BY AGE AND SEX (AMA GUIDE)*

Classification of Impairment	Age and Sex									
	Males			Females			Total			
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages N	All ages %
I - None (0-10%)	12	4	16	4	5	9	16	9	25	19.53
II - Mild (11-23%)	7	7	14	3	6	9	10	13	23	17.97
III - Moderate (24-35%)	5	4	9	2	5	7	7	9	16	12.50
IV - Severe (36-47%)	4	12	16	5	6	11	9	18	27	21.09
V - Critical (48-58%)	9	19	28	5	4	9	14	23	37	28.91
Number	37	46	83	19	26	45	56	72	128	100%
Mean	2.76	3.76	3.31	3.21	2.92	3.04	2.91	3.46	3.22	
Standard Deviation	1.58	1.36	1.55	1.46	1.36	1.43	1.58	1.41	1.53	

* As related to the whole man.

TABLE XII

SPEECH INTELLIGIBILITY RESULTS ON PATIENTS WITH NO SRT OR SD SCORES

Templin-Darley Intelligibility		AMA Speech Intelligibility		Level of Efficiency
I (Readily intelligible)	0	I (0-10%)	0	
II (Intelligible, if topic known)	0	II (11-23%)	0	
III (Intelligible, sometimes)	3	III (24-35%)	2	Not applicable
IV (Unintelligible)	16	IV (36-47%)	1	
		V (48-58%)	16	
Number	19	Number	19	Number 19
Mean	3.84	Mean	4.74	Mean 21.05
Standard Deviation	.37	Standard Deviation	.64	Standard Deviation 30.07

TABLE XIII

CLASSIFICATION OF PATIENTS ACCORDING TO TYPE OF RESPONSE ON AUDIOLOGY TESTS

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Air Conduction Without SRT and SD									
Number	3	8	11	4	2	6	7	10	17
Percent	8.1	17.4	13.3	15.4	10.5	13.3	11.1	15.4	13.3
Air Conduction With SRT and SD									
Number	25	18	43	16	8	24	41	26	67
Percent	67.6	39.1	51.8	61.5	42.1	53.3	65.1	40.0	52.3
No Air Conduction									
Number	9	20	29	6	9	15	15	29	44
Percent	24.3	43.5	34.9	23.1	47.4	33.3	23.8	44.6	34.4
Total									
Number	37	46	83	26	19	45	63	65	128

TABLE XIV

MEAN INTELLIGENCE TEST SCORES BY AGE AND SEX

Name of Test	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Wechsler (WISC-WAIS)									
Performance Scale									
Number	32	36	68	24	16	40	56	52	108
IQ Mean	61.50	60.89	61.66	58.42	63.50	60.45	60.18	62.33	61.21
Standard Deviation	28.45	16.41	22.88	17.00	13.09	15.75	24.26	15.48	20.54
Verbal Scale									
Number	26	17	43	15	14	29	41	31	72
IQ Mean	59.69	59.41	59.58	53.73	57.50	55.55	57.51	58.55	57.96
Standard Deviation	10.71	20.63	15.42	7.16	8.88	8.25	9.99	16.43	13.17
Full Scale									
Number	25	16	41	14	13	27	39	29	68
IQ Mean	62.52	59.81	61.46	53.29	58.00	55.55	59.21	59.00	59.11
Standard Deviation	11.27	5.90	9.63	9.32	10.28	10.06	11.50	8.19	10.22
Modified Goodenough Draw-A-Person Test									
Number	41	46	87	24	22	46	65	68	133
IQ Mean	59.80	62.07	61.00	56.67	61.27	58.87	58.65	61.81	60.26
Standard Deviation	16.40	21.16	19.10	15.44	16.47	16.11	16.12	19.77	18.15
Bender-Gestalt, Rev.									
Number	41	49	90	29	23	52	70	72	142
IQ Mean	74.56	72.00	73.17	64.21	73.04	68.12	70.27	72.33	71.32
Standard Deviation	16.86	22.44	20.14	21.16	18.83	20.63	19.96	21.36	20.47

TABLE XV

MEDIAN SCORES OF MEASURES OF INTELLIGENCE BY AGE AND SEX

Measure	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Wechsler (WISC-WAIS)									
Performance Scale									
Number*	50	56	106	33	30	63	83	86	169
Median	62	40	50	44	44	44	51	42	46
Verbal Scale									
Number*	50	56	106	33	30	63	83	86	169
Median	45	43	43	44	47	44	44	43	43
Full Scale									
Number*	50	56	106	33	30	63	83	86	169
Median	43	43	43	43	43	43	43	43	43
Modified Goodenough									
Number*	50	56	106	33	30	63	83	86	169
Median	53	50	50	49	50	50	52	50	50
Bender-Gestalt, Rev.									
Number	50	56	106	33	30	63	83	86	169
Median	74	75	72	60	75	72	72	75	72

* Patients for whom no scores were obtained were included at the lowest score in the obtained group.

TABLE XVI

EXAMINER'S ESTIMATE OF EXTENT OF COMMUNICATION WITH PATIENTS DURING TESTING BY AGE AND SEX

Dimensions of Communication	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Ease of Establishing General Communication									
Number	49	55	104	33	30	63	82	85	167
Mean	7.84	8.73	8.31	7.85	8.63	8.22	7.84	8.69	8.28
Standard Deviation	4.25	3.70	4.00	4.23	4.82	4.54	4.24	4.13	4.21
Ease of Making Test Directions Understandable									
Number	49	55	104	33	30	63	82	85	167
Mean	7.43	8.16	7.82	7.64	8.60	8.10	7.51	8.32	7.92
Standard Deviation	4.26	3.69	3.99	3.98	4.70	4.36	4.15	4.08	4.14

TABLE XVII

EXAMINER'S ESTIMATE OF INTELLIGENCE BY AGE AND SEX

	Age and Sex								
	Males			Females			Total		
	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages	Under 22 years	22 years and over	All ages
Examiner's Estimate of IQ									
Number	50	56	106	33	30	63	83	86	169
Mean	57.30	56.88	57.08	50.91	52.67	51.75	54.76	55.41	55.09
Standard Deviation	19.58	19.26	19.41	18.07	21.82	19.96	19.25	20.29	19.79
Degree of Current Intellectual Impairment									
Number	50	56	106	33	30	63	83	86	169
Mean	3.58	3.43	3.50	3.88	3.50	3.70	3.70	3.45	3.57
Standard Deviation	.92	1.05	.99	.98	1.09	1.05	.95	1.06	1.02

TABLE XVIII

DIMENSIONS OF PSYCHOPATHOLOGY MEANS AND SIGNIFICANT DIFFERENCES BETWEEN GROUPS*

Dimensions of Psychopathology	Number	Mean	Difference
Psychiatric Rating Scale/			
Anxiety			
Males and females - 22 years and over	79	3.57	
Males and females - under 22 years	77	4.04	.63
Males - 22 years and over	50	3.56	
Males - under 22 years	47	4.02	.46
Males - 22 years and over	50	3.56	
Females - under 22 years	30	4.07	.51
Summary Rating Scale#			
Overt Anxiety			
Males and females - 22 years and over	86	2.92	
Males and females - under 22 years	82	3.23	.31
Depression			
Males - under 22 years	50	2.08	
Females - 22 years and over	30	2.50	.42
Males - under 22 years	50	2.08	
Females - under 22 years	33	2.73	.65
Males - under 22 years	50	2.08	
Females - all ages	63	2.62	.54
Males - all ages	106	2.15	
Females - all ages	63	2.62	.47
Males - all ages	106	2.15	
Females - under 22 years	33	2.73	.58
Nineteen Factor Scale**			
Males - under 22 years	42	96.56	
Females - under 22 years	28	107.47	10.91
Males - 22 years and over	51	97.50	
Females - under 22 years	28	107.47	9.97
Females - 22 years and over	24	95.68	
Females - under 22 years	28	107.47	11.79

* P ≤.05 by t test.
/ Rated on seven point scale.
Rated on five point scale.
** Total score equals 190.

TABLE XIX

CORRELATIONS BETWEEN WECHSLER PERFORMANCE IQ AND OTHER DIAGNOSTIC MEASUREMENTS*

Measurement	Correlation with Wechsler
Achievement	
Arithmetic	r .37
Reading	r .38
Personality	
General adjustment	ϕ .26**
Behavioral disorganization	ϕ .40**
Chronic maladjustment	ϕ .25
Depression	ϕ .24
Nineteen Factor	r .55**

* Only correlations significant at $P < .05$ are given.
** Scores converted in direction from that shown in exhibits.

TABLE XX

CORRELATIONS BETWEEN SPEECH AND HEARING TESTS AND OTHER DIAGNOSTIC MEASUREMENTS

Speech and Hearing Test	Other Diagnostic Measures*			
	Wechsler Performance IQ	Examiner's Estimate of IQ	Reading Achievement	Arithmetic Achievement
Audiologist's Classification of Impairment	<u>.31</u>	<u>.65</u>	.03	<u>.32</u>
Impairment of Total Man	.01	<u>-.36</u>	<u>-.32</u>	<u>-.20</u>
Speech Reception Threshold	<u>.26</u>	<u>.23</u>	.10	<u>.24</u>
Pure-Tone (Air)	-.14	.16	-.01	.10

* Underlined correlations are significant at $P < .05$.

END

2-18