Manhasset Medical Center Hospital

1554 Northern Blvd. Manhasset, L. I.

NEW YORK

PEARL A. KLICK
ADMINISTRATOR

TELEPHONE
MANHASSET 7-4000

February 25, 1957

Dear Doctor:

The Quarterly Medical Staff Meeting of the Manhasset Medical Center Hospital will be held on Thursday, March 7, 1957, at 8:45 P.M., promptly at THE ALLISON, 1583 Northern Boulevard, almost directly opposite the hospital.

PART 1. Review and analysis of Clinical Work in the Surgical and Medical Sections for the month of December 1956, and the months of January, February 1957 inclusive.

A. Surgical Section - Ralph S. Emerson, M.D., Chairman

B. Medical Section - Lawrence S. Kryle, M.D., Chairman

PART 2. Tissue Committee Report - Howard L. Walker, M.D., Chairman

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SCIENTIFIC PROGRAM - Arnold G. Blumberg, M.D., Chairman

"THE TRANQUILIZERS IN PSYCHIATRIC PRACTICE
AND THEIR APPLICATION TO GENERAL PRACTICE."

Dr. Maximilian Fink
Director of Research in Experimental Psychiatry
Hillside Hospital, Glen Oaks, N. Y.

COLLATION.

Respectfully yours,

John G. Connell, M.D.
President - Medical Board

Harry H. Abrahams, M.D.
Secretary - Medical Board

Telephone number at
The Allison is
MA. 7-5584

April 1, 1957

MEMORANDUM

TO: Medical Affairs Committee

FOR: Dr. Joseph S. A. Miller

FROM: Department of Experimental Psychiatry

SUBJECT: Report of Departmental Activities, September 1956 to April 1, 1957

The following report of the activities of the Department of Experimental Psychiatry is submitted at the request of Dr. Miller, covering the period since September 1956.

A. Progress in Ongoing Projects:

1. Electroshock Evaluation: The control study to evaluate the significant elements in electroshock therapy, instituted on April 1, 1956, will be completed by the end of May, 1957. Seventy patients have been studied. It has been a most successful group, and we have gained significant insights into the electroshock process. First, we verified the original observation, made in 1955-56, that the pre-requisite for change in behavior in electroshock therapy is the development of a significant degree and sustained alteration in brain function.

Under the conditions of altered brain function, however, patients respond in various ways. In some patients, the improvement that follows electroshock is sustained, while in others, it rapidly disappears. It was our opinion that the patient's personality was the instrumental determinant in these observations. For this reason we have studied intensively the personality of the patients in this last group. By applying specially developed interview tests, standard psychological tests, and modifying a number of questionnaire tests, we have determined a number of the relationships between personality and type of behavioral response. At the present time, we are predicting the behavioral response of the patients to

electroshock therapy, and our predictions during the past few months have been significantly better than chance. As a result of these observations, we are planning to extend our study to include personality factors in psychotherapy results (see Section C).

Our second interest in this group of patients has been the perceptual changes induced by electroshock. By virtue of a control group, we have been able to determine those perceptual changes which are related to the treatment and those which are related to practice effects. In these observations, we have been impressed by the close interrelation of the personality of the patients and their perceptual processes. The interrelation of these two aspects of behavior is so close, that we have decided to undertake a study of individual differences in perception and hope to relate such differences to eventual behavior under the special conditions of altered brain function (see Section C).

Our studies have led us to develop a concept of electroshock therapy which has been of significant help in the management of this treatment unit. Electroshock is a non-specific treatment. It induces changes in brain function which persist for varying lengths of time, usually less than two months. Under these conditions the patient responds to his environment in different ways depending upon his personality. With a certain personality, he relates better to his family, his therapist, and to other patients. The better that he relates to other people, the less reason is there for him to become tense, anxious or depressed. Once the feeling of well being is set into motion, it is sustained by the patient's better ability to function with others. Electroshock therapy is not a specific treatment for a specific form of mental illness.

2. Biochemical Changes in Electroshock: In the course of these studies of electroshock, we noted that other investigators had reported that there were specific changes in enzymes in the spinal fluid after trauma, and

one report noted similar changes after electroshock. Dr. Goldenberg and I undertook a study of these enzymes in order to verify the previous reports and to clarify our own picture of the electroshock process. To date, we have collected 30 spinal fluids. I anticipate that this phase of the work will continue until the end of 1957.

3. Communication Studies: Our interest in communication problems has led to two types of studies. In one, Dr. J. Jaffe has developed a technique for the analysis of recorded interviews which provides us with an objective index of change in behavior. Support for this phase of the work has been obtained from the Foundations' Fund for Research in Psychiatry. At present, he is analyzing the recordings of interviews with electroshock patients made earlier in the year, and his findings are correlating very well with the clinical results. We anticipate applying this technique to an analysis of the changes in language and behavior that occur in psycho-therapeutic interviews.

A second study is a language analysis of the structured amytal test interviews according to changes in syntax and content. The original findings of this study were presented to the American Psychopathological Association in June. Since then, all our amytal test interviews are being analyzed in like fashion and the original findings have been verified and amplified. We have come to understand that the language of our patients tells us readily whether or not changes have occurred in brain function and in behavior. Furthermore, correlations between the personality evaluations and the language changes have shown a direct relationship between high degree language changes and certain personality types; and minimal to no language changes with other personality types. Language is thus a recordable facet of behavior and we are optimistic that a combination of the language analyses developed by Drs. Jaffe and Kahn would be a meaningful index of changes in behavior applicable to any form of psychiatric therapy, including psychotherapy.

4. Cerebral Reactivity: As described in the previous report, our interest in the question of individual variability in cerebral reactivity has been stimulated by our electroshock studies. One part of this study is the study of biochemical changes in spinal fluid. A second is the study of the rate of development of electroencephalographic change induced by electroshock. Dr. Green has begun this phase of the work and since September has surveyed all our electroshock patients by an analysis of their basic EEG records, and their response to hyperventilation. Also, the cerebral response to Megimide has been assessed and this phase of the work completed (see Section B). Beginning in May, it is anticipated that the laboratory will screen new admissions to the hospital and that various activation procedures will be tested, so that the definitive study can be undertaken in the Fall.

Concurrently, Dr. Green has assessed the relationship between the electroshock seizure threshold and cranial resistance as factors influencing the development of electroencephalographic abnormality. This study is in progress.

5. Ambivalence: This study, under the direction of Dr. Sidney Tarachow, has continued and the observations have been presented before the New York Neurological Society in January. The observations have been summarized in a report which will appear shortly in the A.M.A. Archives of Neurology and Psychiatry.

B. Completed Projects:

1. Chlorpromazine-Insulin Coma:

Insulin Coma Control Study: An interim report on the results of this control study was submitted to the Research Committee of the Medical Board on January 31, 1957. In this study, 59 patients referred for insulin coma were divided into two groups - one half receiving insulin coma and the other half receiving chlorpromazine therapy. It was our conclusion that chlorpromazine is as effective in modifying psychotic behavior patterns as insulin coma therapy.

There was a tendency for the discharge ratings to be better for the chlorpromazine group than for the insulin coma group. We concluded that, in comparison to insulin coma therapy, chlorpromazine was safer, easier to administer, more controllable in its effects, and had fewer side effects. We also concluded that no evidence had appeared in the fifteen months of the study that either therapy had altered the basic schizophrenic process, nor did we feel that either form of therapy had a greater specificity for schizophrenic illnesses. At the conclusion of the study, the Medical Director placed chlorpromazine in the formulary and permitted its use by the resident staff.

2. Megimide Evaluation: During this period Dr. Green has evaluated a new agent in electroencephalography, megimide, for its ability to bring out defects in brain function. The report of his findings were presented at the mid-winter meeting of the Eastern Association of Electroencephalographers.

C. Projected Studies - 1957-58:

It is anticipated that the work now in progress in the department will continue for the remainder of the year. The electroshock evaluation study will be completed this spring and the next few months will be spent in correlating the information obtained and writing the reports. As indicated in the ongoing progress notes, a number of developments have grown out of these studies and it is anticipated that these will be incorporated in the active research program.

1. Individual Differences in Behavioral Response: A protocol has been developed by Dr. Max Pollack, which incorporates the problem of personality affecting individual responsivity to electroshock. By determining the subject's patterns of perception in specially developed orientation and visual tasks, we hope to demonstrate a relationship between these patterns and the behavioral response, both under the special condition of altered brain function, and the general condition of hospitalization and psychotherapy. Such a study has bearing on the problems of the personality aspects of resistance to change

in behavior under stressful conditions (as in forceful indoctrination, isolation, starvation); as well as the definition of suitable candidates for various psychiatric therapies.

2. Personality Factors in Doctor and Patient Affecting Choice of Therapy: Our experiences with electroshock have led us to a number of hypotheses which relate personality factors in the patient and the therapist affecting the choice of treatment. We are in the process of developing our ideas into a workable hypothesis. We anticipate undertaking such a study by the end of the year.

D. Changes in Personnel:

Since the last report this section has been redesignated as the Department of Experimental Psychiatry. In addition to the personnel listed at the time of the last report, we have appointed, on a part time basis, Dr. Max Pollack, as research assistant in psychology. Dr. Pollack, who has his Ph.D. from New York University in 1955, has been a research psychologist at the Mount Sinai Hospital and the Ittleson Foundation for Child Research for the past six years. He is experienced in both personality and perceptual aspects in research. It is anticipated that he will be appointed on a full time basis on July 1st. A program to study the individual differences in behavior with specific emphasis on the perceptual and personality aspects has been developed by him and application has been made to various foundations for support.

Effective April 1st, there will be appointed to the Department, a Technical Assistant for linguistic analyses. Under the terms of the FFRP Grant (see Section E) funds were made available for a technical assistant to carry out the language measurements devised by Dr. Jaffe.

E. Funds:

The Foundations' Fund for Research in Psychiatry has granted Dr. Jaffe support for two years in the sum of $26,000 plus $5,700 overhead for continuation of the study "Language of the Dyad" which has been developed during the past year.

This work had been supported by the Kaufmann Foundation. The FFRP grant will extend from April 1st, 1957 until March 31st, 1959.

Applications have been made to the National Institute of Mental Health for support for the program of work undertaken by Dr. Green. Also, the protocol submitted by Dr. Pollack has been sent to the Research and Development Division of the Surgeon General's Office of the United States Army, and to the Malino Foundation.

F. Publications and Presentations:

In November, a summary of our studies on electroshock was presented at the Divisional Meeting of the American Psychiatric Association in Montreal in a report entitled "Relation of Tests of Altered Brain Function to Behavioral Change Following Electroshock". In December, Dr. Green presented the report "Electroencephalographic and Clinical Effects of Megimide" at the Eastern Association of Electroencephalographers. In February a summary of the electroencephalographic studies during the past two years was presented in a report entitled "Individual Differences in EEG Responsivity" before the Metropolitan EEG Society.

The Department has submitted a number of reports to various societies for the spring and summer meetings. Papers have been accepted for presentation at the Electroshock Research Association, the Society of Biological Psychiatry, the International Congress of Psychology and the International Congress for Psychiatry. In addition, we have been invited to participate in symposia at the American Psychiatric Association and International Congress for Psychiatry meetings. These reports will summarize in considerable detail the experiences of this Department over the past two and one half years, with specific regard to electroshock and to drugs. We will also have an opportunity to present the methods of language analysis devised by Dr. Jaffe, as well as presenting some of our speculations as to the role and mode of action of the newer drug therapies in psychiatry.

G. Education:

Various members of this Department are continuing their education by formal courses. Dr. H. Korin has been enroled in courses at the Graduate School of New York University with specific emphasis on statistics. Dr. J. Jaffe is completing the formal training requirements at the William Alanson White Institute of Psychoanalysis. Dr. Robert L. Kahn has been accepted for training in psychoanalysis at the William Alanson White Institute.

H. Other Activities:

1. Israel Strauss Volume: The Israel Strauss Volume appeared in November 1956. Members of this Department were active in the development and fulfillment of that volume.

2. Resident Training: Since September 1956, two residents have worked actively in the Department. Dr. H. Esecover has been studying the problem of psychotherapy with electroshock patients. In this study he has been supervised by members of the Department and a number of conclusions have been made. He has demonstrated that patients differ considerably during the electroshock process and that no single type of psychotherapy is meaningful. Certain supportive and interpretive approaches may have definite value. He is now in the process of describing his observations.

Dr. S. Friedman has contributed considerably to the ambivalence study. In this work he was supervised by Dr. Tarachow.

During the period September to February, members of the Department participated in a weekly lecture series for the resident staff on the subjects of research methodology and newer trends in psychiatry.

Respectfully submitted,

Max Fink, M.D.

MF:gw
Department of Experimental Psychiatry
Hillside Hospital
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March 1957

Personality Factors in Behavioral Response to Electroshock Therapy

Robert L. Kahn, Ph. D. and Max Fink, M. D.

From the Department of Experimental Psychiatry, Hillside Hospital, Glen Oaks, New York.

Aided by grant M-927 of the National Institute of Mental Health, National Institutes of Health, U.S. Public Health Service.

Presented to the Electroshock Research Association, Chicago, May 1957.

INTRODUCTION

The behavioral response of patients receiving electroshock therapy is variable. In previous studies of the factors related to this variability we noted that patients who showed early, persistent and relatively marked degrees of altered brain function, as measured by the electroencephalogram and the amobarbital test for brain disease (10), were most likely to show a clinical response which was rated as improved (4) (6) (7). The present study is an investigation of the role of personality in the behavioral response.

An explicit hypothesis concerning this relationship has been derived from previous studies of the patterns of behavioral change occurring with EST. In an analysis of language changes after electroshock (7), we reported that patients who develop such language patterns as explicit denial of illness; personal, spatial and temporal displacement of symptoms; and qualification, evasion and minimization are rated as improved. These language patterns are similar to those previously described by Weinstein and Kahn (13) in their studies of neurological patients with cerebral dysfunction. They characterized this behavior as the "language of denial" and demonstrated a relationship to personality. In particular they described the characteristics of the "explicit verbal denial" personality.(11) On the basis of these observations, the hypothesis was advanced that those patients who most closely approximated this "explicit verbal denial" personality type would be more likely to show the behavioral changes after EST which are rated as improved.

The purpose of the present study, therefore, was to determine:

1) whether personality characteristics related to the behavioral response to electroshock therapy can be differentiated; and

2) whether patients with greater "denial" tendencies are more likely to show behavioral changes after electroshock therapy which are rated as improved.

POPULATION

Sixty-three consecutive patients referred for electroshock therapy were studied. The selection of patients for treatment was made by the psychiatric staff, independent of the judgment of the authors. The patients ranged in age from 20 to 66 with a mean of 47, and included 21 men and 42 women.

METHOD

Prior to treatment each patient was evaluated according to the following methods:

1. Structured Family Interviews: Personality was evaluated in interviews with members of the patient's family. At the opening of the interview, the relative was asked to describe, in his own words, the patient's usual interests and attitudes. The relatives were encouraged to talk about any aspect they wished, and the interviewer followed the trend of their talk, rather than proceeding in a serial fashion. The interviewer asked questions, however, to obtain information in ~~the~~ 15 specific areas which have been described as characteristic of the "explicit verbal denial" personality. The number and type of questions required with EACH relative varied according to the degree of spontaneous production and the informant's capacity to comprehend and communicate. The informant was encouraged to give concrete examples of all statements.

The basic items included the presence and extent of each of the following features: 1) stress verbal symbols such as resolutions, homilies, clichés and rationalization; 2) are prestige and security conscious, and do not enjoy the intrinsic benefits of health, work, leisure, money and property; 3) regard illness as an imperfection or disgrace, keeping it a secret from ~~the~~ family and neighbors, and are reluctant to seek medical care; 4) "shake off" their own troubles and are considered practical persons who advise others; 5) have much drive and compulsive energy, and are guilty or uneasy if not occupied; 6) are conscientious with a high sense of duty and responsibility; 7) are sensitive

to criticism, regarding it as an attack on their integrity; 8) are proud and avoid help from others; 9) are reserved rather than openly affectionate or emotional; 10) emphasize being correct; 11) are not imaginative or creative; 12) are not seen as dependent by their relatives; 13) do not discuss sex openly; 14) do not have temper outbursts; 15) and are not ludic (25).

After the interview, each item was rated on a scale of 0, 1 or 2. A score of 0 was given if the aspect was noted to a minimal degree; a score of 1 indicated that the characteristic was moderately present; while a score of 2 indicated the definite and marked presence of the pattern. The scores for each item were added and the resultant score is termed the "denial personality score".

2. Clinical Evaluation: Each patient was interviewed prior to and at weekly intervals during and following the course of treatment. The clinical evaluation was determined by the patient's behavior in the few weeks following the end of the course of treatment and was based on the evaluation of the patient's therapist, the therapist's supervising psychiatrist and the supervising psychiatrist in charge of the electroshock treatment unit. Patients were classed into three groups: much improved, moderately improved, or unimproved, following the criteria outlined previously (6).

3. Language Study: In addition to the clinical interviews, each patient was examined with a standardized series of questions determining his attitude toward his illness. Two of the questions asked were, "What is your main trouble?" and "If you had one wish, what would you wish for?" The patients were tested before and during treatment and the verbatim responses were analyzed for changes in language according to the method previously described (7).

RESULTS

The relatives of 47 patients were interviewed. The denial personality scores ranged from 0 to 25, with a median of 11. For statistical comparison

the patients were divided into two groups. Patients with scores ranging from 11 to 25 were considered the "high denial" group, while those with scores from 0 to 10 were classed as low in denial tendencies.

1. Personality score and clinical response: Patients with high denial personality scores in these family interviews were most likely to be rated as much improved, and only one case was considered unimproved (Table I). In patients with low scores, however, the clinical response rating occurred on a chance basis, with 30% of the patients being regarded as unimproved.

TABLE I

Relation of Denial Personality Scores to Clinical Response to Electroshock

	Much Improved	Moderately Improved	Unimproved	Total
Personality Score				
11 - 25	14	9	1	24
0 - 10	7	9	7	23
Total	21	18	8	47

The difference in the denial scores between the much and moderately improved patients, when compared to the unimproved patients is statistically significant.* Although the much improved patients have a higher mean score than the moderately improved group, this difference is not significant.

2. Qualitative observations: Although there is a relationship between high denial personality scores and the clinical rating, 30% of patients with low denial scores were also evaluated as showing a marked improvement. While the group of seven patients is a small one, certain common characteristics can be described. Although these subjects lack the competitive drive, prestige and security needs of the high denial subjects, they show a similar lack of creative or imaginative capacity or ability to think critically of their own or other's

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* ~~Difference~~ Significant at 1% level of confidence by Mann-Whitney U Test.

feelings. They relate to the environment primarily by non-verbal forms of communication. They are described by their families as laughing or crying excessively; and as showing anger by muteness, "go into a shell," "walk out of the room in a huff," or by violent tempers with table-pounding, throwing objects or direct physical assault. These patients are "ludic," - a term used by Weinstein and Kahn (12) to denote comic, tragic, or melodramatic behavior.*

3. Personality score and changes in language: Applying the technic of language analysis described in a previous study (7), the changes in language in clinical interviews were compared with the denial personality scores. Nine patterns of language change, such as explicit denial of illness or symptoms, displacement, qualification, etc. have been described as characteristically occurring after electroshock. As in the previous study, each patient was classified according to the dichotomy of whether or not he showed three or more explicit language changes. Patients with high denial personality scores showed a greater number of language changes, than those with low denial personality scores (Table II). The coefficient of correlation between the personality scores and the number of language changes is + .71, significant at better than the 1% level of confidence.

TABLE II

Relation of Denial Personality Scores to Clinical Language Changes During Treatment

	Number Language Changes	
	0 - 2	3 or more
Personality Scores		
11 - 25 (20)	8	12
0 - 10 (20)	17	3
Total	25	15

* This term was taken from Piaget who applied it to the play and imitative behavior of young children (8).

4. Illustrative Cases:

Case 1. High Denial Personality Score:

A 61-year-old housewife was admitted to the hospital with a 15 month history of insomnia, abdominal pain and fear of cancer. On admission she was depressed, retarded, and seclusive, evincing little interest in her surroundings, and wandering aimlessly about the ward.

The patient was described by her husband as a conscientious, dependable, responsible person with much integrity. She had no hobbies, outside interests, and was unable to relax. As a consequence, she busied herself with chores at home. She was "mortally afraid" of doctors, minimized her illnesses and concealed ailments, even from her husband. Very restrained, she openly showed no affection or emotion, never discussed sex and rarely lost her temper. She had "a long memory for little things if she felt that she was wronged," a "streak of stubborness," and would "just as soon hold another person responsible for her mistakes." She was proud and would "rather go without food" than borrow or take money from others.

According to the denial criteria, her score was 20.

After 20 electroshock treatments, she became euphoric, took an interest in her personal appearance and participated in hospital activities. Her doctor called her a "model" patient who, "while reluctant to discuss her personal feelings, asserted that she had no difficulties at home, had a wonderful husband who was very good to her, considered herself lucky and eagerly anticipated her discharge." She was discharged with a rating of "much improved."

Case 2. Low Denial Personality Score:

A 41-year-old housewife was admitted to the hospital with a two year history of depression following the birth of her fourth child. She cried frequently, lost interest in social activities, found it increasingly difficult to take care of her baby and had suicidal thoughts. On admission the patient

was noted to pay little attention to her personal appearance, cried readily, showed psychomotor retardation and was circumstantial in speech.

The patient was described by her husband as a "negative personality" with whom it was not easy to get along because she was opinionated and argumentative. He regarded her as "completely impractical, with no common sense." She was a poor housekeeper, constantly demanding help from other people, although not the kind of person who would put herself out for others. An excessively talkative person, she liked to engage in long, intellectual, pretentious conversations. When angry, however, she would become either completely mute, or "very nasty, implying you just don't know any better." Although considered a "cold" person, she was able to talk freely about sex. She frequently complained of physical ailments and went to physicians readily. She was "naive" and "unrealistic," believing, for example, that she had a flair for writing although others considered her amateurish.

Her personality score was rated as 4.

The patient received eighteen electroshock treatments, which were terminated at her own insistence because she was too frightened to take any more. At the time of her discharge her doctor noted her as "quite depressed," but felt that it was doubtful that she could benefit from further treatment at the hospital. She was discharged with the recommendation for continued psychotherapy.

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DISCUSSION

The structured family interview was designed to test the specific hypothesis derived from earlier observations that patients with the "explicit verbal denial" personality are most likely to show both the language and behavioral changes to electroshock therapy which are rated as much improved by the examiner. The data supports this hypothesis and is also consistent with

the theory of the mode of action of electroshock therapy advanced by Weinstein, Linn and Kahn in 1952 (9). They suggest that "....the therapeutic efficacy of electroconvulsive therapy....derives from the production of a state of brain function in which the mechanism of denial is facilitated in characterologically disposed individuals."

The degree of explicit verbal denial is, however, only one personality aspect affecting the behavioral response to treatment. On the basis of the present data and methods of analysis a broader view of personality patterns in relation to improvement with EST is now possible. Those patients who are rated as clinically improved are characterized by such features as: 1) non-empathic - - unable to think critically or sensitively about the needs, feelings, or communications of others; 2) non-introspective - - unable to think critically about their own feelings or needs; unable to achieve insight even with the collaboration of others in a psychotherapeutic relationship; 3) rely heavily on non-verbal communication - - even when they are talkative there is little referential communication, the words being cliched, stereotyped, or representative of feelings and emotions rather than transmitters of information and 4) highly conventional - - without imaginative or creative capacity, and with few resources to deal with stressful or new situations.

With this pattern as the common background, two classes of patients who respond to treatment can be defined: a) the driving, conscientious, independent, successful, emotionally-controlled person who can be characterized as the "explicit verbal denial" personality type; b) the chronically inadequate, affectively labile and ludic, dependent person, ~~derived~~ coming from an impoverished sociocultural background. While both types are rated as improved in their short term response to electroshock, preliminary follow-up observations indicate that the "explicit verbal denial" personality type is more likely to sustain the clinical response, while the ludic group is likely to relapse quickly.

Consistent with our previous studies we have found that altered brain function is a necessary condition for behavioral change with electroshock therapy. The kinds of behavioral change shown with altered brain function, however, vary markedly in different patients. Some show mood changes and denial or displacement of symptoms and are rated as improved. Others develop paranoid agitated states, become withdrawn, or show additional somatic or memory complaints, and are rated as unimproved. In this study we have stressed the personality factors in those cases whose behavioral response was rated as improved. We have not considered the patients who were rated as only moderately improved or unimproved. If the basic hypothesis is correct, we should also find a relationship between personality and the behavioral response in patients who are rated as unimproved. Present information in this regard is minimal, as this problem has not been approached with a specific hypothesis.

These observations raise questions concerning the relation of personality to type of mental illness and choice of therapy. Clinical observations support the concept of a characteristic predepressed personality. Abraham (1) noted that states of depression occurred in obsessional persons. Arnot (2) describes depressions as being overly conscientious and perfectionistic. Hamilton and Mann (5), reporting various aspects of the personality in involutional depression, include such features as "followed a rigid pattern of behavior....displayed a lack of imagination....narrow range of interests....thorough, conscientious, meticulous devotion to duty....lack of feeling for point of view of others....hard, uncompromising drivers....oversensitive....reserved." Cohen, et al (3) in an intensive study of manic-depressive psychosis, reported their patients as being highly prestige-conscious; little concerned with problems of interpersonal relatedness; stereotyped; conventional; having little capacity for communicative interchange; and unaware of other persons' feelings toward

himself or of his feelings toward others. They emphasized the patients' inability to communicate verbally and suggested that the therapeutic relationship should be in non-verbal terms rather than emphasizing the intellectual contents of the exchange.

These studies of the personality background of depression show a pattern that is most similar to those personality aspects which have been described as the "explicit verbal denial" personality. The factor of personality could thus explain the fact that depression is the condition which responds best to electro-shock treatment. The same personality factors which make a person susceptible to a depressive reaction are those which make him responsive to non-verbal forms of therapy. These factors enable him to respond, under the conditions of altered brain function, with those language and other behavioral changes which are evaluated as improved. Thus, the same stereotypy, conventionality, perfectionism, and prestige-consciousness, which produce a catastrophic response in the individual faced by the loss of a partner, job, business, or loved one permit the development of denial, minimization and displacement under the conditions of altered brain function and are deemed "improved" by the family and the therapist.

SUMMARY AND CONCLUSIONS

1. Personality factors in 63 consecutive patients referred for electroshock therapy were studied by means of a structured family interview.

2. The results show that aspects of personality can be differentiated which are significantly related to the response to treatment.

3. The basic personality pattern of the patients who respond best can be characterized as a) non-empathic, b) non-introspective, c) communicate non-verbally, and d) highly conventional and stereotyped, with little imaginative or creative capacity.

4. Within the context of this common core, there are two main subdivisions of improved patients. One group is comparable to the "explicit verbal denial" personality, showing such features as drive, conscientiousness, independence and emotional control. The other group consists of persons apt to be chronically inadequate and dependent, coming from deprived socio-cultural backgrounds, who are affectively labile and ludic.

5. The relationship between these personality patterns and descriptions of the personality of depressed persons is noted. The same personality factors which contribute to a depressive reaction, contribute to a behavioral change under the conditions of altered brain function following electroshock therapy which is evaluated as improvement.

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April 1, 1957.

MEMORANDUM

TO: Medical Affairs Committee

FOR: Dr. Joseph S. A. Miller

FROM: Department of Experimental Psychiatry

SUBJECT: Report of Departmental Activities, September 1956 to April 1, 1957.

The following report of the activities of the Department of Experimental Psychiatry is submitted at the request of Dr. Miller, covering the period since September 1956.

A. Progress in Ongoing Projects:

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Under the conditions of altered brain function, however, patients respond in various ways. In some patients, the improvement that follows electroshock is sustained, while in others, it rapidly disappears. It was our opinion that the patient's personality was the instrumental determinant in these observations. For this reason we have studied intensively the personality of the patients in this last group. By applying specially developed interview tests, standard psychological tests, and modifying a number of questionnaire tests, we have determined a number of the relationships between personality and type of behavioral response. At the present time, we are predicting the behavioral response of the patients to electroshock therapy, and our predictions during the past few months have been significantly better than chance. As a result of these observations, we are planning to extend our study to include personality factors in psychotherapy results (see Section C).

Our second interest in this group of patients has been the perceptual changes induced by electroshock. By virtue of a control group, we have been able to determine those perceptual changes which are related to the treatment and those which are related to practice effects. In these observations, we have been impressed by the close interrelation of the personality of the patients and their perceptual processes. The interrelation of these two aspects of behavior is so close, that we have decided to undertake a study of individual differences in perception and hope to relate such differences to eventual behavior under the special conditions of altered brain function (see Section C).

Our studies have led us to develop a concept of electroshock therapy which has been of significant help in the management of this treatment unit. Electroshock is a non-specific treatment. It induces changes in brain function which persist for varying lengths of time, usually less than two months. Under these conditions, the patient responds to his environment in different ways depending upon his personality. With a certain personality, he relates better to his

family, his therapist, and to other patients. The better that he relates to other people, the less reason is there for him to become tense, anxious or depressed. Once the feeling of well-being is set into motion, it is sustained by the patient's better ability to function with others. Electroshock therapy is not a specific treatment for a specific form of mental illness.

2. Biochemical Changes in Electroshock: In the course of these studies of electroshock, we noted that other investigators had reported that there were specific changes in enzymes in the spinal fluid after trauma, and one report noted similar changes after electroshock. Dr. Goldenberg and I undertook a study of these enzymes in order to verify the previous reports and to clarify our own picture of the electroshock process. To date, we have collected 30 spinal fluids. I anticipate that this phase of the work will continue until the end of 1957.

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Concurrently, Dr. Green has assessed the relationship between the electroshock seizure threshhold and cranial resistance as factors influencing the development of electroencephalographic abnormality. This study is in progress.

5. Ambivalence: This study, under the direction of Dr. Sidney Tarachow, has continued and the observations have been presented before the New York Neurological Society in January. The observations have been summarized in a report which will appear shortly in the A.M.A. Archives of Neurology and Psychiatry.

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Insulin Coma Control Study: An interim report on the results of this control study was submitted to the Research Committee of the Medical Board on January 31, 1957. In this study, 59 patients referred for insulin coma were divided into two groups - one-half receiving insulin coma and the other half receiving chlorpromazine therapy. It was our conclusion that chlorpromazine is as effective in modifying psychotic behavior patterns as insulin coma therapy. There was a tendency for the discharge ratings to be better for the chlorpromazine group than for the insulin coma group. We concluded that, in comparison to insulin coma therapy, chlorpromazine was safer, easier to administer, more controllable in its effects, and had fewer side effects. We also concluded that no evidence had appeared in the fifteen months of the study that either therapy had altered the basic schizophrenic process, nor did we feel that either form of therapy had a greater specificity for schizophrenic illnesses. At the conclusion of the study, the Medical Director placed chlorpromazine in the formulary and permitted its use by the Resident staff.

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It is anticipated that the work now in progress in the Department will continue for the remainder of the year. The electroshock evaluation study will be completed this Spring and the next few months will be spent in correlating the information obtained and writing the reports. As indicated in the ongoing progress notes, a number of developments have grown out of these studies and it is anticipated that these will be incorporated in the active research program.

1. Individual Differences in Behavioral Response: A protocol has been developed by Dr. Max Pollack, which incorporates the problem of personality affecting individual responsivity to electroshock. By determining the subject's patterns of perception in specially developed orientation and visual tasks, we hope to demonstrate a relationship between these patterns and the behavioral response, both under the special condition of altered brain function, and the general condition of hospitalization and psychotherapy. Such a study has bearing on the problems of the personality aspects of resistance to change in behavior under stressful conditions (as in forceful indoctrination, isolation, starvation); as well as the definition of suitable candidates for various psychiatric therapies.

2. Personality Factors in Doctor and Patient Affecting Choice of Therapy: Our experiences with electroshock have led us to a number of hypotheses which relate personality factors in the patient and the therapist affecting the choice of treatment. We are in the process of developing our ideas into a workable hypothesis. We anticipate undertaking such a study by the end of the year.

D. Changes in Personnel:

Since the last report, this section has been redesignated as the Department of Experimental Psychiatry. In addition to the personnel listed at the time of the last report, we have appointed, on a part-time basis, Dr. Max Pollack, as Research Assistant in Psychology. Dr. Pollack, who has his Ph.D. from New York University in 1955, has been a research psychologist at the Mount Sinai Hospital and the Ittleson Foundation for Child Research for the past six years. He is experienced in both personality and perceptual aspects in research. It is anticipated that he will be appointed on a full-time basis on July 1st. A program to study the individual differences in behavior with specific emphasis on the perceptual and personality aspects has been developed by him and application has been made to various foundations for support.

Effective April 1st, there will be appointed to the Department, a Technical Assistant for linguistic analyses. Under the terms of the FFRP Grant (see Section E) funds were made available for a technical assistant to carry out the language measurements devised by Dr. Jaffe.

E. Funds:

The Foundations' Fund for Research in Psychiatry has granted Dr. Jaffe support for two years in the sum of $26,000 plus $5,700 overhead for continuation of the study "Language of the Dyad" which has been developed during the past year. This work had been supported by the Kaufmann Foundation. The FFRP grant will extend from April 1, 1957 to March 31, 1959.

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The Department has submitted a number of reports to various societies for the Spring and Summer meetings. Papers have been accepted for presentation at the Electroshock Research Association, the Society of Biological Psychiatry, the International Congress of Psychology and the International Congress for Psychiatry. In addition, we have been invited to participate in symposia at the American Psychiatric Association and International Congress for Psychiatry meetings. These reports will summarize in considerable detail the experiences of this Department over the past two and one-half years, with specific regard to electroshock and to drugs. We will also have an opportunity to present the methods of language analysis devised by Dr. Jaffe, as well as presenting some of our speculations as to the role and mode of action of the newer drug therapies in psychiatry.

G. Education:

Various members of this Department are continuing their education by formal courses. Dr. H. Korin has been enrolled in courses at the Graduate School of New York University with specific emphasis on statistics. Dr. J. Jaffe is completing the formal training requirements at the William Alanson White Institute of Psychoanalysis. Dr. Robert L. Kahn has been accepted for training in psychoanalysis at the William Alanson White Institute.

H. Other Activities:

1. Israel Strauss Volume: The Israel Strauss Volume appeared in November 1956. Members of this Department were active in the development and fulfillment of that volume.

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Dr. S. Friedman has contributed considerably to the ambivalence study. In this work he was supervised by Dr. Tarachow.

During the period September to February, members of the Department participated in a weekly lecture series for the Resident staff on the subjects of research methodology and newer trends in psychiatry.

Respectfully submitted,

Max Fink, M.D.

MF:gw
Department of Experimental Psychiatry
Hillside Hospital
Glen Oaks, New York

HILLSIDE HOSPITAL

FOR PSYCHIATRIC TREATMENT, TRAINING AND RESEARCH

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April 2, 1957.

Dear Sir:

As a basis for the discussion of the research activities at the meeting of the Medical Affairs Committee on Monday, April 8th, I am herewith enclosing the following memoranda:

1. Report of Dr. Fink for the Department of Experimental Psychiatry.

2. Research activities in the Department of Biochemistry, by Dr. Harry Goldenberg.

3. Research in the Department of Medicine, by Dr. Arnold G. Blumberg

Aside from the regular Medical Board members of the Medical Affairs Committee, there will also be present Dr. H. L. Rachlin, Chairman of the Research Committee of the Medical Board and Dr. Max Fink, Director of the Department of Experimental Psychiatry.

Yours sincerely,

Joseph S. A. Miller, M.D.

Joseph S.A.Miller, M.D.
Medical Director

JSAM:lb
encl.

April 1, 1957.

MEMORANDUM

TO: Medical Affairs Committee

FOR: Dr. Joseph S. A. Miller

FROM: Department of Experimental Psychiatry

SUBJECT: Report of Departmental Activities, September 1956 to April 1, 1957.

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Respectfully submitted,

Max Fink, M.D.

MF:gw
Department of Experimental Psychiatry
Hillside Hospital
Glen Oaks, New York

April 1, 1957

TO: Medical Affairs Committee

For: Dr. Joseph S.A.Miller

From: Department of Biochemistry

Subject: Report of Departmental Activities, July 1956 to March 31, 1957.

Steroid Studies

Studies were continued on the steroid hormones because of their importance in the physiological response to stress. Experiments with rats showed that the liver converts neutral and sex hormones to their sulfate conjugates which are subsequently voided in the urine. Female rat liver was far more active than male preparations in conjugating the steroids, particularly the male hormones. These findings indicate that the liver plays a major role in the maintaining hormonal balance, females being endowed with a regulatory device to dispose of excess male hormones produced in their bodies.

Urinary steroid sulfate excretion studies on human subjects were carried out with our newly developed complexation and chromatographic techniques. The total sulfate output was found to be related to both sex and age. Interesting results were obtained with urine from schizophrenics, the level of one fraction (dehydroepiandrosterone sulfate) being elevated in a number of cases.

Drugs and Alkaloids

New colorimetric, chromatographic and electrophoretic techniques were established for both the psychotomimetic and psychotherapeutic drugs. These were recently presented at the American Chemical Society Meeting (Brooklyn, February 15, 1957). The findings are now being applied to determining the role of trace urinary alkaloids in schizophrenia.

Our earlier chlorpromazine studies, which were dropped for lack of suitable instrumentation, are again under way with financial help from the National Institutes of Health. The subject is of very great interest because it throws much light on liver function (microsome action) which cannot be gained from the gross liver function tests in current use. We find the chlorpromazine molecule is in many ways an ideal tracer, superior in some ways to isotopes. The information gleaned from this study would also throw light on the Akerfeldt "six-minute blood test for schizophrenia" and should help us to decide whether schizophrenics suffer from a defect in oxidative metabolism leading to the in vivo production of hallucinogens.

Cholinesterase Levels in Electroshock Therapy.

Earlier investigations by Tower and others have indicated demonstrable changes in acetylcholine, acetylcholinesterase, and pseudocholinesterase in spinal fluid following electroshock therapy as well as other forms of head trauma. Accordingly, Dr. Fink and associates have undertaken to correlate EEG patterns of patients before, during and after EST with concurrent alterations in cholinesterase values of spinal fluid. Simultaneous serum cholinesterase determinations on these patients are also being carried out, and we plan to extend these studies to red blood cell (true)cholinesterase. The specific enzyme methods in use were developed at Hillside Hospital and have recently been presented at the American Chemical Society Meeting in Brooklyn. Further reference is made to Dr. Fink's progress report for findings to date.

Future plans: More of the same.

Harry Goldenberg, Ph.D.

April 1, 1957.

TO: Medical Affairs Committee

For: Dr. Joseph S.A.Miller

From: Department of Medicine

Subject: Report of Departmental Activities, July 1956 to March 31, 1957.

1. Mecholyl Test: An analysis of the response of psychiatric patients to injections of mecholyl subcutaneously has revealed a striking correlation between response and age, diagnosis and response to electroshock therapy.

2. Preliminary studies of an automatic blood pressure recording machine have been carried out to evaluate the accuracy and practicability of this machine for further work on the mecholyl test. As a result of these studies, it now seems likely that this machine can be used usefully to evaluate the reproducibility of the mecholyl test.

3. Drug evaluation studies on meprobamate are being carried out.

4. Chemical studies with the laboratory department are being conducted on possible hepato-toxic effects of chlorpromazine in our patients.

Proposed Research for the coming year:

1. Evaluation of meprobamate in psychiatric patients. (to be completed within three months).

2. Evaluation of reproducibility of mecholyl test employing a recording sphygmomamometer.

3. Evaluation of protein alterations with chlorpromazine therapy by chromatographic techniques.

4. Evaluation of a substitute for chlorpromazine. This will be either Sparine or Trilafon.

Arnold Blumberg, M.D.

LB

HILLSIDE HOSPITAL

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A Proposed Study for the Behavioral Assay of New Drugs

Max Fink M.D.

From the Department of Experimental Psychiatry

October 30, 1957.

A Proposed Study for the Behavioral Assay of New Drugs

Max Fink M.D. *

1. Problem:

While there is little disagreement that the newer psychopharmacological agents alter behavior, the mode of action of these drugs and factors in the marked individual variability in response are unresolved problems. Difficulty in resolving these problems lies, in part, in the lack of a theoretic framework subject to operational analysis and experimentation. Particularly perplexing is the assay of new, i.e., clinically untested agents capable of altering behavior. Many present studies are difficult to assess because the reports are subjective; the population poorly defined; and nosologic classifications are unsatisfactory.

Based on our previous studies, we have expressed the hypothesis that the efficacy of psychopharmacological agents in psychotic states is related to their ability to induce persistent measurable changes in cerebral function (1). Such alteration in cerebral function provides the milieu for changes in adaptation of the patient in his environment. In this view, alterations in cerebral function following drug administration are not "complications," or "untoward effects," but the sine qua non of the mode of action of these therapies. Changes in cerebral physiology are a necessary, but not a sufficient condition for improvement.

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* Director, Department of Experimental Psychiatry, Hillside Hospital, Glen Oaks, N.Y.

This hypothesis is a direct outgrowth of four years of experimental investigations of electroconvulsive, insulin coma and various drug therapies in use at Hillside Hospital. These studies are summarized in the appended report (1).

We have used a wide variety of measures of brain function (2, 3, 4, 10, 12). Most successful have been changes in the frequency spectrum of the EEG, patterns of language and perceptual tasks. In our experiences with electroshock, slowing of EEG frequencies has been most helpful (2). In drug studies, however, this is less prominent, although fundamental. Language and perceptual tests, however, have given us clues as to ways of measuring brain changes, more subtle than present electroencephalographic techniques.

It is the purpose of this study to compare various psychopharmacologic agents according to their effects on the EEG, on language patterns and on perceptual tasks. The study is specifically designed to test the following:

(a) Can the extent of behavioral change in psychopharmacologic agents be related to the degree of EEG spectrum changes?

(b) To what extent can visual discrimination tests, and measures of changes in language be refined to provide reliable, predictable measures of changes in clinical behavior?

(c) To what extent can such measures predict the clinical usefulness of psychopharmacologic agents?

II. Method:

1. Subjects:

All subjects are drawn from the adult in-patient service of the Hillside Hospital. In general, these patients are alert, cooperative, well educated and intelligent. All are ambulatory and in good physical health.

2. Procedure:

Two methods of drug assay are in progress.

(a) Acute Experiments:

In the laboratory setting, with simultaneous EEG and language recording in process, single intravenous or oral doses of drugs are administered. Patients are under constant observation for the period of drug activity.

(b) Clinical Experiments:

Patients are referred by their therapist to the supervising psychiatrist for treatment with psychopharmacologic agents. Prior to drug administration, EEG and language recording interviews are held. Perceptual tasks are completed. Drug administration then proceeds at a rapid increment until toxicity is manifest, and drug dosage reduced to a maintenance dose. Testing is repeated, and behavioral observations made, at frequent, defined intervals.

As in previous studies, subjects are randomly divided into two groups - an experimental and a control. The experimental group receives the medication, the control group placebo medication.

3. Measurements:

(a) EEG.

Recording with an 8 channel Medcraft instrument is in progress. Records have been visually analyzed for changes in frequency, voltage, symmetry and rhythmicity (2). Activation by hyperventilation is routine. The validity of other activating procedures as intravenous megimide (6), hypoglycemia and photic stimulation is being assessed.

(b) Perceptual.

Within the past decade certain perceptual procedures have been shown to be sensitive measures of cerebral dysfunction (11, 12, 13). Such techniques as critical flicker fusion (CFF), and the tachistoscopic recognition of polychromatic figures "embedded" in a complex visual background are being assessed (10, 12, 13). These measures have the advantage of giving a reliable quantitative measure of pretreatment functioning in terms of a continuous variable, rather than the qualitative dichotomy of "normal" versus "abnormal;" imposing no undue stress on the patient; and the apparatus and procedure are simple, convenient and relatively inexpensive.

1) Critical flicker fusion (CFF): As the rate of flicker of light is increased, there develops the illusion that the light is steady. The frequency of the flickering light at this point is the CFF. The CFF threshold is measured using a Sylvania glow tube pulsed by an electronic power supply. The light-dark ratio is fixed, and brightness is varied to obtain thresholds at different

levels. The psychophysical method of limits using ascending and descending steps is employed.

2) Tachistoscopic recognition of pseudoisochromatic figures:

The H-R-R pseudoisochromatic plates (American Optical Company) consisting of a series of cards with numerous small circles of various sizes are used. The circles vary in color, and form outlines of various geometric patterns, as ring, cross and triangle. These patterns form a "figure" on a constant background. The initial "neutral" plates are recognized by all subjects - normal and "color-blind." These plates have been photographed and mounted as 2" x 2" projection slides. The speed of exposure which permits accurate identification of the figure is the index used.

(c) Language.

Interviews with patients are recorded. Both unstructured and structured periods are included. The records are analyzed for changes in syntax (9), and for diversity (7) of the dyadic speech. These methods have been found useful in analysis of changes in behavior with other therapies.

(d) Evaluation of clinical changes.

Psychiatric evaluations are made at fixed intervals as to type and degree of changes in behavior, and a rating of "improvement" is made. The methods of rating both change in behavior and in "improvement" are now under study. Present ratings have been based on the Malamud-Sands Rating Scales and have been of limited usefulness. The present descriptive statements of the evaluator,

following an outline of specific areas of behavior combined with a review of the nurses' and resident therapist's notes is being continued.

4. Pharmacologic Agents:

Previous experience with amobarbital (8), megimide (6), reserpine (14) and chlorpromazine (5) provides the background for the selection of new agents. At present, acute study of diethazine (SKF 1026-A) is in progress. Clinical studies of meprobamate, perphenazine and chlorpromazine are under investigation. Plans have been formulated to test other agents, with different EEG spectral response.

III. Facilities Available:

The Department of Experimental Psychiatry was established at the Hillside Hospital in 1954. Members of the department have no clinical duties. They devote their full time at the institution to the research programs.

Eight rooms of laboratories and offices in the principle medical building of the hospital are provided. These include:

a) EEG Laboratory - equipped with Medcraft 8 channel Electro-encephalograph and Grass photic-stimulator. A technician is employed on a full-time research basis.

b) Psychophysical Laboratory - Two Grass stimulators, Dumont oscilloscope and step-up transformer power supply in a rack-mounted assembly. This equipment has been used for the past three years to study threshold for simultaneous tactile stimuli of patients before and after induced states of altered cerebral function.

A tachistoscopic assembly consisting of two projectors, solenoid-activated shutters, and opal glass screen is in use.

c) Psycholinguistic Laboratory: A third laboratory has been established for the recording of interviews. It is equipped with a Magnecord tape recorder, two Electrovoice microphones, and mixer. Two auxilliary recorders for transcription are available.

All patients in the hospital are available for study. The research programs have been well integrated into the hospital milieu so that manipulation of experimental variables are readily accomplished.

IV. Publications and Reports:

1. Fink, M. : A Unified Theory of the Action of Physiodynamic Therapies, J. Hillside Hosp. (in press).

2. _____ and Kahn, R.L.: Relation of EEG Delta Activity to Behavioral Response in Electroshock: Quantitative Serial Studies, A.M.A. Arch. Neurol. and Psychiat. (in press).

3. _____, _____, and Korin, H.: Effects of Diffuse Altered Brain Function in Perception. Read at XV Int'l Congress of Psychology, Brussels, 1957.

4. _____, _____, _____: Relation of Tests of Altered Brain Function to Behavioral Change Following Electroshock. Read at the A.P.A. Divisional Meeting, Montreal, November, 1956.

5. _____, Shaw, R., Gross, G., and Coleman, F.S.: Comparative Study of Chlorpromazine and Insulin Coma in the Therapy of Psychosis, J. Amer. Med. Assoc. (in press).

6. Green, M.A. and Fink, M.: EEG and Clinical Effects of Megimide, EEG. Clin. Neurophysiol., 9: 180-181, 1957.

7. Jaffe, J.: An Objective Study of Communication in Psychiatric Interviews, J. Hillside Hosp. (in press).

8. Kahn, R.L., Fink, M. and Weinstein, E.A.: Relation of Amobarbital Test to Clinical Improvement in Electroshock, A.M.A. Arch. Neurol. & Psychiat. 76: 23-29, 1956.

9. _____, _____: Changes in Language During Electroshock Therapy, in Psychopathology of Communication, Grune and Stratton (in press).

10. _____, _____: Perception of Embedded Figures After Induced Altered Brain Function, Am. Psychol., 12: 361 (Abst.) 1957.

11. Pollack, M.: Effects of Visual, Vestibular and Somatosensorimotor Deficit on Autokinetic Perception, J. Exp. Psychol., 52: 398-410, 1956 (with Battersby, W.S., Kahn, R.L. and Bender, M.B.)

12. Pollack, M.: Tachistoscopic Identification of Contour in Patients with Brain Damage, J. Comp. Physiol. Psychol., 50: 220-227, 1957, (with Battersby, W.S. and Bender, M.B.)

13. _____: Visual Deficit After Brain Damage in Man as Measured with Rapidly Exposed Chematic Stimuli, Amer. Psychol., 12: 468, (Abst.) (with Battersby, W.S. and Bender, M.B.).

14. Wachspress, M., Blumberg, A.G., Fink, M. and Miller, J.S.A.: Evaluation of High Dose Reserpine Therapy for Relief of Anxiety, J. Hillside Hosp. 5: 67-77, 1956.

V. Financial Support:

Support for the ongoing programs of the Department of Experimental Psychiatry is provided by U.S. Public Health M-927, (Altered Brain Function Following Electroshock), the Foundations' Fund for Research in Psychiatry grant 56-151 (Language of the Dyad), and the Board of Directors' Research Fund. The proper development of the specific aspects of this protocol require support for the following, for a two year period.

		1958	1959
Dr. M. Pollack, Ph.D. Senior Research Asst. Psychology		$ 8,250	$ 8,750
EEG Technician - Mrs. Hannah Mosquera		3,720	3,840
Equipment: (Over 2 year period).			
EEG Analyzer (Edin)	(4,000)	2,000	2,000
Flicker Fusion Apparatus	(800)	400	400
Projector, Slides	(100)	50	50
Calculator	(880)	440	440
Travel:			
(Amer. Psychol. Assoc.) (Amer. Psychiatric Assoc.)		200	300
		$ 15,060	$ 15,480
Overhead (15%)		2,264	2,327
TOTAL		$ 17,324	$ 17,807

HILLSIDE HOSPITAL
Glen Oaks, N.Y.

January 27, 1958.

MEMORANDUM TO: Medical Affairs Committee

FOR: Joseph S. A. Miller, M.D.

FROM: Department of Experimental Psychiatry

SUBJECT: Report of Activities, April 1, 1957 to January 1, 1958.

I. INTRODUCTION:

In the past nine months, the work of the Department has achieved professional recognition. We have presented reports reflecting our understanding of various physiodynamic therapies before national and international societies, and these have been well received. Five aspects of our work were presented in the October issue of the Journal and other reports have been accepted by leading psychiatric journals and will appear in 1958-59.

Our studies have given us a clear picture of the mode of action of convulsive and insulin coma therapies. This information has given us confidence to extend the hypotheses and techniques which were fruitful in these therapies to drug therapy. We have expressed our ideas in protocols concerning a behavioral assay of new drugs. These ideas, having been well received both by the Psychopharmacology Research Center of the U.S.P.H.S. and various pharmaceutical companies, have been implemented in the new studies for 1958.

In evaluating electroshock therapy, we were led to a number of ancillary investigations which have broad, basic significance for psychiatry. The value of language measures as indices of behavioral change were assessed and found satisfactory. The problem of defining "improvement" was studied. While a satisfactory resolution was not accomplished, an operational approach has been defined which was successful in our recent studies. Also, the criteria which determine patient referral for the various therapies at Hillside has led to an evaluation of the sociologic and psychologic factors affecting choice of therapy.

In addition, the ability of this department personnel to work together has been amply demonstrated. Our roles and relationships in the hospital have been defined and we have received excellent cooperation from all staffs at the hospital.

II. PROGRESS IN ONGOING PROJECTS:

(A) Therapy Evaluations:

1. Electroshock.

Our studies have defined the process of electroshock therapy. We have related the behavioral response to the induced changes in brain physiology; described personality and sociologic factors that affect the type of behavioral response; and defined the relationship between behavioral response and clinical ratings of improvement. These studies permit us to relate the various types of convulsive therapy as drug (metrazol, PM 1090), electroshock and its varieties, and lately, inhalant (Indoklon), into a meaningful concept of "convulsive therapies".

Based on these studies, reasonable criteria for the type of patient who will "do well" with convulsive therapy can be defined. Continuing studies in this area are designed to amplify the role of personality in the behavioral response; to define the differences between out-patient non-electroshock referrals and in-patient populations (IIIc) and an evaluation of inhalant convulsive therapy (IIIa).

2. Drug Therapy.

Following the conclusion of our insulin coma-chlorpromazine control study, our report was accepted by the J.A.M.A. and will appear in early 1958. During the past six months, we have developed a program for the experimental evaluation of new psychopharmacological agents (see IIIb), which was begun January 1, 1958.

3. Selection of therapies:

While the selection of therapy is generally based on the type of mental disorder, other factors affect such decisions. Such aspects as the facility of the patient to communicate verbally, his education and cultural background, and the degree of "authoritarianism" have been studied, and we have reported that such historical and psychologic aspects bear a significant relationship to the choice of therapy or referral for ancillary services. These studies have led to an interest in the role of these factors in the results of therapy, and we have designed a study to further evaluate the role of socio-psychologic factors in results of inpatient and outpatient therapy (see IIIc).

(B) Language as measurable behavior:

The definition of "improvement "in psychiatry is a complex one. In evaluation of various therapies, the definition of behavioral change and improvement is crucial. While clinical descriptions are adequate, we have sought for more objective guides in the language behaviør of our patients. Two methods of analyses have been developed - a syntactic analysis of structured interviews and a dyadic of unstructured.

We have described the changes induced by convulsive and non-convulsive therapy, and find that changes in these language patterns do reflect clinical evaluation. Our experiences have led to the application of these techniques to the drug evaluation studies.

In addition, other analyses of language are in progress in an effort to broaden the applicability of the present methods.

(C) Neurophysiology of Behavior:

In the electroshock studies we noted the relationship between the degree of neurophysiologic change and the behavioral response. We concluded that a change in cerebral physiology was essential to a change in behavior and to "improvement". We had come to the same conclusion for insulin coma therapy. Since we had observed a similarity between the treatment response in chlorpromazine therapy and insulin coma, it seemed plausible that the same mode of action was operative for the newer tranquilizing drugs.

A review of the literature and some preliminary experiments supported this hypothesis - that the newer psychopharmacologic agents are potent to the extent that they measurably and predictably affect brain function. We have expressed this hypothesis at the International Congress of Psychiatry and in the Journal of the Hillside Hospital. As a result, we have undertaken a new project evaluating various drugs therapies (see IIIb).

Concomitantly, our interest has continued in the biochemistry of convulsive therapy. We have observed that diethazine, a potent anticholinergic drug, reverses the electroshock effect. Further analysis has demonstrated a marked similarity between LSD-25 and mescaline to diethazine. These observations confirm the significance of the cholinesterase-acetylcholine system as a basic mechanism for psychotic behavior - the type of psychotic behavior which may be affected by convulsive therapy.

(D) Perception:

Our studies of perceptual tests as an index of behavioral change have continued. We have defined the relationship between the degree of perceptual alteration and the degree of altered brain function. Our studies have demonstrated the significance of personality type not only in the perceptual response, but also in the physiologic response, to convulsive therapy.

Our studies of tactile perception clarified the role of strength of stimulus and of the type of instructions (set) in the reported responses.

(E) Individual Differences in Behavioral Responses:

The program of study of the ways in which individual differences in perception, personality and physiology affect the response of subjects to various psychiatric therapies is well under way. Dr. Green's studies of neurophysiologic differences affecting the EEG response to electroshock, and Dr. Pollack's emphasis on perceptual aspects as they relate to drug therapies are both in the phase of collecting data in consecutive groups of subjects.

III. New Projects - Program 1958

(A) Inhalant Convulsive Therapy:

In the studies of electroshock, we have been puzzled by the significance of the electric current in the treatment response. In the convulsive-subconvulsive control study, the significance of the seizure for the treatment response was affirmed, but the role of current was not clear. Recently, an inhalant compound, similar to the ethyl ether of anesthesia, was described as a safe, simple convulsant. We visited the laboratory at Spring Grove State Hospital, Maryland, and observed the treatment. It was reliable, quick and easy for the patient. We have obtained a supply of this compound and are undertaking a study on February 1st, of the clinical, neurophysiologic, psychologic and biochemical effects of convulsive therapy using this compound.

(B) Mode of Action of Psychophammacologic Agents:

Our experiances with other forms of therapy have led us to formulate a hypothesis (see IIc) regarding psychopharmacologic agents. In essence, the degree to which drugs affect behavior is related to the degree and kind of effect they have on brain function, measurable in part, by the EEG. For this purpose,we have written a protocol and obtained support for special equipment and personnel from the U.S.P.H.S. and various pharmaceutical concerns.

In these studies, patients referred for drug therapies, as chlorpromazine, promazine, reserpine, meprobamate, etc., undergo special tests before and during treatment, which may predict and reflect the treatment response.

(C) Psychologic and Sociologic Factors in Out Patient Therapy;

As a result of our studies in inpatients defining certain psychologic and sociologic factors as they affect treatment choice and treatment response, we have made predictions regarding the outpatient population. We are planning to undertake a sociologic study of outpatients, and extend our inpatient studies this Spring.

IV. PRESENTATIONS AND PUBLICATIONS:

(A) Experimental Psychiatry Issue, Journal of Hillside Hospital:

At Dr. Tarachow's invitation, members of this Department wrote five articles reflecting various aspects of our study program for the October 1957 issue of the Journal. This encompassed the whole issue. Such an effort is unique in the Journal's history.

(B) Publications:

In addition to these five articles, our report on the relation between EEG changes and treatment response in electroshock appeared in the Archives of Neurology and Psychiatry. Seven other reports have been accepted for publication and two others are in the hands of editors as of January 1st.

(C) Presentations:

Reports of our studies have been presented to psyc iatric, neurologic and psychologic societies. Twelve reports were made before National societies in the U.S. and three before International Congresses in Brussels and Zurich during the summer. These reports have been generally well received.

V. PERSONNEL:

No changes in personnel have been made. We have requested, and the Research Committee and Medical Director have approved, a restatement of the titles for staff members from "Research Assistant" and "Senior Research Assistant" to "Research Associate". The present staff consists of nine members including:

Martin A. Green, M.D.	- Research Associate	(Neurophysiology)
Joseph Jaffe, M.D.	- " "	(Psychiatry)
Robert L. Kahn, Ph.D.	- " "	(Experimental Psychology)
Hyman Korin, Ph.D.	- " "	(Experimental Psychology)
Max Pollack, Ph.D.	- " "	(Experimental Psychology)

and four technical assistants: Mrs. Hannah Mosquera (EEG), Mrs. Jean Kolodny and Mrs. Ann Horowitz(Psycholinguistics) and Mrs. Janet Bowie (Secretary).

VI. TENTATIVE BUDGET PROJECTION, 1958-59.

(A) Personnel:

In addition to the personnel listed above, we will request the addition of a Research Associate in Social Psychology; and a redesignation of the half-time neurophysiologist to a full-time status. These items will increase the budget by $9500 above authorized annual increments for ongoing personnel.

(B) Supplies, Equipment and Travel:

There will be an increase of $1000 in supplies and travel and a specific equipment expense of $5200 for an EEG Analyzer. This instrument will provide greater flexibility in EEG analysis. A supplementary request for this amount has been asked of the U.S.P.H.S.

(C) Total Expenses:

The total expenses for 1958-59 will be $95,796. as against $78,812 for 1957-58, an increase of $16,984.

(D) Income:

In the past six months, this Department has been more successful than anticipated in attracting research funds from private and governmental sources. For the current year, we anticipated $33,595 and so far have been advised that we can expect $43,431 for 1957-58, an increase of $9,836 over expectations.

For 1958-59, we have already been assured of $50,664 which is $7,233 more than 1957-58. It may be of interest that we already have funds for 1959-60 in the amount of $15,297. These grants totalling $115,235 have been made available to the Department for the period April 1, 1957 to December 1960.

Respectfully submitted,

Max Fink, M.D.

MF:jb/b