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Personality Factors in Behavioral Response to Electroshock Therapy

ROBERT L. KAHN, PH.D., and MAX FINK, M.D.

In previous studies[4,6,7] we found that patients who were most likely to improve from electroshock treatment exhibited persistent and relatively marked degrees of altered brain function, as measured by the electroencephalogram and the amobarbital test for brain disease.[10] We reported, furthermore,[7] that patients who improved with electroshock treatment had developed a language pattern similar to that previously described by Weinstein and Kahn[13] in their studies of neurological patients with cerebral dysfunction. Weinstein and Kahn described a language pattern which they called "language of denial" and demonstrated the relationship of this language pattern to the premorbid personality of the patient.

On the basis of these observations, we assumed that the patients most likely to benefit from electroshock treatment would be those who most closely approximated the "explicit verbal denial" personality.[11]

To test this hypothesis, we studied 63 consecutive patients referred for electroshock therapy. 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. Prior to and during 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 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 patients were evaluated as to the presence and extent of the following characteristics: whether they (1) stressed verbal symbols such as resolutions, homilies, clichés and rationalization; (2) were prestige and security conscious, and did not enjoy the intrinsic benefits of health, work, leisure, money and property; (3) regarded illness as an imperfection or disgrace, keeping it a secret from family and neighbors, and were reluctant to seek medical care; (4) tended to "shake off" their own troubles and to be regarded as practical persons who advise others; (5) possessed much drive and compulsive energy and felt guilty or uneasy if not occupied; (6) were conscientious, with a high sense of duty and responsibility; (7) were sensitive to criticism, regarding it as an attack on their integrity; (8) were proud and tended to avoid help from others; (9) were reserved rather than openly affectionate or emotional; (10) emphasized being correct; (11) lacked imaginativeness and creativity; (12) were not considered by their relatives as dependent; (13) did not discuss sex openly; (14) did not have temper outbursts; and (15) were not "ludic"—a term taken from Piaget[8] and used by Weinstein and Kahn[12] to denote comic, tragic or melodramatic behavior.

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

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

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presence of the pattern. The scores for each item were added and the resultant score termed the "denial personality score."

2. Clinical Evaluation: Each patient was interviewed prior to treatment 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 directed at 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]

Treatment for all patients consisted of grand mal electroshock, using a Reiter electrostimulator or a Medcraft alternating-current instrument, on a schedule of three treatments per week.

Of the 63 patients, we were able to interview the relatives of 47; and the present study refers to this group. 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.

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

Denial Personality Score	Much Improved	Moderately Improved	Unimproved	Total
11 - 25	14	9	1	24
0 - 25	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 (at 1% level of confidence by Mann-Whitney U Test). Although the much improved patients have a higher mean score than the moderately improved group, this difference is not significant.

Qualitative Observations: Although there is a relationship between high personality scores and the clinical rating, 30 per cent of the 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 others' feelings. They relate to the environment primarily by nonverbal forms of communication. They are described by their families as laughing or crying excessively and as showing anger by muteness—"going into a shell," "walking out of the room in a huff"—or by violent tempers with table-pounding, throwing objects or direct physical assault.

Personality Score and Changes in Language: By means of the technique 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

Denial Personality Scores	No. Language Changes 0 - 2	3 or more
11 - 25 (20)	8	12
0 - 10 (20)	17	3
Total	25	15

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 or 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 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 stubbornness," 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 it was noted that the patient paid 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 18 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 it was doubtful that she could benefit from further treatment at the hospital. She was discharged with the recommendation for continued psychotherapy.

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, with electroshock therapy, to show both the language and behavioral changes which are rated as much improved by the examiner. The data support this hypothesis and are 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 character-

ized as: (a) nonempathic—unable to think critically or sensitively about the needs, feelings or communications of others; (b) nonintrospective—unable to think critically about their own feelings or needs, or to achieve insight even with the collaboration of others in the psychotherapeutic relationship; (c) relying heavily on nonverbal communication—even when they are talkative there is little referential communication, the words being clichéd, stereotyped or representative of feelings and emotions rather than transmitters of information; and (d) 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: the driving, conscientious, independent, successful, emotionally controlled person who can be characterized as the "explicit verbal denial" personality type; and the chronically inadequate, affectively labile and ludic, dependent person, 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 premorbid personality. Abraham[1] noted that states of depression occur in obsessional persons. Arnot[2] described depressed patients as being overconscientious and perfectionistic. Hamilton and Mann,[5] reporting various aspects of the personality in involutional depression, included such features as "followed a rigid pattern of behavior . . . displayed a lack of imagination . . . narrow range of interest . . . 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 them or of their feelings toward others. They emphasized the patients' inability to communicate verbally and suggested that the therapeutic relationship should be in nonverbal terms rather than emphasizing the intellectual content 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 that responds best to electroshock treatment. The same personality factors which make a person susceptible to a depressive reaction are those which make him responsive to nonverbal 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 cat-

astrophic response in the individual faced with 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

To summarize, we believe that our results show that aspects of personality can be differentiated, which are significantly related to the response to treatment. The basic personality pattern of the patients who respond best to electroshock treatment can be characterized as (a) nonempathic, (b) nonintrospective, (c) communicating nonverbally and (d) highly conventional and stereotyped, with little imaginative or creative capacity. Within the context of this common core, there are two main subdivisions of improved patients. One group is comparable with 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 sociocultural backgrounds, who are affectively labile and ludic. 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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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, United States 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 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, cliches 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 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 analized 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

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

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 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.

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

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

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.

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 the 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, 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 electroshock 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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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, L.I., N.Y.

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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 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, cliches 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 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 emotuonal; 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 was 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 to Clinical Response to Electroshock

Personality Score	Much Improved	Moderately Improved	Unimproved	Total
11 to 25	14	9	1	24
0 to 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

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

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 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

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

symptoms, displacement, qualification, etc. have been described as characterically 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	
Personality Scores	0 - 2	3 or more
11-25 (20)	8	12
0-10 (20)	17	3
Total	25	15

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.

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 changeswith 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 the 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, 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 s h own 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 electroshock 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.

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