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MODIFICATION OF PSYCHOTHERAPEUTIC TRANSACTIONS BY ALTERED BRAIN FUNCTION

J. JAFFE, M.D., H. ESECOVER, M.D., R. L. KAHN, Ph.D.
and M., FINK, M.D.

Glen Oaks, N. Y.

This report is derived from a supervisory seminar in which the effects of convulsive treatment upon psychotherapeutic transactions were studied. The therapist's observations have been described in a previous publication (1). The present paper describes the process from the frame of reference of the supervisor and supervisory group. It is intended as a complementary set of observations of this combined therapy. In addition, concurrent neurophysiologic data are included, of which both therapist and supervisor were unaware. This additional frame of reference may broaden the understanding of certain phenomena in the patient-therapist, and therapist-supervisor interactions. Our purpose is to demonstrate that the introduction of a measurable physiologic variable is a useful method for the investigation of the psychotherapeutic process.

The histories of the patients under study were given in the above-mentioned publication (1). In the following report, a detailed analysis of one of the cases* discussed in that paper is presented as most illustrative of the modification of interpersonal transactions by altered brain function. The patient, a 44-year-old widow and mother of a 12-year-old son, had been admitted to the hospital with symptoms of depression, anxiety, anorexia, varied physical complaints, and feelings of unreality and isolation. In her psychotherapeutic sessions she would reiterate her difficulties in a complaining pattern, repetitiously illustrating her inadequacy. During a three-month-period no improvement occurred and a course of electroshock therapy was recommended. At this juncture the patient was included in the present study.

From the Department of Experimental Psychiatry, Hillside Hospital.

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* Case #3, G. C.

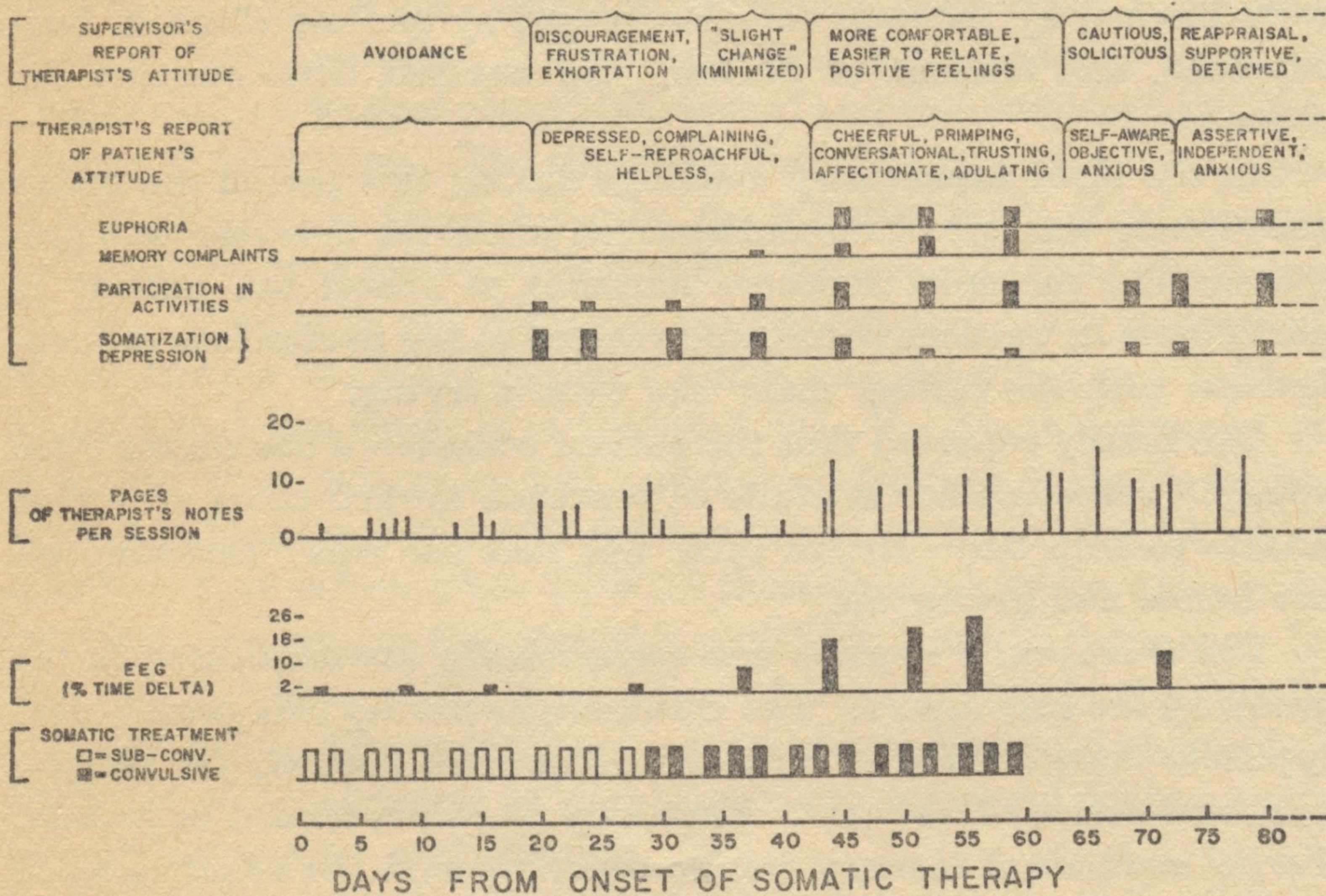
The setting was a weekly multi-disciplinary supervisory conference. Included in the group were: (a) the therapist (H.E.), (at the time a senior resident in psychiatry), who presented the case material; (b) a social worker who reported the response of the patient's family; (c) a psychoanalyst (J.J.), who dealt mainly with the didactic aspects of psychotherapeutic technique; (d) a psychologist (R.K.), who studied the cases independently; and (e) a neuropsychiatrist (M.F.), who coordinated the discussion. The last two members were aware of the concomitant changes in physiologic measures, and although this information influenced their questions, the data were not introduced at these conferences. The actual somatic treatment was performed by a physician who was not a participant at the meetings.

The procedure was informal, with the therapist taking the lead in presenting his verbatim notes of the psychotherapeutic sessions. The order of the case reports and the amount of time devoted to each was not prescribed. Following the spontaneous case presentation, more directive questioning was introduced, aimed at clarifying and relating the information presented by therapist and social worker.

Observations made during the period of somatic therapy are depicted in the accompanying chart. During the 94 days of supervision, two different forms of somatic treatment were utilized. This procedure was part of a hospital-wide convulsive-subconvulsive control study then in progress, in which therapists were unaware of the introduction of subconvulsive phases of treatment.

For the first treatment period (27 days) the patient received subconvulsive electro-stimulation with pentothal premedication. Twelve such treatments were given at the rate of three per week. No changes in the quantitative measures of EEG slow wave activity (2) were manifest during this time. This period served to establish a baseline for the behavioral observations and the expectancies of the staff.

In the second treatment period (29th to 59th day), grand mal convulsions were induced three times weekly for a total of 14 treatments. In that period, minimal degrees of EEG change were recorded on the 37th day, and moderate degrees were shown on three subsequent recordings. Twelve days after the termination of convulsive therapy, EEG slow wave activity was considerably diminished. This information was not available to the therapist or the supervisor until after the conclusion of the study.

EFFECT OF CHANGING BRAIN FUNCTION
ON PSYCHOTHERAPY

The patient was seen in psychotherapeutic sessions three times weekly throughout her hospitalization. While the therapist was aware of the concurrent somatic treatment, he was unaware that subconvulsive stimulation was given initially, and of the change to convulsive therapy on the 29th day.

Changes in the patient-therapist relationship as reported in the supervisory meetings are summarized in the chart and are detailed below.

Supervisors' Notes

1st to 19th day: During the first three weeks the therapist did not discuss this patient in the supervisory group. Other patients occupied the allotted time, in spite of a resolution to consider each patient weekly.

In retrospect, the failure to report this patient's progress constituted a pattern of avoidance. Somatic therapy had not modified the patient's ward behavior or the doctor-patient relationship. Both were the same as in the initial months of hospitalization. The neurophysiologic indices were unchanged.

20th to 33rd day: The case history was first presented in the meeting on the 20th day. The therapist reported no alteration in

the patient's clinging, whining, helpless attitude throughout the preceding three months. Efforts to explore her problems in living were blocked by physical complaints and by recitals of guilt, self-reproach, and feelings of failure. He was left little opening for comment.

In the three supervisory meetings during this period the group atmosphere was one of discouragement whenever this case was presented. The therapist reported impulses to exhort the patient to participate in ward activities, and reacted to her professions of helplessness with the feeling that "she wasn't trying."

The family reported that the patient considered her doctor "too young," reflecting her attitude of reproach toward those who were unable to help her. He, in turn, felt that she was "throwing up her hands and giving up."

The therapeutic impasse was empathically communicated to the group by the case report. The transactions during this period were typically those leading to referral of depressed patients for somatic (i.e., non-verbal) treatment. They may be characterized as follows. Verbal methods of therapy are incompatible with the affective mode of communication adopted by such patients (3). The doctor's efforts to help are not met by a collaborative response, and he feels frustrated. The insatiable quality of the patient's demands also calls forth defensive reactions in the therapist.

During this period the mode of somatic treatment was changed from subconvulsive to convulsive. The clinical status and therapeutic relationship, however, continued unaltered. Perhaps the lack of the expected response of somatic treatment contributed to the therapist's discouragement. He assumed that convulsions had been induced from the outset, and his past experience had led him to anticipate a clinical response by the fourth week of treatment (2).

34th to 42nd day: In the meeting that took place on the 38th day, a "slight change" was reported. Although the patient was still "crying, ranting, raving" in therapy sessions, it was also noted that "she participates in activities a little bit more, but not much." The therapist and the group discounted this change in social relationships. The first spontaneous complaint of memory difficulty was also reported.

The first evidence of neurophysiologic change appeared at this time. The EEG taken the day prior to this meeting showed a significant increase in slow wave activity.

43rd to 63rd day: In the meeting on the 45th day the therapist reported a full psychotherapeutic session for the first time. He described the patient as "brighter," "with a little more rouge and lipstick" and "smiling." Two days later her mood was noted as "euphoric." Physical complaints ceased and were replaced by complaints of forgetting. The therapist described this as a "cessation of complaining." Concomitantly, the affective mode of expression was replaced by a more intellectualized pattern. Instead of stating "I have to cling to my mother," the patient said "I'm dependent on my mother for many things." This was described as "talking about her dependency in a different way." Another change in communication pattern evoked "uncanny" feelings in the therapist. He stated that the patient "mentions things we had talked about as if it were new information." With these changes, there was a concomitant increase in the patient's sociability and participation in hospital activities, and a diminution of her clinging to the family and therapist. The supervisory group atmosphere also changed—from one of hopelessness to well-being, with increased joking, smiling, and animated participation.

On the 52nd day the therapist reported that the patient dressed seductively and applied fresh make-up for her sessions. She expressed feelings of trust and enjoyment of the meetings. The doctor experienced similar emotions, and was eager to report the progress of this patient. She was now "upset" because she couldn't recall her problems, and the therapist noted that he was inclined to a directive "remembering" role. She complained of memory loss and attempted to relate in a friendly, realistically gratifying way to prevent further psychologic exploration.

A greater detachment from her family was expressed. Social improvement continued. The family stated that she no longer considered the doctor "too young," but rather a "guiding angel."

The abrupt, gross change in the clinical picture paralleled the development of maximum physiologic change. The three EEG records during this period showed a moderate degree of slow wave activity. The advent of positive feelings elicited reciprocal emotions in the therapist which were communicated in the supervisory sessions. The affect was empathically reflected in members of the conference group. (The clinical picture resembled that of a "transference cure.")

It is of interest that a change from "physical" to "memory"

complaints was described as a "cessation of complaining." Perhaps the memory deficit, an expected concomitant of convulsive therapy, is more acceptable to the staff because it is understandable. They feel a responsibility for this symptom and can authoritatively reassure the patient that it will be transient. An affectionate dependency may also be more tolerable than a hostile one, especially when accompanied by gratifying social improvement. The language changes are indicative of a more detached, intellectualized communication of familiar content (4). The patient now "talked about" rather than emoting or "acting out." This new language pattern was more in keeping with her background of college education, and the therapist's implicit expectations (5). In contrast to her prior mode of communication it seemed to be more compatible with a psychoanalytically-oriented approach. The concomitant development of memory difficulty, however, perpetuated the essentially non-insightful therapeutic situation.

64th to 72nd day: This period followed the termination of somatic treatment. The patient reported a "sudden feeling of self-awareness." Euphoria and memory difficulty were no longer observed, and an anxious state supervened. Psychotherapeutic sessions were characterized by more critical appraisal of her life situation. For the first time the doctor gave the patient extra time in the sessions. The group voiced some concern that she was "slipping back." When the patient occasionally talked positively about career, emancipation from mother, and so forth, the therapist felt called upon to respond optimistically, rather than to explore. There was a revival of old complaints.

At this point, the supervisor and therapist reviewed a tape-recorded therapy session. A recurrence of the earlier verbal patterns could indeed be identified. However, these occurred in circumscribed fashion rather than throughout the interview. The events antecedent to such periods were examined and the adaptive nature of the recurrent affective patterns became apparent.

The EEG record during this period showed a considerable decrease in slow wave activity. There was a concomitant reestablishment of some of the communication patterns which preceded the period of altered brain function. The conference group responded with anxiety, reflected in the solicitousness of the therapist in prolonging the sessions.

The phenomenon observed in the supervisory group, for lack of

a better term, may be called "electroshock dependency." Statements were made in the meeting such as "she's slipping back," "needs more treatments" and "improvement not holding up." These statements imply that the hostile-dependent pattern was being thought of primarily as a nosologic entity, "a depression," rather than a mode of human relatedness. Perhaps because behavioral change had not been effected by psychologic means alone, it now seemed totally dependent upon the alteration in cerebral function. The change in interaction was conceptualized as the result of the brain syndrome, and not as a function of the doctor-patient relationship. Hence the group's uneasiness on the sporadic reappearance of preconvulsive patterns. The detailed examination of a tape-recorded session revealed the adaptive function of this more circumscribed occurrence of the complaints, and the phenomenon of "electroshock dependency" was not observed in subsequent group meetings.

73rd to 94th day: During this period a more stable psychotherapeutic relationship was apparent. The patient became more independent and discussed problems of compliance and self-assertiveness. Although her attitude remained positive and collaborative, her adulation of the therapist diminished. In one session she said "Maybe I won't get better unless I get angry at you." She was less elated. She moved from the closed ward to an open cottage, and began to work in the hospital library. Occasional episodes of overt disturbance were treated by the therapist without solicitude. His attitude was one of interest, support and detachment. They discussed plans for discharge and outpatient treatment.

Subsidence of the changes in brain function resulting from convulsive therapy permitted a new integration of the doctor-patient relationship. The pattern of a conventional psychotherapeutic situation appeared, which differed both from the original negative and the artificially induced positive relationships.

Therapist's Notes as an Index of Relatedness

Following the conclusion of the study, another index of the psychotherapeutic relationship was investigated. Rioch has described the use of the volume of staff progress notes as an index of staff-patient interaction (6). The therapist had kept his notes in a standard stenographic notebook throughout the treatment. A gross count of the number of pages of notes per session was made, and

is represented graphically on the chart. No written notes were taken during occasional tape-recorded sessions, and these are omitted from the chart. The change in the relationship is apparent from the abrupt and persistent increase in note-taking from the 44th day. This coincided with the first gross change in the electroencephalogram. The notes taken by the two other psychiatrists in the supervisory meetings followed a similar pattern (not illustrated), although with peaks of note-taking at the onset and again at the waning of induced neurophysiologic change.

DISCUSSION

This report describes an investigation of psychotherapy when somatic therapy is introduced as an adjunctive procedure. One difficulty in the objective study of psychotherapeutic transactions is the absence of a quantifiable and controllable variable. Adjunctive therapies, somatic and pharmacologic, provide such a variable. They produce alteration in behavior as well as measurable neurophysiologic changes (2, 7). This opportunity has been utilized in the present project. For example, one mode of adaptation to altered brain function is a euphoric type of relatedness (8). The occurrence of the phenomenon in this case permitted us to observe how induced alternation of positive and negative attitudes call forth similar attitudes in therapist and supervisor. Another illustration was the discounting of the earliest clinical change during the 34th to 42nd day of treatment. The electroencephalogram indicated the significance of this beginning change in the relationship. The fact that it was minimized demonstrates the obscuring effects of staff expectancies. Finally, the alteration of brain function was accompanied by a change in complaint pattern, that is, from physical symptoms to memory difficulty. This resulted in a new form of the dependency relationship (43rd to 63rd day) which was experienced differently by the supervisory staff, with resultant change in their feelings about the patient. This effect was also observed in the patient's family group.

The observations also illustrate a phenomenon peculiar to supervision in group settings. We have called attention to the emotional atmosphere of the group, which seemed to fluctuate in accordance with the therapeutic relationship being described. Hora (9) suggests that the supervisee may communicate the affective aspects of his experience with the patient non-verbally in the supervisory meet-

ing. His formulation is that "The supervisee unconsciously identifies with the patient and involuntarily behaves in such a manner as to elicit in the supervisor those very emotions which he himself experiences while working with the patient, but was unable to convey verbally." He also describes the diffusion of this affect in the other participants of a supervisory seminar. Thus he reports that "This observation has been subjected to repeated tests in seminars where it was possible to verify the supervisor's emotional perceptions by matching them with the emotional reactions of the other participants present." Our work supports such observations and suggests the potential fruitfulness of studies of group dynamics in supervisory seminars.

We have noted one change in relatedness resulting from the somatic therapy that had a disjunctive effect upon the relationship (45th day). The patient mentioned familiar topics "as if it were new information." The "uncanny" quality produced in the therapist and supervisor resulted from the temporary feeling that the therapeutic relationship had no history. Rapport in intensive psychotherapy depends to a great extent upon an accumulated body of shared information. Both doctor and patient take this for granted, and the inability to rely upon it may affect rapport adversely.

Other patients in the study, not discussed in this paper, showed different patterns of response. These included transient paranoid episodes, hyperactivity, erotic, exhibitionistic, and other forms of "acting-out" which were disruptive to the concurrent psychotherapy. In each case the induced behavioral change was related to the personality of the individual patient and occurred at the time of changing brain function (2). Also in each case there were concomitant changes in behavior in the supervisory group.

Our experience also highlights some of the difficulties that may develop when the two modes of treatment are used concurrently. Intensive psychotherapy is based upon the conviction of the efficacy of verbal communication for improvement of the patient's adaptation. In the case reported, a trial period of psychotherapy had been ineffective in altering clinical behavior. The introduction of somatic treatment represented a decision against exclusive reliance upon interpersonal communication as the therapeutic instrument. When cerebral change was maximal, a "social recovery" occurred, apparently unrelated to interpretation of psychodynamic factors. When the induced neurophysiologic changes subsided, a recurrence

of earlier communication patterns led the therapist to doubt that the improvement could be perpetuated by interpersonal means alone. To some extent this phenomenon was an expression of differing conceptual and linguistic systems inherent in the two modes of therapy. It is related to the philosophical dichotomy described by Hollingshead and Redlich (10) between practitioners using somatic and analytically-oriented therapies.

SUMMARY

A study of concurrent somatic therapy and psychotherapy is reported, in which simultaneous observations of serial changes in brain function, the psychotherapeutic relationship and social adaptations were made. The observations in a group supervisory seminar reflected the pattern of neurophysiologic alteration.

It is concluded that the introduction of a measurable physiologic variable is a useful method for investigation of interpersonal relationships.

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Modification of Psychotherapeutic and Supervisory
Relationships by Altered Brain Function

J. Jaffe, M.D., H. Esecover, M.D.
R.L. Kahn, Ph.D. & M. Fink, M.D.

From the Department of Experimental Psychiatry, Hillside Hospital,
Glen Oaks, L.I., N.Y.

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Modification of Psychotherapeutic and Supervisory Relationships by Altered Brain Function

This report is derived from a supervisory seminar in which the effects of convulsive treatment upon psychotherapeutic communication were studied. The therapist's observations have been described in a previous publication (2), and are based mainly upon his personal experiences with the patients. The present paper describes the process from the supervisor's frame of reference. It is intended as a complementary set of observations of this complex combined therapy. In addition, concurrent neurophysiologic data is included, of which both therapist and supervisor were unaware. This additional level of observation seems to account for certain clinical phenomena in the patient-therapist, and therapist-supervisor interactions.

Our purpose is to demonstrate that the introduction of measurable physiological variables is a useful method for the investigation of the psychotherapy process.

METHOD:

The setting was a weekly multi-disciplinary conference composed of five people, and thus departed from the conventional supervisory situation. The group included: a) the therapist (H.E.), at the time a senior resident in psychiatry, who presented the case material; b) a social worker assigned to the cases selected for study, who reported the on-going response of the patient's family; c) a psychoanalyst (J.J.), who dealt mainly with the didactic aspects of psychotherapeutic technique; d) a psychologist (R.L.K.), who had studied the cases independently; and e) a neuropsychiatrist (M.F.), who coordinated the discussion. The last two members were aware of concomitant changes in the physiologic measures, and although this information influenced their questions, the data was not introduced at these conferences. The actual somatic treatment was performed by a physician who was not a participant at the meetings.

The procedure was informal. The therapist took the lead in presenting verbatim notes of his psychotherapy sessions with five patients receiving combined therapy. The order of the case presentations and the amount of time devoted to each was not prescribed. Following the spontaneous case reports, more directive questioning was introduced, aimed at clarifying and relating the information presented by the therapist and the social worker. Although roles were defined, the atmosphere was one of inquiry in which no participant claimed a definitive answer to the problem under investigation.

SUBJECT:

The case histories of the subjects of this study were reported in a previous publication (2). In this report a detailed analysis of Case #3 is presented as most clearly illustrative of the modification of interpersonal transactions by altered brain function. This patient, a 44 year old widow and mother of a 12 year old son, had been admitted to the hospital because of depression, anxiety, anorexia, multiple somatic complaints, and feelings of being "unreal" and isolated. In therapeutic sessions she would reiterate her difficulties in a persistent complaining pattern, as illustrations of her failures and inadequacies. After a three month period of psychotherapy without alteration in the clinical condition it was decided to utilize a course of electroshock therapy. At this time the patient was included in the present project. More detailed description of the psychotherapy sessions is included under "Observations" below.

SOMATIC THERAPY:

Serial observations made during the intercurrent somatic therapy are depicted in the accompanying chart. During the 94 days of supervision two different forms of somatic treatment were utilized. This procedure was part of a convulsive-subconvulsive control study then in progress, in which the therapist was unaware of the introduction of the subconvulsive phase of treatment.

For the first 27 day period the patient received subconvulsive electrostimulation with pentothal premedication. Twelve such treatments were given at the rate of three per week. No manifest changes in quantitative analyses of the degree of delta activity in the EEG (3) were observed during this time. This period established a baseline for the behavioral observations and the staff expectancies.

Grand mal convulsions were induced from the 29th to the 59th days of somatic treatment, also at a rate of three per week for a total of 14 treatments. In this convulsive period, minimal degrees of electroencephalographic delta activity appeared on the 37th day, and moderate degrees were shown on three subsequent recordings. On a follow-up record 12 days after the termination of convulsive therapy the delta activity had decreased considerably. This information was not available to the therapist or the supervisor until after the conclusion of the study.

The patient was seen in psychotherapy sessions three times a week throughout her hospitalization. While the therapist was aware of the concurrent somatic treatment, he was unaware of the fact that subconvulsive stimulation was given initially, and of the change to convulsive therapy on the 29th day.

The changes in patient-therapist relationship as reported in the supervisory meetings is summarized in the chart and is detailed in the following observations.

Figure I

OBSERVATIONS:

1st to 19th day:

During the first three weeks of somatic treatment the therapist did not discuss this patient in the supervisory group. Other patients occupied all the allotted time, in spite of our resolution to hear about every patient in the study each week. The case histories presented during this time were those of patients undergoing gross day-to-day changes in clinical behavior.

Comment:

In retrospect, we consider the omitted presentation to be a significant communication. A pattern of avoidance characterized this period. The neurophysiologic indices during this time were unchanged. Similarly, the patient's clinical status and the doctor-patient relationship were the same as in the three months preceding somatic treatment.

20th to 33rd day:

The case history was first presented in the meeting on the 20th day. Over a three month period the psychotherapeutic relationship had been unchanged, the therapist being unable to discern any alteration in the patient's clinging, whining, helpless attitude. Efforts to explore her problems in living were blocked by physical complaints and by long recitals of guilt, self-reproach, and feelings of failure. In the three supervisory meetings during this period the group atmosphere

was one of discouragement when this case was presented. The therapist reported impulses to exhort the patient to participate in ward activities, and reacted to her professions of helplessness with the subjective feeling that "she wasn't trying." The reproach against those who were unable to help her was reflected in the family's report that the patient considered her therapist "too young."

Comment:

The therapeutic impasse was empathically communicated to the group by the therapist's report. The interaction during this period may be characterized as follows: After prolonged, unsuccessful efforts at verbal communication the psychotherapist is realistically frustrated (1). The affective mode of communication adopted by the patient rendered essentially verbal techniques useless. The doctor's efforts to help were not met by a collaborative response, while the insatiable quality of the patient's demands may also have called forth defensive reactions in the therapist. Such interactions are typically those that lead to the referral of psychotically depressed patients for somatic, i.e. non-verbal forms of therapy.

During this period the mode of somatic treatment was changed from subconvulsive to convulsive. The clinical status and therapeutic relationship however,

continued unaltered. Perhaps lack of the expected response to somatic treatment contributed to the therapist's discouragement. He assumed that convulsive therapy had begun at the outset, and his past experience had led him to anticipate a clinical response by the fourth week of treatment (3).

34th to 42nd day:

In the meeting that took place on the 38th day, a "slight change" was reported. Although the patient was described as still "crying, ranting, and raving" in therapy sessions, it was reported that "she participates in activities a little bit more, but not much." The therapist and the group tended to minimize the social improvement. The first spontaneous complaint of memory difficulty was also reported in this meeting.

Comment:

In retrospect, the first evidence of neuro-physiologic change had appeared at this time. The electroencephalogram on the day prior to this meeting showed a significant increase in delta activity. The group discounted the concomitant observation of clinical change in view of a persistent hostile-dependent transference, and negative counter-transference feelings.

43rd to 63rd day:

In the meeting on the 45th day the therapist spontaneously reported a full verbatim psychotherapy session for the first time. The patient was described as "brighter," "with a little more rouge and lipstick," and "smiling." Within the next two days he described her mood as "euphoric." Physical complaints ceased and were replaced by complaints of forgetting. The therapist, however, described this change as a cessation of "complaining." There was a change in the form of verbal expression although the content remained the same. Her affective mode of expression was replaced by an intellectualized pattern. For example, instead of complaining "I have to cling to my mother" the patient said, "I'm dependent on my mother for many things." The therapist described this change as "talking about her dependency in a different way." Another of his observations, however, was reported with "uncanny" feelings which were shared by the supervisor. He stated that the patient "mentions things we had talked about as if it were new information."

With these changes, there was a concomitant increase in her sociability and participation in hospital activities, and a diminution of her overt dependency upon family and therapist. The supervisory group atmosphere at this time changed from one of discouragement to a feeling of well-being, with increased joking, smiling and animated participation.

On the 52nd day the therapist reported that the patient dressed seductively and applied fresh make-up for her therapy meetings. She expressed feelings of trust and enjoyment of the sessions. The doctor experienced similar emotions, and was eager to report the progress of this case. The patient was now "upset" because she could'nt remember her problems, and the therapist noted that he was being continually led into a directive "remembering" role. He felt the patient used her memory loss as a defense against further psychologic exploration, and that she preferred to maintain the relationship on a friendly, realistically gratifying level.

A greater detachment from her family was also expressed. Indications of social improvement were prominent. The family stated that she no longer considered the doctor "too young," but rather a "guiding angel."

Comment:

The abrupt and gross change in the clinical picture paralleled the development of maximum physiological change in this case. The three electroencephalograms during this period showed a moderate degree of delta activity.

The advent of markedly positive feelings elicited reciprocal emotions in the therapist. These were communicated in the supervisory sessions, and were empathically reflected in members of the conference group. The clinical pattern resembled that of a "transference cure."

It is of interest that change from "physical" to "memory" complaints was described as an overall "decrease in complaining." Perhaps a memory deficit, an expected concomitant of convulsive therapy, was more acceptable to the staff because it was understandable. They felt some responsibility for this symptom and could authoritatively reassure the patient that it would be transient. It is also probable that an affectionate dependency is more tolerable than a hostile dependency, especially when accompanied by obvious and gratifying social improvement.

The language changes were indicative of a more detached, intellectualized communication of familiar content (8). The patient at this time "talked about" rather than emoting or "acting out." These new language patterns were consistent with her college education and, in contrast to her prior mode of communication, appeared to be more compatible with a psychoanalytically-oriented approach. However, there was the concomitant development of memory difficulty, exemplified by her introduction of previously discussed topics as new information. The net effect was thus a non-communicative situation with regard to interpretive insight therapy.

64th to 72nd day:

This period followed the termination of somatic treatment. The patient reported a "sudden feeling of self-awareness." The euphoria and memory difficulty were no longer observed, and an anxious state supervened. The content of the psychotherapy sessions changed to a more critical appraisal of her life situation. For the first time the therapist gave the patient extra time in the sessions. The group voiced some concern that she was "slipping back." When the patient occasionally talked positively about such problems as her emancipation from mother, the therapist was inclined to respond optimistically, rather than to explore. She reacted to this with a revival of old complaints.

At this point, supervisor and therapist reviewed a tape recorded therapy session. A recurrence of the earlier pattern could indeed be identified, although in circumscribed fashion rather than throughout the interview. It was possible to examine the antecedent events in the session and to clarify the pattern as an adaptive response to stressful content.

Comment:

The electroencephalogram during this period showed a considerable decrease in slow wave activity. There was a concomitant reestablishment of some of the communication patterns which preceded the period of altered cerebral function. The supervisory group responded with uneasiness which was reflected

in the solicitousness of the therapist in prolonging the sessions.

At this point a phenomenon was observed in the supervisory group which, for lack of a better term, may be called "electroshock dependency." Statements were made in the meeting such as, "she's slipping back," "needs more treatments," and "improvement not holding up." These statements imply that the hostile-dependent pattern constituted a nosologic entity - "a depression" - rather than a mode of human relatedness. Perhaps because therapeutic change could not be effected by interpersonal means alone, its persistence seemed dependent upon the alteration in cerebral function. The change in interaction was thus being conceptualized as the result of the brain syndrome, and not as a function of the doctor-patient relationship. Hence the group's uneasiness on the sporadic reappearance of the pre-convulsive interaction pattern. The detailed examination of a tape-recorded session revealed the adaptive function of this more circumscribed occurrence of the complaints, and the phenomenon of "electroshock dependency" was not observed in subsequent group meetings.

73rd to 94th day:

During this period a more stable psychotherapeutic relationship was apparent. The patient became more independent and discussed problems of compliance and self-assertiveness. Although her attitude remained positive and collaborative, her gross adulation of the therapist diminished. In one session she said, "Maybe I won't get better unless I get angry at you." She was less elated. She moved from a closed ward to an open cottage, and began to work in the hospital library. Occasional episodes of overt disturbance were handled by the therapist without solicitude. His attitude was one of interest, support and detachment. Patient and therapist discussed plans for discharge and outpatient treatment. The patient was discharged six weeks later.

Comment:

Subsidence of the changes in brain function resulting from convulsive therapy permitted a new integration of the doctor-patient relationship. The pattern of a conventional psychotherapeutic situation appeared. This differed both from the original negative and the artificially induced positive transference relationships.

Therapist's notes as an index of relatedness:

Following the conclusion of the study, another index of the psychotherapeutic relationship was investigated. Rioch (9) has described the use of the volume of staff progress notes as an index of staff-patient interaction. The therapist had kept his notes in a standard stenographic notebook throughout the treatment. A gross count of the number of pages of notes per session could be made. This is represented graphically on the chart. As no written notes were taken during the occasional tape-recorded sessions, these were omitted from the chart. The change in the therapeutic relationship is apparent from the abrupt and sustained increase in note-taking from the 44th day on. This coincided with the first gross change in the electroencephalogram. The notes taken by the two other psychiatrists in the supervisory meetings followed a similar pattern, although with peaks of note-taking at the onset and again at the waning of induced neurophysiologic change.

DISCUSSION:

The primary purpose of this report is to demonstrate the value of a detailed investigation of psychotherapy when somatic therapies are temporarily introduced as adjunctive procedures. One of the difficulties in the objective study of transference and countertransference phenomena is the absence of a quantifiable and controllable variable. Adjunctive therapies, somatic or pharmacological, provide such a variable. They produce alteration in behavior as well as concomitant, measurable neurophysiologic changes (3, 4). This opportunity has been utilized in the present project. For example, one mode of adaptation to altered brain function is a euphoric type of relatedness (5). The occurrence of the phenomenon in this case permitted us to observe how the induction of positive and negative transferences called forth similar countertransference attitudes in therapist and supervisor. Another illustration of this technique was our discounting of the earliest clinical change during the 34th to 42nd day of somatic treatment. The electroencephalogram gave evidence in favor of the significance of this beginning change in the relationship. The fact that it was minimized demonstrates the obscuring effects of staff expectancies. Finally, the alteration of brain function in this course of psychotherapy was accompanied by a change of the pattern of complaints i.e. from physical symptoms to memory difficulty. This resulted in a modification

of the dependency relationship (43rd to 63rd day). The new form of the relationship was experienced differently by the staff, with resultant change in their feelings about the patient. This effect was observed in the patient's family group as well as in the supervisory group.

The observations illustrate several other phenomena of interest. One is peculiar to supervision in group settings. We have called attention to the emotional atmosphere of the group, which seemed to fluctuate in accordance with the therapeutic relationship being described. Hora (7) believes that the supervisee may communicate the affective aspects of his experience with a patient by non-verbal means. His formulation is that "the supervisee unconsciously identifies with the patient and involuntarily behaves in such a manner as to elicit in the supervisor those very emotions which he himself experiences while working with the patient, but was unable to convey verbally." He also describes the diffusion of this effect in the other participants of a supervisory seminar. Thus he reports that, "This observation has been subjected to repeated tests in seminars where it was possible to verify the supervisor's emotional perceptions by matching them with the emotional reactions of the other participants present." Our work supports such observations and suggests the potential fruitfulness of studies of group dynamics in supervisory seminars.

We have noted one change in relatedness resulting from the somatic therapy that had a disjunctive effect upon the

relationship (45th day). The patient mentioned familiar topics "as if it were new information." The "uncanny" quality produced in the therapist and supervisor resulted from the temporary feeling that the therapeutic relationship had no history. Rapport in intensive psychotherapy depends to a great extent upon an accumulated body of shared information. Both doctor and patient take this for granted, and the inability to rely upon it may affect rapport adversely.

Other patients in the study, not discussed in this paper, showed different patterns of response. These included transient paranoid episodes, hyperactivity, erotic, exhibitionistic and other forms of "acting-out," which were disruptive to the concurrent psychotherapy. In each case the induced behavioral change was related to the personality of the individual patient and occurred at the time of changing brain function (3). Also, in each case, there were concomitant changes in behavior in the supervisory group.

The limited scope of this study does not warrant general conclusions as to the efficacy of concurrent somatic treatment and psychotherapy. We have confined the discussion, therefore, to the presentation of methodology and description of the types of observations that can be made in such interdisciplinary approaches.

Our experience does highlight, however, some of the difficulties that may develop when the two modes of treatment are used concurrently. Intensive psychotherapy is based upon

a conviction as to the efficacy of verbal communication for the improvement of the patient's adaptation. In the case reported a trial period of psychotherapy had been ineffective in altering clinical behavior. The introduction of somatic treatment represented a decision against exclusive reliance upon interpersonal communication as the therapeutic instrument. When cerebral change was maximal a "social recovery" occurred. This was apparently unrelated to interpretation of psychodynamic factors. No increase in awareness of psychological relationships was verbalized. When the induced neurophysiologic changes subsided, there was a partial recurrence of earlier communication patterns. This was accompanied by a brief period of doubt that the modification of behavior could be perpetuated by interpersonal means alone. To some extent this phenomenon was an expression of the different conceptual and linguistic systems inherent in the two modes of therapy. It is related to the philosophical dichotomy described by Hollingshead and Redlich (6) between practitioners using somatic and analytically-oriented therapies. These considerations also arise in the use of psychopharmacologic agents during the course of psychotherapy (4).

SUMMARY:

A study of the effects of concurrent somatic therapy on psychotherapy is reported, in which simultaneous observations of serial changes in brain function, the psychotherapeutic relationship, and social adaptation were made. The observations in a group supervisory seminar reflected the pattern of neuro-physiological alteration.

It is concluded that the introduction of a measurable physiological variable is a useful method for investigation of the psychotherapy process.

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**Modification of Psychotherapeutic Transactions
By Altered Brain Function**

**J. Jaffe, M.D., H. Esecover, M.D.,
R. L. Kahn, Ph.D. and M. Fink, M.D.**

**From the Department of Experimental Psychiatry, Hillside Hospital,
Glen Oaks, L.I., N.Y.**

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This report is derived from a supervisory seminar in which the effects of convulsive treatment upon psychotherapeutic transactions were studied. The therapist's observations have been described in a previous publication (2). The present paper describes the process from the frame of reference of the supervisor and supervisory group. It is intended as a complementary set of observations of this combined therapy. In addition, concurrent neurophysiologic data are included, of which both therapist and supervisor were unaware. This additional frame of reference may broaden the understanding of certain phenomena in the patient-therapist, and therapist-supervisor interactions.

Our purpose is to demonstrate that the introduction of a measurable physiological variable is a useful method for the investigation of the psychotherapy process.

METHOD:

The setting was a weekly multi-disciplinary supervisory conference. Included in the group were: a) the therapist (H.E.), (at the time a senior resident in psychiatry), who presented the case material; b) a social worker who reported the response of the patient's family; c) a psychoanalyst (J.J.), who dealt mainly with the didactic aspects of psychotherapeutic technique; d) a psychologist (R.K.), who studied the cases independently; and e) a neuro-psychiatrist (M.F.), who coordinated the discussion. The last two members were aware of the concomitant changes in physiologic measures, and although this information influenced their questions, the data was not introduced at these conferences. The actual somatic treatment was performed by a physician who was not a participant at the meetings.

The procedure was informal, with the therapist taking the lead in presenting his verbatim notes of the psychotherapy sessions. The order of the case reports and the amount of time devoted to each was not prescribed. Following the spontaneous case presentation, more directive questioning was introduced, aimed at clarifying and relating the information presented by therapist and social worker.

SUBJECT:

The histories of the subjects of this study were reported in a previous publication (2). In this report a detailed analysis of Case #3 (G.C.) is presented as most illustrative of the modification of interpersonal transactions by altered brain function. This patient, a 44 year old widow and mother of a 12 year old son, had been admitted to the hospital with symptoms of depression, anxiety, anorexia, varied physical complaints, and feelings of unreality and isolation. In psychotherapy sessions she would reiterate her difficulties in a complaining pattern, repetitiously illustrating her inadequacy. During a three month period no improvement occurred and a course of electroshock therapy was recommended. At this juncture the patient was included in the present study.

SOMATIC THERAPY:

Observations made during the period of somatic therapy are depicted in the accompanying chart. During the 94 days of supervision two different forms of somatic treatment were utilized. This procedure was part of a hospital-wide convulsive-subconvulsive control study then in progress, in which therapists were unaware of the introduction of subconvulsive phases of treatment.

For the first treatment period (27 days) the patient received subconvulsive electro-stimulation with pentothal

premedication. Twelve such treatments were given at the rate of three per week. No changes in the quantitative measures of EEG slow wave activity (3) were manifest during this time. This period served to establish a baseline for the behavioral observations and the expectancies of the staff.

In the second treatment period (29th to 59th days), grand mal convulsions were induced thrice weekly for a total of 14 treatments. In this period, minimal degrees of EEG change were recorded on the 37th day, and moderate degrees were shown on three subsequent recordings. Twelve days after the termination of convulsive therapy, EEG slow wave activity was considerably diminished. This information was not available to the therapist or the supervisor until after the conclusion of the study.

Fig. 1 about here

The patient was seen in psychotherapy sessions three times weekly throughout her hospitalization. While the therapist was aware of the concurrent somatic treatment, he was unaware that subconvulsive stimulation was given initially, and of the change to convulsive therapy on the 29th day.

Changes in the patient-therapist relationship as reported in the supervisory meetings are summarized in the chart and are detailed in the following observations.

OBSERVATIONS:

1st to 19th day.

During the first three weeks the therapist did not discuss this patient in the supervisory group. Other patients occupied the allotted time, in spite of a resolution to consider each patient weekly.

Comment:

In retrospect, the failure to report this patient's progress constituted a pattern of avoidance. Somatic therapy had not modified the patient's ward behavior or the doctor-patient relationship. Both were the same as in the initial months of hospitalization.

The neurophysiologic indices were unchanged.

20th to 33rd day:

The case history was first presented in the meeting on the 20th day. The therapist reported no alteration in the patient's clinging, whining, helpless attitude throughout the preceding three months. Efforts to explore her problems in living were blocked by physical complaints and by recitals of guilt, self-reproach, and feelings of failure. He was left little opening for comment.

In the three supervisory meetings during this period the group atmosphere was one of discouragement when this case was presented. The therapist reported impulses to exhort the

patient to participate in ward activities, and reacted to her professions of helplessness with the feeling that "she wasn't trying."

The family reported that the patient considered her doctor "too young," reflecting her attitude of reproach towards those who were unable to help her. He, in turn, felt that she was "throwing up her hands and giving up."

Comment:

The therapeutic impasse was empathically communicated to the group by the case report. The transactions during this period were typically those leading to referral of depressed patients for somatic (i.e. non-verbal) treatment. They may be characterized as follows. Verbal methods of therapy are incompatible with the affective mode of communication adopted by such patients (1). The doctor's efforts to help are not met by a collaborative response, and he feels frustrated. The insatiable quality of the patient's demands also calls forth defensive reactions in the therapist.

During this period the mode of somatic treatment was changed from subconvulsive to convulsive. The clinical status and therapeutic relationship, however, continued unaltered. Perhaps the lack of the expected response to

somatic treatment contributed to the therapist's discouragement. He assumed that convulsions had been induced from the outset, and his past experience had led him to anticipate a clinical response by the fourth week of treatment (3).

34th to 42nd day.

In the meeting that took place on the 38th day, a "slight change" was reported. Although the patient was still "crying, ranting, raving" in therapy sessions, it was also noted that "she participates in activities a little bit more, but not much." The therapist and the group discounted this change in social relationships. The first spontaneous complaint of memory difficulty was also reported.

Comment:

The first evidence of neurophysiologic change appeared at this time. The EEG taken the day prior to this meeting showed a significant increase in slow wave activity.

43rd to 63rd day:

In the meeting on the 45th day the therapist reported a full psychotherapy session for the first time. He described the patient as "brighter," "with a little more rouge and lipstick" and "smiling." Two days later her mood was noted as "euphoric." Physical complaints ceased and were replaced by complaints of forgetting. The therapist described this as a "cessation of complaining." Concomitantly, the affective

mode of expression was replaced by a more intellectualized pattern. Instead of stating "I have to cling to my mother" the patient said "I'm dependent on my mother for many things." This was described as "talking about her dependency in a different way." Another change in communication pattern evoked "uncanny" feelings in the therapist. He stated that the patient "mentions things we had talked about as if it were new information."

With these changes, there was a concomitant increase in the patient's sociability and participation in hospital activities, and a diminution of her clinging to the family and therapist. The supervisory group atmosphere also changed - from one of hopelessness to well-being, with increased joking, smiling and animated participation.

On the 52nd day the therapist reported that the patient dressed seductively and applied fresh make-up for her sessions. She expressed feelings of trust and enjoyment of the meetings. The doctor experienced similar emotions, and was eager to report the progress of this case. The patient was now "upset" because she couldn't recall her problems, and the therapist noted that he was inclined to a directive "remembering" role. He felt she complained of memory loss and attempted to relate in a friendly, realistically gratifying way to prevent further psychologic exploration.

A greater detachment from her family was expressed. Social improvement continued. The family stated that she no

longer considered the doctor "too young," but rather a "guiding angel."

Comment:

The abrupt, gross change in the clinical picture paralleled the development of maximum physiological change. The three EEG reports during this period showed a moderate degree of slow wave activity. The advent of positive feelings elicited reciprocal emotions in the therapist which were communicated in the supervisory sessions. The affect was empathically reflected in members of the conference group. (The clinical picture resembled that of a "transference cure.")

It is of interest that a change from "physical" to "memory" complaints was described as a "cessation of complaining." Perhaps the memory deficit, an expected concomitant of convulsive therapy, is more acceptable to the staff because it is understandable. They feel a responsibility for this symptom and can authoritatively reassure the patient that it will be transient. An affectionate dependency may also be more tolerable than a hostile one, especially when accompanied by gratifying social improvement. The language changes are indicative of a more detached, intellectualized communication

of familiar content (8). The patient now "talked about" rather than emoting or "acting out." This new language pattern was more in keeping with her background of college education, and the therapist's implicit expectations (9). In contrast to her prior mode of communication it seemed to be more compatible with a psychoanalytically-oriented approach. The concomitant development of memory difficulty, however, perpetuated the essentially non-insightful therapeutic situation.

64th to 72nd day:

This period followed the termination of somatic treatment. The patient reported a "sudden feeling of self-awareness." Euphoria and memory difficulty were no longer observed, and an anxious state supervened. Psychotherapy sessions were characterized by more critical appraisal of her life situation. For the first time the doctor gave the patient extra time in the sessions. The group voiced some concern that she was "slipping back." When the patient occasionally talked positively about career, emancipation from mother, etc., the therapist felt called upon to respond optimistically, rather than to explore. There was a revival of old complaints.

At this point, the supervisor and therapist reviewed a tape-recorded therapy session. A recurrence of the earlier

verbal patterns could indeed be identified. However, these occurred in circumscribed fashion rather than throughout the interview. The events antecedent to such periods were examined and the adaptive nature of the recurrent affective patterns became apparent.

Comment:

The EEG record during this period showed a considerable decrease in slow wave activity. There was a concomitant reestablishment of some of the communication patterns which preceded the period of altered brain function. The conference group responded with anxiety reflected in the solicitousness of the therapist in prolonging the sessions.

The phenomenon observed in the supervisory group, for lack of a better term, may be called "electroshock dependency." Statements were made in the meeting such as "she's slipping back," "needs more treatments" and "improvement not holding up." These statements imply that the hostile-dependent pattern was being thought of primarily as a nosologic entity, "a depression," rather than a mode of human relatedness. Perhaps because behavioral change had not been effected by psychologic means alone, it now seemed totally dependent upon the alteration in cerebral function.

The change in interaction was conceptualized as the result of the brain syndrome, and not as a function of the doctor-patient relationship. Hence the group's uneasiness on the sporadic reappearance of preconvulsive patterns. The detailed examination of a tape-recorded session revealed the adaptive function of this more circumscribed occurrence of the complaints, and the phenomenon of "electroshock dependency" was not observed in subsequent group meetings.

73rd to 94th day:

During this period a more stable psychotherapeutic relationship was apparent. The patient became more independent and discussed problems of compliance and self-assertiveness. Although her attitude remained positive and collaborative, her adulation of the therapist diminished. In one session she said "Maybe I won't get better unless I get angry at you." She was less elated. She moved from the closed ward to an open cottage, and began to work in the hospital library. Occasional episodes of overt disturbance were treated by the therapist without solicitude. His attitude was one of interest, support and detachment. They discussed plans for discharge and outpatient treatment.

Comment:

Subsidence of the changes in brain function resulting from convulsive therapy permitted a new integration of the doctor-patient relationship. The pattern of a conventional psychotherapeutic situation appeared, which differed both from the original negative and the artificially induced positive relationships.

Therapist's notes as an index of relatedness:

Following the conclusion of the study, another index of the psychotherapeutic relationship was investigated. Rioch has described the use of the volume of staff progress notes as an index of staff-patient interaction (10). The therapist had kept his notes in a standard stenographic notebook throughout the treatment. A gross count of the number of pages of notes per session was made, and is represented graphically on the chart. No written notes were taken during occasional tape-recorded sessions, and these are omitted from the chart. The change in the relationship is apparent from the abrupt and persistent increase in note taking from the 44th day. This coincided with the first gross change in the electroencephalogram. The notes taken by the two other psychiatrists in the supervisory meetings followed a similar pattern (not illustrated), although with peaks of note-taking at the onset and again at the waning of induced neurophysiologic change.

DISCUSSION:

This report describes an investigation of psychotherapy when somatic therapy is introduced as an adjunctive procedure. One difficulty in the objective study of psychotherapeutic transactions is the absence of a quantifiable and controllable variable. Adjunctive therapies, somatic and pharmacological, provide such a variable. They produce alteration in behavior as well as measurable neurophysiologic changes (3, 4). This opportunity has been utilized in the present project. For example, one mode of adaptation to altered brain function is a euphoric type of relatedness (5). The occurrence of the phenomenon in this case permitted us to observe how induced alternation of positive and negative attitudes call forth similar attitudes in therapist and supervisor. Another illustration was the discounting of the earliest clinical change during the 34th to 42nd day of treatment. The electroencephalogram indicated the significance of this beginning change in the relationship. The fact that it was minimized demonstrates the obscuring effects of staff expectancies. Finally, the alteration of brain function was accompanied by a change in complaint pattern, i.e., from physical symptoms to memory difficulty. This resulted in a new form of the dependency relationship (43rd to 63rd day) which was experienced differently by the supervisory staff, with resultant change in their feelings about the patient. This effect was also

observed in the patient's family group.

The observations also illustrate a phenomenon peculiar to supervision in group settings. We have called attention to the emotional atmosphere of the group, which seemed to fluctuate in accordance with the therapeutic relationship being described. Hora (7) suggests that the supervisee may communicate the affective aspects of his experience with the patient non-verbally in the supervisory meeting. His formulation is that "The supervisee unconsciously identifies with the patient and involuntarily behaves in such a manner as to elicit in the supervisor those very emotions which he himself experiences while working with the patient, but was unable to convey verbally." He also describes the diffusion of this affect in the other participants of a supervisory seminar. Thus he reports that "This observation has been subjected to repeated tests in seminars where it was possible to verify the supervisor's emotional perceptions by matching them with the emotional reactions of the other participants present." Our work supports such observations and suggests the potential fruitfulness of studies of group dynamics in supervisory seminars.

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temporary feeling that the therapeutic relationship had no history. Rapport in intensive psychotherapy depends to a great extent upon an accumulated body of shared information. Both doctor and patient take this for granted, and the inability to rely upon it may affect rapport adversely.

Other patients in the study, not discussed in this paper, showed different patterns of response. These included transient paranoid episodes, hyperactivity, erotic, exhibitionistic and other forms of "acting-out" which were disruptive to the concurrent psychotherapy. In each case the induced behavioral change was related to the personality of the individual patient and occurred at the time of changing brain function (3). Also in each case there were concomitant changes in behavior in the supervisory group.

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that the improvement could be perpetuated by interpersonal means alone. To some extent this phenomenon was an expression of differing conceptual and linguistic systems inherent in the two modes of therapy. It is related to the philosophical dichotomy described by Hellingshead and Redlich (6) between practitioners using somatic and analytically-oriented therapies.

SUMMARY:

A study of concurrent somatic and psychotherapies is reported, in which simultaneous observations of serial changes in brain function, the psychotherapeutic relationship and social adaptation were made. The observations in a group supervisory seminar reflected the pattern of neuro-physiologic alteration.

It is concluded that the introduction of a measurable physiologic variable is a useful method for investigation of interpersonal relationships.

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