

## THE PATIENT'S LANGUAGE

### AN INVESTIGATION INTO THE USE OF MEDICAL TERMS\*

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Any physician who listens to the stories of patients and explains the nature of their illness to them becomes aware of frequent misunderstandings between patient and physician. In bedside teaching, on the presentation of patients to students, and on ward rounds one is often struck by the anxiety and confusion of patients which follow a partial or complete misunderstanding of the physician's words on such occasions. At times serious maladjustment of the patient has resulted from such inadequate communication.

These are experiences every physician has had and yet no adequate clinical or experimental study of this field has been done with the exception of a paper by Romano<sup>25</sup> in which he analysed the results which teaching rounds in the Peter Bent Brigham Hospital had on the patient. Among other items in this study, Romano investigated the patients' knowledge of medical terms and their emotional reaction to some of them. No detailed report on these data, however, is given in the publication. Interest in the rôle of signs and language, as one of the most important stimuli in the human environment, is increasing. Philosophers (Tarski,<sup>28</sup> Carnap,<sup>4, 5</sup> Peirce,<sup>24</sup> Meads<sup>21</sup>), linguists (Bloomfield,<sup>1</sup> Richards and Ogden,<sup>23</sup> Walpole,<sup>29</sup> Hayakawa<sup>12</sup>), anthropologists (Malinowski<sup>19</sup>), and the school of semanticists (Korzybski,<sup>15, 16</sup> Lee,<sup>18</sup> Campbell<sup>9</sup>) have outlined the many practical and theoretical aspects of the problem in a general way. Korzybski<sup>16</sup> pointed to some very important practical aspects and Crookshank<sup>7</sup> wrote a treatise on the epistemological problem of names, concepts, and things in the medical arts. No one has contributed more to the knowledge of the function of symbols than Freud<sup>11</sup> in his analysis of forgetting, slips, dreams, and psychogenic disorders. Interesting work was done by Kretschmer<sup>17</sup> and Storch.<sup>27</sup>

Recent and important contributions have been made by C. W. Morris.<sup>22</sup> This author in agreement with Carnap<sup>4, 5</sup> postulates three dimensions of semiotics: The relations of signs to other signs, or

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syntactics; the relation of signs to objects, or semantics; and the relation of signs to its interpreters, or pragmatics. Naturally these dimensions are intimately interconnected, as Morris points out repeatedly.

No systematic empirical investigation of the subject of the meaning of medical terms to patients has been made. The purpose of the present investigation was to study responses of patients to medical terms. In terms of semiotics this study deals with the following problems: How do patients respond to medical terms; what are their verbal habits if asked to define such signs? What do definitions, i.e., substitutions of signs by other signs which are presumably better "understood," teach us about such interpretations? Can any statement about such "understanding" be made? Can any conclusions as to the patient-physician relationship be drawn from this material?

#### *Method*

The following report is based on the data obtained from 25 patients to whom 60 medical terms were presented and who were asked to define these terms. The patients were chosen in a neuropsychiatric hospital practice by random sample. Every fourth case was used for this study, excluding patients with sweeping personality changes, marked deterioration, feeble-mindedness, and aphasia. All patients were literate; none of them had more than a high school education; all came from an urban environment and were born in the United States.

A survey of the patient's diagnosis, sex, age, education, occupation, intelligence quotient (obtained by the Wechsler Bellevue Test—Verbal Scale—for adults), emotional status, and a test score for medical vocabulary is made in Table 1.

An attempt to score the patients' definitions was made in the following manner: The patients' definitions of all words which can be objectively (operationally) defined were compared with definitions given by physicians. The scoring was done by two physicians; in cases of doubt and contradiction comparisons were made with definitions as they are given in the American Medical Dictionary. To achieve a crude quantitative analysis, such terms were scored in the following manner: The score plus (+) was given when the definition was identical with a reasonably full definition as given by an expert. The score plus-minus ( $\pm$ ) was given when the statements were true though incomplete as judged by an expert. The score minus (-) was given when statements were either very incomplete or false. The score (0) designated the lack of any response, or acknowledgment of ignorance of the sign. Such comparisons between statements of experts and the statements of patients and subsequent rating will necessarily be inadequate and arbitrary; nevertheless

TABLE 1

Patient	Sex	Age	Diagnosis	Anxiety in regard to illness	Education	Occupation	I. Q.	Score on medical terms
A.	M.	36	Neurodermatitis	Anxious	8th Grade	Draftsman	123	63
B.	F.	18	Post encephalitic state	Anxious	High school graduate		109	19
C.	M.	16	Post traumatic convulsions	Not anxious	3 yrs. of high school	Laborer	106	10
D.	M.	59	Post traumatic syndrome	Anxious	High school graduate	Clerk	110	70
E.	M.	29	Myelitis	Anxious	High school graduate	Engineer	127	35
F.	F.	28	Multiple sclerosis	Anxious	3 yrs. of high school	Housewife	98	28
G.	M.	23	Ulcerative colitis, anxiety state, hypochondriasis	Very anxious	High school graduate	Clerk	134	44
H.	F.	18	Hysterical reaction		High school graduate	Laborer	118	31
I.	M.	23	Syncope	Anxious	High school graduate	Clerk	110	32
J.	F.	50	Psychopathic personality. Anxiety state, hypochondriasis		8th grade	Housewife	117	44
K.	M.	35	Chronic alcoholism	Anxious	High school graduate	Foreman	125	37
L.	M.	42	Meniere's syndrome	Anxious	High school graduate	Clerk	118	29
M.	F.	28	Brain tumor	Not anxious	High school graduate	Housewife	122	47
N.	F.	32	Luetic meningitis	Anxious	8th grade	Maid	80	18
O.	M.	20	? Brain tumor	Not anxious	8th grade	Laborer	108	27
P.	M.	16	Myelitis	Not anxious	3rd yr. high	Student	128	27
Q.	M.	18	Paralysis axillary nerve	Anxious	High school graduate	Student	128	36
R.	M.	23	Friedreich's ataxia. Osteomyelitis	Anxious	High school graduate	Waiter	132	46
S.	F.	49	Lues, myelitis	Not anxious	6th grade	Housewife	80	21
T.	F.	18	Birth injury, convulsive seizures	Anxious	8th grade	Laborer	80	15
U.	F.	22	Chronic alcoholism	Anxious	8th grade	Dancer	86	26
V.	F.	27	Diphth. polyneuritis	Not anxious	2 yrs. high school	Housewife	100	30
W.	F.	19	Cerebellar degenerative disease	Not anxious	High school graduate	None	100	16
X.	M.	32	Hysteria	Very anxious; hypochondriacal	High school graduate	Clerk	106	23
Y.	F.	31	Brain tumor	Not anxious	8th grade	Housewife	99	29

they will determine roughly what the patient knows and what he does not know.

The following words were used in the test in the given order: infection, spinal fluid, prognosis, spine, nerve, deterioration, feeble-minded, convulsion, schizophrenia, dementia praecox, tuberculosis, moron, pathology, syphilis, lesion, tumor, gonorrhoea, lues, I. Q., hysteria, G. C., Ca., neurosis, Wassermann, metastasis, cancer, paralysis, psychoanalysis, functional, organic, psychogenic, hypnosis, diagnosis, psychopathic, physiotherapy, psychotherapy, nervous disease, mental disease, neurologist, psychiatrist, psychologist.

The choice was determined by the following criteria. Words were chosen which occur frequently in the discourse between physicians and neuro-psychiatric patients, or in discourses between physicians at the bedside. The terms used can be divided into four groups: 1. Terms which are used by physicians and patients: infection, stroke, nerve, spine, degeneration, feeble-minded, convulsion, schizophrenia, moron, tuberculosis, syphilis, tumor, gonorrhoea, I. Q., hysteria, neurosis, neurotic, cancer, psychoanalysis, mind, soul, hypnosis, diagnosis, mental disease, nervous disease, psychiatrists, neurologist, psychologist. 2. Terms which are highly technical, very rarely used by patients: prognosis, deterioration, pathology, lues, lesion, metastases, psychogenic, psychotherapy, physiotherapy. 3. Medical jargon terms used only by physicians and medical personnel: lesion, G. C., Ca., Wassermann, functional, organic. 4. Terms used mostly by patients: shock, spell, nervous breakdown, nervous, nerve specialist. Some of these terms have a rather strict referential and operational meaning; others have a very vague referential meaning but elicit emotional responses.

The patient was asked to define these words in a simple manner. He was encouraged to speak freely without regard to elegance of form, but rather to express whatever occurred to him when he heard such a word. Patients were told that they were expected not to know a number of these words because they were technical terms, mostly known only to physicians and medical students. In all cases good cooperation was assured; whenever it was necessary the patient was encouraged and praised for his achievements. The atmosphere of an examination was avoided as much as possible and all patients were told that this was not an intelligence test, but just served the purpose of seeing whether patients understand certain medical terms. The patients were all well known to the examiner at the time of this examination and no particular resistance or anxiety about the whole test was encountered. All patients were tested privately in the form of a casual interview; the responses of the patient were recorded verbatim.

Semiotics employs certain terms which will be used in the following sections: Such basic terms occurring in the process of semiosis are: 1. The sign vehicle or word (in the case of language) or mediator of a sign; in this paper referred to as sign, term, or word. 2. The designatum or what is

taken account of (if the designatum refers to an actual existant semiotics speaks of a denotatum). 3. The interpreter and its response or the interpretation; such responses are complexes of cognitive, emotive, and conative behavior and experiences.

### *Observations*

In the following paragraphs the most typical and interesting definitions of the terms of this study are quoted. It is impossible to quote all definitions as this would make the study too bulky. On the other hand, hardly any attempt at quantitative appraisal has been made as only 25 patients were studied.

*Infection:* The sign is known to physician and patients. Denotations are rare (10 per cent), but approximate definitions were given by 86 per cent. It is a sign which is apt to lead to some confusion and possibly to anxiety. It expressed (a) sepsis, (b) destruction of tissue, to most patients. Recurrent definitions are: (patient L) "If you scratch or cut yourself"; (patient C) "something that got into the blood stream from the skin"; (patient J) "something that has gotten into the blood stream which causes poisoning of the body"; (patient A) "it's poison, blood poisoning, skin wounds cause it."

*Lesion:* This is a sign exclusively used by physicians; only one-fourth of the patients defined it. To this group it indicated a wound, (patient D) "is something like an incision"; (patient H) "may be a cut"; (patient G) "like a sore."

*Tuberculosis:* The sign is used by physicians and patients; all patients had heard it before, but only about one-fourth gave a correct definition. The predominant interpretation was that tuberculosis is a disease of the lungs. Only a few patients considered a tuberculous infection of other organs as well. The interpretation that the disease is chronic, dangerous, hard to cure, was frequent. (Patient D) ". . . takes persons' strength, makes them weak, they lose general health"; (patient H) "a rundown condition of the body, which causes cough, makes persons tired"; (patient L) "eats lungs away, hard to cure"; (patient U) "it's a disease of chest and throat with spitting"; (patient Y) "patients get all run down."

*Syphilis:* The sign is used by physicians and patients. Only one-tenth of the patients had never heard of it. In four-fifths of all patients, it referred to a disease of the sex organs; often a reference to other organs was made and the mode of acquisition through intercourse was expressed. Strong emotional responses referring to the "evil, sinful, malignant" character of the term were made. (Patient D) "that's a disease of the penis that affects the brain"; (patient E) "is a social disease, usually from intercourse or from a cut lip"; (patient F) "that's a disease in the lower part of your body"; (patient H) "is a disease caused by unlawful relations"; (patient L) "might spread over your body"; (patient O) "a venereal disease you get it from women";

(patient Q) "is a disease that eats away flesh, caused through intercourse"; (patient S) "is some kind of disease, a bad disorder. I used to go out and see such a woman; it is incurable"; (patient V) "a disease of the body; a blood disease, a bad disease."

*Lues*: In contrast to the sign syphilis, the sign lues is virtually unknown to patients. Only two patients knew of its reference to syphilis.

*Gonorrhea*: The sign is used by patients and physicians. Twenty per cent of the patients had never heard of it. In definitions the cause of the disease and certain properties were described. (Patient D) "that's an affliction that comes from sexual intercourse and affects the system"; (patient G) "a venereal disease that cripples, that gets into the bones"; (patient K) "a venereal disease, a local infection"; (patient N) "a sore that runs in your arms and legs." References were made to some similarities with syphilis but it seems the term does not have the same "bad" connotation as syphilis. (Patient H) "that's a twin disease to syphilis"; (patient J) "the early state of syphilis; a condition that is recognized in the eyes."

*G. C.*: This technical abbreviation is unknown to patients.

*Wassermann Reaction* or "*Wassermann*": The sign is a technical designation which has become widely known. Half of the patients gave correct definitions; about one-third never heard of the sign. It was defined as a blood test for venereal disease; (patient E) "for people who get married to determine syphilis through a blood test"; (patient U) "is what they take the blood to see how good your blood is; to see whether you are positive or negative for syphilis and gonorrhea."

*Spine*: The sign has a clear designation and is used by patients and physicians. About half of the patients defined it correctly and only about one-tenth had misleading notions. A number of patients defined the term by substituting "backbone," "vertebrae." Most definitions were "regional" explanations. Some patients referred only to the lumbar and sacral spine. (Patient C) "at the bottom of my back; the center of all bones"; (patient U) "is a bone, way down in your back." The stress on the "central position" of the spine and its connecting rôle is interesting. All notions about connections of spine and the central nervous system are quite hazy. (Patient L) "the bone that runs up the center of your back and your head and legs are connected"; (patient H) "it's a collection of nerves at the center of your back"; (patient J) "is the continuation of the brain, the central nervous system."

*Spinal Fluid*: This sign is seldom used by patients. When physicians use it in their discourse with patients, the patients connect meanings to it which are greatly determined by the concepts referred to by the terms "spinal" and "fluid." Even a patient who never heard it before will say (patient F) "it's liquid in the spine." Beyond that they elaborate with some statements pertaining to experiences (lumbar puncture) and to fantasies which, for some

reason, are frequent and elaborate in regard to the term. The importance of the spinal fluid is frequently stressed. (Patient G) "it's the fluid they tap sometimes to make tests"; (patient K) "it's the fluid that runs in the cord that ties vertebrae together; a deficiency of this fluid was Lou Gehrig's trouble"; (patient L) "fluid which exists at the base of the spine, a very important fluid for your body that can be taken for test"; (patient O) "that's the fluid drawn from your spine, they test it for bugs"; (patient P) "that's the fluid that is in your spine, so they won't rub together and don't creak"; (patient U) "that's what they draw from the back and the brain; it's very important and you can have 26 diseases from it." The most fantastic definition implied that the spinal fluid is an excretion of evil things in the mind. (Patient H) "pus that comes out of the spine; these are bad things in our mind; they go to the intestines and kidneys."

*Nerve:* This term is one of the most interesting ones. It is used by physicians and patients very frequently in their discourse on neuropsychiatric disease and is the root word for a number of other words as nervous, nervous disease, nervous breakdown, etc. Wide discrepancies in its usage by physicians and patients result in considerable confusion and possibly consequent maladjustment. Not a single patient gave a complete or essential definition, while three-fourths of the patients stressed one or the other properties. To all patients the sign expressed something. The majority of the patients tried to describe (a) the appearance and location; (b) functions. As no patient had any concrete experience with the anatomy and physiology of nerves, most statements were based on hearsay, vague general assumptions with little cognitive and many emotional interpretations. Descriptions of nerves referred to threads, wires, which run all over the body. (Patient A) "a tiny thread all over your body"; (patient E) "it goes to the spine, I never saw it, like a little vein"; (patient H) "a delicate tissue in the brain, the brain is the central nerve, the nerves are all at the back of the brain"; (patient K) "it's the entire wiring of the nervous system"; (patient Q) "a telephone line from body to brain"; (patient V) "parts of your body; the main nerve in the back, the pulse nerve." It is noteworthy that the sensory function of nerves is much stressed, while the motor rôle is hardly mentioned. The description of functions pertains to feelings, vague notions on coordination, "life," "nervousness." (Patient B) "something you have all over, I think it's microscopic, they give you feelings or if they go dead, if they are upset it makes you bad"; (patient D) "nerves is something in the system; if they get irritated you can't find peace and you worry"; (patient F) "feels like strings and gives sharp sensation all over the body"; (patient I) "stands all over the body for feeling, tasting, smelling, is very sensitive; the main line runs to the brain"; (patient J) "it's the background of the whole body"; (patient M) "a tendon that carries currents to the brain"; (patient N) "a nerve would be what shakes; you have nervous headaches, a nervous stomach"; (patient S)

"they keep you alive"; (patient R) "they are controlled by our mind"; (patient U) "you have to have them, they keep you excited"; (patient W) "something inside you, it makes you nervous."

*Stroke:* This sign is chiefly used by patients and by physicians only in their discourse with patients. No scoring was attempted. In definitions suddenness, loss of power, are mentioned. (Patient A) "same as shock"; (patient Q) "an attack of disease"; (patient J) "apoplexy." Descriptions chiefly refer to loss of power, paralysis, and "nervousness." (Patient D) "makes individual powerless, helpless"; (patient K) "is getting paralyzed"; (patients B, C) "all of a sudden you get nervous." Causes as mentioned in a number of definitions, high blood pressure, heart disease, trauma; (patient F) "a sunstroke"; (patient F) "when the blood pressure gets high, it breaks arteries in the head"; (patient I) "caused by over-exertion"; (patient L) "a severe fright." In many respects patients use the term interchangeably with the term shock.

*Shock:* The sign "shock" without any further specification is frequently used by patients while physicians usually specify what type of shock (surgical, spinal, etc.) they wish to designate. This alone is apt to lead to confusion in the physician-patient discourse. As "shock" without any further specification is not a definable term, no scoring has been attempted. The definitions dealt with (a) suddenness of onset, (b) the process, its results and various explanations. Suddenness and unawareness were stressed: (patient A) "strikes you all of a sudden"; (patient B) "something you get when you are unaware"; (patient S) "comes on quick"; (patient W) "something that happens to a person very unexpected." As to the process, it was stated: (patient A) "affects muscles and nerves"; (patient B) "rush of blood to the head"; (patient E) "leaves you paralyzed, makes you unconscious"; (patient I) "usually thinking power lapses"; (patient S) "leaves you crippled"; (patient T) "the nerves go to pieces, you could die from the shock I had"; (patient V) "that happens to older people"; (patient M) "they can't talk, walk." Similarity with electric shock and even the causal rôle of electricity is stressed; it can be seen repeatedly that a concept which is well known will be associated with another concept which is fairly well known, like electric shock. (Patient L) "is what you get by touching electricity." Fright is stressed by a smaller group while the majority stresses injury to the brain; (patient G) "some kind of thrombosis"; (patient D) "rush blood to the head." It seems the term gives rise to considerable anxiety, an interpretation which is based on the catastrophic character and the seriousness of its consequences. Actually all patients referred to shock of the nervous system, stressing the dangerous implications.

*Spell:* The sign is almost exclusively used by patients and not by physicians. No scoring was done. Definitions by patients referred to a considerable variety of designations. A large group defined by substituting for spell



the words sickness, shock, fit, coma, convulsion, and they elaborated accordingly. The most frequent amplification was to designate fainting; (patient A) "you mean a fainting spell"; (patient N) "a spell of dizziness, weakness"; (patient E) "sometimes you just collapse, lose power to control limbs." In describing the properties of the concept, the suddenness of its onset and its repetitive character are stressed; (patient J) "it works in circles, the spell is renewed." There are references to hypochondriasis, nervousness, mental disease, as the cause of "spells." (Patient G) "hypochondriacs get it"; (patient K) "can be a recurrence of any chronic ailment, often mental"; (patient R) "fits or spells are brought on by head or nerves"; (patient T) "if you are all nervous and shake all over"; (patient U) "is something they get over their head, their mind"; (patient V) "could be . . . a loss of memory."

*Fit*: The sign is primarily used by patients, though some medical authors, e.g., Stanley Cobb,<sup>6</sup> use it. No scoring has been attempted. The sign proves to be well known, though many patients, particularly those suffering from convulsive disorders, show a disinclination to use it themselves. The term is often defined by substituting another word; (patient A) "a convulsion"; (patient F) "something like hysteric"; (patient S) "like a spasm"; (patient T) "like a spell"; (patient M) "like an epileptic fit." A comparatively small number described symptoms; (patient B) "you turn over and shake all around, some fight, some take it, turn color"; (patient C) "lost control of the limbs"; (patient I) "confined to frothing of the mouth, twitching, convulsions." The popular correlation between "fit" and "insanity" is exemplified by (patient H) "when you go insane"; (patient U) "it's caused by a temper"; (patient V) "people lose sense, balance"; (patient W) "go out of your head." The hereditary point of view is stressed; "fits are hereditary." This term seems to induce considerable anxiety which is chiefly expressed by the implications of danger to mental health.

*Convulsion*: The sign primarily is used in technical discourse, but is well known to about two-thirds of all patients. A number of patients will define by substituting the sign with "fit" or "spell." The other definitions refer to properties in a descriptive way; (patient B) "that's when you turn color, foam comes, you are out of the picture"; (patient D) "that's something that comes on very sudden and affects the person with loss of power"; (patient E) "like a person may take a fit, shake all over"; (patient I) "twitching of muscles all involuntarily." No references were made as to the occurrence of fits, causes, and consequences.

*Paralysis*: The sign is used by physicians and patients. All patients had heard of the sign. The most important reference is to "immobility"; (patient B) "it makes you stiff so you can't move"; (patient E) "loss of limb or speech"; (patient G) "when the nerves of the body go dead"; (patient R) "when one has no control over extremities"; (patient W) "is when you are rigid"; (patient Y) "when the nerves become dead." Shock,

stroke, infantile paralysis are mentioned as causes. (Patient A) "like a shock"; (patient L) "a stroke you get"; (patient U) "is infantile paralysis; could be in a part of the body; caused by a cold or shock; a fall paralyzes you."

*Tumor*: The sign is frequently used in the discourse of physicians and patients. It was known to all patients and more than four-fifths used it as a designation for growth. There were frequent references to its malignancy. (Patient A) "a growth, bad, needs removing"; (patient E) "some growth anywhere in the blood or brain; it's bad"; (patient G) "a growth like internal carbuncle"; (patient I) "a growth of breast or brain, it's infectious"; (patient U) "is a growth that's inside your head; it eats up everything; it's similar to a cancer." A frequent reference in regard to the etiology; (patient X) "a bump; something that is caused by a blow." References to the necessity of removal are found; (patient N) "you got to have an operation; you can have it anywhere"; (patient R) "is a growth in the flesh or bone; can be dangerous if not taken care of."

*Cancer*: The sign is used by physicians and patients. All patients were acquainted with the term as a designation for a malignant growth; (patient E) "is a malignant growth, no cure"; (patient O) "that's another growth eating your flesh away"; (patient V) "a growth that spreads, can be very dangerous"; (patient W) "is a growth, very bad; is a disease caused by growth, keeps growing and growing and you have to have it trimmed." References to physiological processes are made; (patient G) "is when the cells go haywire; don't conform to their proper place; branch out cells and go crazy"; (patient J) "is a destruction of body cells in the last stage; in the first state it's a production of cells from irritation." Patients often stress incurability. (Patient S) "it can't be cured; they say they can't find the head of the cancer." There is comparatively much information about the term, probably due to the extensive popular education on the cancer problem.

*Ca.*: This technical abbreviation is unknown to patients.

*Metastasis*: This technical sign is entirely unknown to patients.

*Degeneration*: The sign is used by physicians with various denotations. To patients it does not express the structural degenerations but refers chiefly to "evil, disgraceful, undesirable." (Patient A) "a person that's not up to par"; (patient D) "something that's evil or bad habit"; (patient L) "that's mental; getting to be evil, foul, degenerate"; (patient R) "when a part weakens; a degenerate is a person with a weak mind"; (patient I) "the falling down of a person's mind; can't converse with own age; sexual craving which is not normal"; (patient U) "a degenerate is a person that masturbates; I think so, it runs people down, is bad for the mind; look out for these fags." Reference to undesirable hereditary trends is made in several definitions; (patient F) "that's something from family to family"; (patient B) "you get it from the next generation."

*Deterioration*: The sign is used by physicians only. Patients, in their

use of it, do not refer in any way to processes in the central nervous system or psychological deficit. Half of the patients refer to deterioration of organs in general. (It often has been necessary to have the patient define "deterioration" in a specific context as "this patient is deteriorated.") (Patient L) "of the body? that's rotting"; (patient Y) "of the body? sort of decay"; (patient A) "a dying of something, a weakening."

*Prognosis*: The sign "prognosis" is a technical term, used by physicians and seldom used by patients. Only one patient defined it correctly. Almost four-fifths of all patients never had heard of the sign. It was confused with diagnosis by two patients. One patient (G) defined prognosis, "Prognosis negative—no hope." Another patient (R) said "everything is going to be all right." (The first case had a rather gloomy outlook on life, while case (R), though seriously sick, was suggestible and optimistic.)

*Diagnosis*: The sign is used by patients and physicians; more than four-fifths of the patients were familiar with some of its designations. (Patient A) "an opinion of the physician"; (patient F) "to look into you, to find out what's wrong"; (patient L) "a doctor's term for the ailment"; (patient R) "the findings in one case"; (patient U) "the conclusions the doctors come to"; (patient Y) "study of a case."

*Pathology*: The sign and its derivatives are practically unknown to patients. To nine-tenths it has no factual meaning. The ending syllable indicated a reference to a science in a number of patients.

*Organic*: This sign is another medical jargon expression and means little to patients. Most patients referred to a "disease of organs"; (patient K) "pertains to the organs; organic infection of heart or muscle"; (patient H) "trouble below in the organs of your stomach"; (patient W) "something wrong inside your organs"; (patient L) "one of the organs is not functioning proper." Reference to irreversible structural change is made. (Patient A) "would you say it is a disease of the organs that is not curable?"

*Functional*: The sign is used exclusively by physicians in medical jargon. To patients it has no particular reference to medicine. Even when the patient was asked to define the term in a specified medical context, e.g., "This patient's illness is functional," no adequate explanations were given. (Patient D) "parts of the body that operate in a normal manner"; (patient A) "something that occurs normally"; (patient G) "the workings of an organ"; (patient U) "when your mind works."

*Psychogenic*: The sign is used by physicians in technical discourse and is not understood by patients. Almost nine-tenths of the patients never heard of the word. (Patient E) "psycho—I know what that is; study of the mind"; (patient J) "psycho means mind, genic, I don't know"; (patient M) "I should think a person who knows about the genital organs."

*I. Q.*: Originally an abbreviation for a highly technical sign, "I. Q." has become widely used and only one-fifth of the patients did not know the term.

Most patients referred to it as an intelligence test, particularly as an expression of the degree of intelligence. (Patient A) "I. Q. test is a mental test"; (patient H) "intelligence quota means how smart you are, how much brain you have"; (patient L) "that's the amount of intelligence"; (patient O) "intelligence quota, that's your mind." One peculiar definition was (patient D) "as far as I know it's a sort of inquisitiveness."

*Mind*: The sign is frequently used in discourse of physicians and patients. References are made to (a), "the organ of the mind, the brain"; (b) "to the functions of the brain, particularly the ability to think"; (c) "to ethico-social functions." As for (a), (patient A) defined it as "the brain"; (patient R) "the mind is an organ; the brain is the organ of control"; (patient W) "everything in your head"; (patient X) "is part of your body; located in the head; it's really the brain"; (patient Y) "has to do with the brain." Regarding (b), (patient C) stated "what we use to think"; (patient D) "it's the functions of the brain, makes persons concentrate"; (patient H) "thoughts"; (patient I) "thinking power of human being"; (patient J) "is the part of man which thinks, feels and loves." With respect to (c), (patient K) said, "I would say the captain of the entire body; what we should do and what we shouldn't do; when to raise our arm; when to stop to smoke"; (patient U) "is what rules your body; without your mind you are good to nobody; even not to yourself."

*Soul*: The sign is rarely used by physicians, but often enough patients will use it referring to various aspects of behavior and experience. In contrast to the word mind, the esthetic, ethical, and religious designations are in the foreground. All responses are rather vague. (Patient D) "it's spiritual, the soul is the conscience"; (patient F) "the mind is up there"; (patient points to the head) "the soul is in your heart"; (patient H) "the soul is the beautiful thoughts of your mind"; (patient I) "is the invisible part of the body controlled by God"; (patient J) "is the highest development of the mind. Don't know how to describe it; must be the whole make up"; (patient K) "something spiritual—a good mind creates our soul; it is revealed in our everyday life; criminals are without a soul"; (patient L) "soul is an imaginary substance"; (patient N) "it's inside, all over"; (patient O) "supposed to be here" (patient taps head); (patient P) "that's your heart"; (patient R) "that's the part that leaves you after death"; (patient S) "in our religion we have a soul that goes to heaven"; (patient T) "if you sinned that's where the mark goes; it's on the right side of the chest"; (patient U) "is something you cannot see; it's immortal"; (patient W) "it's in your body; some place in your head."

*Personality*: The sign is frequently used in the discourse of patient and physician; its designations are vague. It seems to refer to acts, habits; (patient C) "a way a person acts"; (patient R) "his habits, thoughts"; (patient S) "is your ways"; (patient X) "that's how a person conducts him-

self." Definitions pertaining to the "make up" resemble the former; (patient I) "is the make up of a number of things; conscientiousness, honesty, thoughtfulness"; (patient N) "would be disposition good or bad." There were a few references pertaining to individuality; (patient A) "something that pertains to your individual self"; (patient P) "the person himself."

*Feeble-minded:* The sign is used by physicians and patients in technical and everyday language. Not a single patient had a really satisfactory definition but more than half of the patients stressed some of the properties. To most patients it expressed lack of intellect; (patient A) "lacking normal intellect"; (patient B) "the mind is feeble"; (patient I) "he does not have strength of the mind, you are simple"; (patient T) "slow in mind." References to mental illness are frequent; (patient E) "a person who has not strong senses and is a mental case"; (patient H) "queer, funny"; (patient J) "one that is not normal"; (patient N) "is somebody who gets more childish"; (patient S) "is half insane."

*Moron:* The sign is used by physicians as a fairly precise designation; seldom used by laymen in such a way, but one-third referred to at least some characteristics of the term; particularly denoting lack of intelligence. (Patient A) "means lack of intelligence"; (patient G) "just above an idiot like immature intelligence"; (patient H) "a person below normal"; (patient I) "idiots, capable of knowing nothing except distinction of various objects"; (patient K) "a person who has no development in one or more fields." In some definitions lack of cooperation, undesirable character traits, and even psychotic features are stressed. (Patient J) "one who does not want to cooperate"; (patient L) "that's a person who does not believe in God, plays tricks on everybody"; (patient S) "is bad; to be a moron is rude"; (patient W) "some who keep to themselves." An error on the basis of similarity of sounds is the statement (patient O) "a certain religion."

*Schizophrenia:* The sign is used in scientific discourse but very seldom used by patients. No correct definition was given; 84 per cent of the patients had never heard of it. One patient substituted dementia praecox, insanity, abnormal. (Patient H) "could be insanity"; (patient G) "split personality, two people in one body"; (patient I) "I believe it is a disease of mind which makes persons sexually depraved."

*Psychopathic:* The sign is used by physicians, rarely by patients. To most patients it expresses psychosis, feeble-mindedness. To some "psychopathic" refers to a mental hospital. (Patient E) "they say when persons are mentally ill or insane"; (patient I) "usually a mental case as D. T.'s"; (patient K) "a psychopathic person is one who is mentally upset"; (patient W) "is crazy, plain, ordinary crazy"; (patient R) "deals with mental disease; psychopathic hospital is a mental institution."

*Hysteria:* The sign is used by physicians and patients; by the latter group it is often referred to as "hysterics." All patients responded to the sign, though

not a single patient gave a fairly complete or essential account of the term. It is defined by description of certain properties, "nervousness," emotional lability, hypochondriacal trends, psychomotor agitation, convulsive phenomena, anxiety. (Patient K) "a nervous trouble; you like to cry; not controlling oneself"; (patient B) "that's when a person is laughing and crying"; (patient C) "a nervous person who makes a lot of noise and runs around"; (patient D) "gets frightened, gets all upset"; (patient E) "when panic is created, or a guy yells in a fire, all women become crazy, frantic"; (patient U) "something to do with the nerves; a mild form of a fit"; (patient L) "is a severe fright, caused by propaganda, lies"; (patient H) "is an epileptic fit, they scream and fight and yell"; (patient U) "hysterical means going out of your mind for a few moments, everything gets upset"; (patient V) "to have a lot more sickness, laughing and crying; break down." Several references are made to the occurrence of hysteria in women. (Patient G) "usually found in females"; (patient I) "is caused by catastrophe within household; causing women to lose mentality; they are laughing and crying; bombings cause hysteria." Other references are made to the etiology; catastrophe, "nervous conditions," "emotional conditions" playing a rôle. (Patient R) "it's a nervous condition brought on by the mind."

*Neurosis*: The sign is used widely by physicians, less so by patients. One-fourth of the cases never heard of the term and only one-fourth referred to some significant features. Some of the definitions referred to it as a "disease of the nerves"; (patient A) "a breaking down of the nerves"; (patient K) "is a nerve disease; it might reveal itself often physically"; (patient H) "it is neurotic pain, neuralgia." In other definitions this is not clear, because patients refer to the pragmatically hazy concept of "nerves." (Patient R) "something to do with the nerves"; (patient D) "is something to do with the nerves, a nervous condition." Other definitions stress psychological aspects—(patient G) "is a mental state; anxiety neurosis; you have to do certain things, a compulsion state of mind that pins down actions"; (patient H) "means you are extremely nervous"; (patient I) "is a form of illness confined to the mind; it may be in existence, but the mind helps it along."

*Neurotic*: The sign is used in a very similar fashion as "neurosis," designating being nervous, high-strung, worried, irritable; describing (patient X) "a person who dwells on one thing; always something wrong," or (patient V) "people who complain of illness and don't suffer; a brain disease," and of (patient I) "a person who thinks he is ill; hypochondriacal is the right term."

*Nervous Breakdown*: In contrast to "neurosis" this sign is frequently used by lay persons and is not used in technical discourse. To many patients it expressed an actual mechanical breakdown of nerve tissue. (Patient A) "a trouble with the nerves and a weakening of them"; (patient C) "a ner-

vous condition"; (patient D) "the nerves become all unstrung and you can't get any rest"; (patient G) "when a person's nerves no longer can perform their function"; (patient I) "it's a breakdown of morale and character of the individual"; (patient M) "nervous system becomes so tense that it snaps; the nerves, literally speaking, rather have a breakdown because you can be cured"; (patient N) "you just get sick; flop over; you have to get your nerves together"; (patient Q) "an emotional collapse, a strain, you lose your reasoning power"; (patient T) "you can't eat, you can't sleep"; (patient U) "when every nerve in your body is completely gone and you break down under the strain of your nerves"; (patient W) "just go completely to pieces"; (patient X) "breakdown of the nervous system, it collapses, they just go"; (patient Y) "breakdown of nerves of the body; the nervous system becomes dead." Causes for such a "catastrophe" are (patient E) "a person who is overworked and needs rest"; (patient R) "from overstudy or hard work"; (patient S) "if you go through too much, if you worry what happens to your nerves"; (patient L) "that comes from overtiredness; people who worry." The implication of danger is quite evident—(patient B) "you get nervous, you can die of it; sometimes it is bad enough you go out of the picture"; (patient H) "tissue of brain collapses; it's dangerous to the body"; (patient K) "generally there is a degree of breakdown; normal mentality ceases to function."

*Nervous*: This sign is used by patients more often than by physicians. To patients it expresses anxiety and tension in its many forms, particularly its muscular concomitants—(patient A) "quite jittery and fidgety"; (patient F) "kind of jumpy. I had plenty of that"; (patient G) "a state of anxiety, characterized by quick movements and apprehension"; (patient K) "described in hypertension, or unsteadiness, or lack of calmness, inability to relax"; (patient O) "people that are shaky, get frightened easily"; (patient R) "a man who can't sit still all the time." Frequently references to a disease of the "nerves" are made—(patient C) "the nerves are in a bad condition, they shake"; (patient E) "something with the nerves, they kick up and feel bad, irritable"; (patient H) "nervous, jerky or jumpy, your brain is tired; the nerves are extremely ill"; (patient J) "is a manifestation of an unstable condition of the mind of the nerves." References to causes are made; (patient L) "a disease caused by excessive drinking, become sleepless, jumpy"; (patient W) "when you just can't take it; everything bothers you"; (patient Y) "condition of the nerves of the body; different things can cause them to be nervous; overwork, worry, shocks."

*Nervous Disease*: The sign is frequently used in the discourse of physicians and patients. Of the patients, 60 per cent used the term in a different fashion than the conventional medical usage. The vague and inconsistent use of this sign has given rise to misunderstandings which are of considerable practical and theoretical interest. The sign refers to (a) so-called "organic

neurological" disease; (b) different manifestations of nervous-motor discharge, as tics, convulsions; (c) "nervousness" in the popular sense. Definitions of the first group are: (patient B) "could be different things; spells paralysis"; (patient M) "a disease in which nerves become paralyzed or infected." A definition of the second group is: (patient E) "like I got, they twist the neck, tics, twitches." Most definitions belong to the third group, "nervous disease" being "nervous," "disease of the nerves," and "nervous breakdown," as though these terms were synonymous (see nerve, nervous, and nervous breakdown). (Patient C) "disease of the nerves, you are just nervous"; (patient D) "something when a person can't content himself with different things. Mental disease has something to do with the brain, nervous disease with the nervous system"; (patient F) "the reactions of your nerves; a person gets nerved up"; (patient H) "epilepsy, neurosis; insanity is completely insane; neurosis is slightly insane"; (patient I) "concerns nerves; caused by worry, treated by quietness, relaxation"; (patient K) "goes back to neuroses or neurotic; it can reveal itself physically or mentally"; (patient J) "a condition a person brings on by himself, because of misunderstanding"; (patient L) "a disease caused by excessive drinking, become sleepless, jumpy"; (patient N) "you lose your nerves; get all excited"; (patient R) "when one's nerves are weakened or strained."

*Mental Disease:* The sign is used by patients and physicians. Its designations are not as vague and are much more consistent with medical usage than those of "nervous disease." Definitions refer to brain disease; (patient A) "a trouble of the brain"; (patient C) "disease of the brain"; (patient Q) "disease which impair functions of the brain." Others refer in a much vaguer fashion to "disorder of the mind" often as a result of brain disease; (patient D) "mental disease is when a person's mind becomes unbalanced; I believe it's from the brain"; (patient E) "could be affliction of brain or mind"; (patient J) "when the mind is in a disordered condition"; (patient K) "can be a disease of the mind, more of the brain; reveals itself in numerous ways; dementia praecox is a mild one"; (patient P) "a disease of the mind; go crazy, not normal, kind of funny"; (patient Y) "persons whose mind is gone." Some of the definitions refer only to severe disturbances of behavior and certain unusual experiences; (patient I) "get in insane asylums; taken over by inheritance; the person has no control over himself"; (patient O) "could be insane; a kleptomaniac; lot of foolish things; some are violent; get insane from an accident; from drinking"; (patient R) "when one's mind is weak and affected by some disease; by nervousness or syphilis."

*Physiotherapy:* The sign is used at times by physicians in their discourse with patients; to more than two-thirds of the patients it is unknown. Two patients gave correct descriptions; (patient I) "use of diathermy, heat lamps, etc. for muscles and bones"; (patient L) "art of giving treatment by heat, massage." Other definitions were vague; (patient D) "that's something



for a physical condition"; (patient E) "is to teach people to use their hands and feet."

*Psychotherapy*: The sign is frequently used in the discourse between patients and physician, but only one-fourth of the patients defined at least some of its properties. Two-thirds of the patients said they never heard of the word. To one-fourth, it had the rather vague meaning of "treatment of the mind"—(patient E) "something mental to teach them"; (patient J) "is the treatment of the mind"; (patient M) "the massaging of the mind through practice, through reading and thinking"; (patient L) "try to eliminate things that bother a person; get their mind off it."

*Hypnosis*: The sign is very occasionally used in the discourse of patients and physicians. No full definitions were given; about one-third of the patients had erroneous concepts, though only ten per cent never heard of the word. Many patients stressed "the loss of control" of the hypnotized person; (patient A) "one person placing another under control"; (another patient) "you lose control over your mind"; (patient K) "a hypnotist can tell his object to do as he wishes"; (patient E) "one can hypnotize people when one person has a supermind; they use it lately in psychoanalysis." The result of hypnosis is at times referred to as "spell," "trance"—(patient F) "get a person into a trance"; (patient L) "make a person numb, rigid"; (patient Y) "is putting a person under a spell"; (patient W) "put you to sleep." Generally speaking, the sign seems to provoke a certain apprehension.

*Psychoanalysis*: This sign is widely used by physicians; frequently used by patients. Not a single patient was able to give a satisfactory definition, though to quite a number of patients the hyphenated words themselves suggest designations. (Patient D) "I think that's analysis of brain or intelligence or actions of a person"; (patient H) "analysis by a doctor"; (patient I) "is analyzation of persons inner being; trying to find out whether a person can live more harmoniously with fellowman"; (patient K) "is the analysis of one's life; a pathological study"; (patient R) "analyze one's mind." A more specific definition concerning the method is; (Patient G) "a form of listening and questioning to determine conflicts of a psychiatric patient." Less apt definitions in regard to the method are; (patient V) "ask questions and say whether a person is normal or abnormal"; (patient L) "a test given by a psychologist to determine your insanity or intelligence." There is no reference made to the work of Freud and his followers.

*Psychologist*: This sign is in general usage and occurs in the discourse of the patient and physician. Half of the patients, however, defined it incorrectly, and more than one-fourth have not heard of the sign. Definitions refer to someone who "studies the mind"; its delimitation from the term "psychiatry" is vague (see psychiatrist). (Patient E) "is a person who studies the mind, psychiatrist does it"; (patient K) "a person who says or does the right thing to affect his patient or adversary"; (patient L) "is a

doctor who studies ways of living, behavior"; (patient M) "a person that studies the mind; a psychologist studies more actions, a psychiatrist more results"; (patient V) "psychiatrist and psychologist are very much alike."

*Nerve Specialist:* This sign is only used by patients; its meaning for patients is identical with those of the sign "neurologist"; (patient C) "someone who specializes in nerves"; (patient D) "one who studies actions of nerves"; (patient E) "a person who deals with neurotics"; (patient F) "is someone who finds out whether you are nervous"; (patient I) "a man who is specialized in nerves of body, knows their functions and treats them as such."

*Neurologist:* Four-fifths of the patients define the sign incorrectly. The definitions of the sign refer to someone who takes care of patients with "sick nerves" (see nerve, nervous). As "nervous disease" is a rather ill-defined term, the term neurologist consequently is grossly misunderstood. (Patient D) "that's someone who specializes on nerves"; (patient K) "a specialist in the field of nerves alone; would see neuroses"; (patient P) "one who takes care of cases for nerves; a nerve doctor takes care of nervous cases."

*Psychiatrist:* Only slightly more than half of the patients gave adequate definitions of the sign. To this group, the definitions referred to a physician who studies and treats patients with "mental disorders," especially "brain disease." (Patient A) "one who studies the brain"; (patient F) "that's someone who specializes in the medical profession in regard to mental condition"; (patient E) "is a man who studies the mind; as a rule they are doctors; they have to know psychology"; "a doctor that finds out whether they are crazy or not"; (patient I) "a doctor who attempts to take care of people who are unbalanced; temporarily unbalanced; they use colors of rooms." The interpretation of psychologist and psychiatrist appears rather vague, and some of the definitions referred just to someone who studies various aspects of human behavior (patient Q) "studies people in their reaction to stimuli; student of mental medicine"; (patient T) "is a doctor who settles matters"; (patient X) "a medical doctor who studies various habits and backgrounds."

### *Analysis and Discussion*

A definition as a conscious verbal response is certainly only one of many responses. All definitions remain incomplete, if only for the reason that an infinity of existants corresponds to a finitude of words, or to put it differently there are more things than words. This is particularly true when short definitions are demanded in a test situation. Many definitions are unsatisfactory because people who are not accustomed to expressing themselves in such a manner are unable to verbalize sufficiently for linguistic reasons or because consciously or unconsciously they do not wish to verbalize. To

determine more adequately an individual's response to a sign, it would be necessary to observe the individual over a period of time and in various situations. It is quite obvious that such studies would be very laborious and complex. The present study with all its insufficiencies seems to be at least a beginning in the direction of a study of medical signs and their interpretations.

The test scores on medical terms of 25 patients were expressed on a 0-100 scale; they varied from a minimum of 10 to a maximum of 63 with a mean of 30 and a standard deviation of 12. The I. Q. of these patients, determined by the Wechsler-Bellevue (verbal scale), varied from a minimum of 80 to a maximum of 134, with a mean of 110 and a standard deviation of 16. The correlation between knowledge of medical terms and I. Q. is +0.3.

It is quite evident that, in addition to general intelligence and general vocabulary of the patient, other factors determine the test scores. Interest in the disease, the degree of anxiety, hypochondriacal tendencies, curiosity, as well as the age of the patient, cultural and ecological background, duration of the disease and reward or punishment of previous explorations seem to play a rôle.

The impression was gained that patients get most of their medical knowledge from observation of other patients and discussions among themselves. Twelve of the 25 patients thought they obtained some information from their physicians. Thirteen thought their information about their own disease and medical matters in general was not adequate. General school education seemed to contribute very little to the patients' knowledge of disease. Only 10 of 25 listed radio and books as sources of information. Only one patient thought he gained medical knowledge in school. Discussions of medical matters in the family and with friends received low ratings, though it seemed patients underrated such sources.

The ignorance and the confusion as regards medical terms make one wonder whether our system of education fulfills its function of teaching the population certain minimal requirements regarding health and disease. An investigation of this topic might be of equal importance for educators, public health officials, and physicians and might become the basis for certain changes in the teaching of hygiene.

Table 2 shows how many of the 25 patients knew of the different terms. Hardly any term was generally known. As was expected, highly technical terms and medical jargon expressions were virtually unknown in the cultural and educational group which was

TABLE 2

KNOWLEDGE OF INDIVIDUAL TERMS  
(Figures Indicate Percentage of Patients)

<i>Terms in order of text</i>	<i>Complete and correct information (+)</i>	<i>Incomplete but correct information (±)</i>	<i>Incorrect information (—)</i>	<i>No information (0)</i>
Infection	10	86	4	0
Lesion	0	24	5	71
Tuberculosis	27	78	5	0
Syphilis	10	70	10	10
Lues	4	4	0	92
Gonorrhoea	35	40	5	20
G. C.	0	0	0	100
Wassermann	50	20	0	30
Spine	53	37	10	0
Spinal Fluid	17	66	11	0
Nerve	0	76	24	0
Convulsion	64	28	4	4
Paralysis	8	54	38	0
Tumor	36	51	13	0
Cancer	10	80	10	0
Ca.	0	0	0	100
Metastasis	0	0	0	100
Deterioration	0	50	0	50
Prognosis	0	4	17	79
Diagnosis	0	83	6	11
Pathology	5	5	34	56
Organic	0	14	54	32
Functional	0	0	71	29
Psychogenic	0	0	13	87
I. Q.	32	42	5	21
Feeble-minded	0	57	43	0
Moron	6	28	66	0
Schizophrenia	0	12	4	84
Psychopathic	0	0	90	10
Hysteria	0	91	9	0
Neurosis	0	25	50	25
Nervous Disease	0	41	46	13
Mental Disease	0	91	9	0
Physiotherapy	11	5	16	68
Psychotherapy	0	24	10	66
Hypnosis	0	55	35	10
Psychoanalysis	0	14	50	36
Psychologist	5	14	52	29
Neurologist	0	17	70	13
Psychiatrist	0	54	22	22
Dementia Praecox	0	58	8	84

represented by the 25 patients. Such expressions were: prognosis, schizophrenia, dementia praecox, pathology, lesion, lues, G. C., Ca., metastasis.

A more important and much larger group were definitions of terms which gave rise to "semantic confusion." Such definitions by patients were different from definitions made by physicians, and the inference is drawn that such confusion might lead to definite maladjustment on the side of the patient. Such terms were: infection, tuberculosis, syphilis, gonorrhoea, tumor, cancer, paralysis, spine, spinal fluid, nerve, functional, organic, psychogenic, hypnosis, psychologist, neurologist, psychiatrist.

A third group consisted of terms which led to a more or less outspoken fear response. Such an emotional response was inferred either from the content of the response or from concomitant reactions of the patients. Some of these terms were comparatively well known, as: infection, cancer, paralysis, fit, tumor, syphilis, mental disease. Others were only vaguely known, often ill-defined, as: degeneration, psychopathic, moron, schizophrenia, hypnosis.

No attempt is made to present the histories of the patients with the full protocols of their definitions of medical terms. Naturally great differences in knowledge and in the type of response were encountered even in the small group of patients under investigation. It was felt, however, that in many cases important knowledge in regard to the patient's illness and his "experiencing" of it (Kahn<sup>18</sup>) was gained from his definitions. Definitions of such signs as neurosis, mental disease, nervous disease, psychiatrist, neurologist, and psychotherapy proved to be interesting material in the case study and became helpful for future relationships. Generally speaking, it was felt that most patients could be helped considerably in their attitude by a rational discussion, with elimination of certain fears and doubts and other irrational attitudes arising from ignorance and misunderstanding of medical terms. Two-thirds of the 25 patients knew too little about medical matters, their illnesses, and the implications of their illnesses. A small group possibly knew "too much," but their knowledge was rather erratic, poorly integrated, and often quite irrational. Both groups might be helped considerably by sensible information. However, it should be stressed that adjustment is possible without any adequate knowledge of the processes involved, as our every-day life shows. Most persons handle money, play radios, take care of their bodily needs, etc., with-

out much of an idea of economic, physical, or physiological laws or of the nature of the things involved. An operating knowledge usually is sufficient.

Questions posed were whether patients "understand" the language of their physicians, whether physicians "understand" their patients' language, and whether both are aware of any limitation of such "understanding." "Understanding" can be defined in syntactic, semantic, and pragmatic rules. Understanding pre-supposes the proper observation of formation and transformation, or syntactic rules, by users of a language. The semantic dimension of understanding refers to operational acts which intend to determine actual existents. In pragmatics, however, "understanding" occurs when identical expectations are raised by the same sign in its different users. In trying to deduct such expectations from definitions given by patients one becomes aware that patients often do not understand medical terms as they are used by physicians and even more often have confusing and misleading concepts, causing inadequate behavior, unnecessary suffering, and a poor physician-patient relationship. Naturally a physician ought to expect such ignorance of medical terms, but actually physicians are not sufficiently aware of these misunderstandings.

Some of these misunderstandings can be explained in syntactic-semantic terms though, as Morris<sup>22</sup> says, all rules when actually in operation contain a pragmatic component. To my knowledge, syntax, as developed by Carnap,<sup>4, 5</sup> Tarski,<sup>28</sup> etc., has chiefly dealt with scientific languages and very little with every-day language. It will be the future task of some logician to subject the every-day language to a syntactical analysis; but some crude observations may be made even without such analysis. The amount of circular definitions in our material (with consequent confusion and maladjustment) is amazing. Few patients observed the fundamental rule of definition to establish a familiar starting point and to define outside the speech situation, i.e., to denote. Besides, unfamiliar signs very often are defined on grounds of their phonetic similarity to other familiar signs and thus are not properly denoted. "Paralysis" is equated with "infantile paralysis"; "feeble-minded" is defined as a "feeble mind"; "psychoanalysis" is defined as "analysis of the mind." Such violation of formation rules and neglect of significations occur with the signs "nerve," "nervous," "nervous disease." The denotation of "nerve" is not well known to laymen and on the

ground of similarity of these signs with the vague designation "nervous," the sign "nervous disease" acquires a very peculiar significance for patients, and even "nerve" itself tends to be defined in terms of the designation "nervous." A totally inadequate orientation results. The fact that the signs "neurologist" and "psychiatrist" have no adequate interpretation is one of these consequences, which I think is of considerable importance to patients as well as to neurologists and psychiatrists. This equation of words and things, the so-called jingle-fallacy,\* is probably one of the gravest mistakes in popular thinking in general, and can often be successfully pointed out to people, as Korzybski<sup>16</sup> has stressed.

Thus harm is done by the indiscriminate use of the term "disease." "Disease," as the term is used particularly in neuropsychiatric contexts, has all kinds of designations. Actual existants, such as structural changes, patho-physiological processes, "abnormal" behavioral adjustments, experiences, and evaluations, often enough do not designate anything in operational or logical terms. This applies in a way to the sign "disease" as well as to "mental disease" and to the signs syphilis, tuberculosis, and cancer as is demonstrated in our material. Signs of this type are abstractions of a high order; we are bound to use such abstractions not only in scientific but in every-day language, but the user should be aware of their ever-changing denotations in different contexts.

The different interpretations of medical terms by physicians and laymen must be recognized. To physicians, medical terms are, or ought to be at least, "significata," the content of which has been determined by operational procedures. Laymen in most cases, as it has been demonstrated, are not aware of such denotations and their underlying operational principles; their responses to medical terms are predominantly emotional. If physicians are not aware of such responses, they will not be understood, and the doctors will not understand patients or be able to alleviate the patients' anxiety and maladjustment.

During the past decade attempts have been made to gain some knowledge of the specific response of individual patients to various diseases (Flanders Dunbar<sup>10</sup>). One of the important factors determining the patient's response is his linguistic environment. Most

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\* Carnap<sup>4</sup> discusses other aspects of the same error when he speaks of "thing names" and "pseudothings names," and Ogden and Richards<sup>28</sup> refer to it as "hypostatic subterfuge."

information regarding the patient's response is derived from his linguistic utterances; any analysis of the patient's behavior is impossible without a thorough knowledge of the patient's use of signs, of his conscious and unconscious symbolic substitutions. In order to gain a more thorough understanding of the patient "experiencing disease" (Kahn<sup>13</sup>) and to be able to help him, it is often interesting and advantageous to ask the patient for his "theory" of his illness, its causes and implications; to get his interpretations of some of the important terms which he or the physician may use, and to correct some "misunderstandings."

Such procedures may be regarded as "semiotic psychotherapy." "Semiotic psychotherapy" usually deals with conscious material. It does not disperse confusion, anxiety, or maladjustment which are primarily not due to misinformation or lack of information, but have other causes as, e.g., traumatic experiences, constitutional inadequacies, etc. "Semiotic psychotherapy" cannot tackle unconscious conflicts; such conflicts must be approached by analytical methods. Analytic therapy in some instances, however, attempts to show up unconscious irrational symbolic substitutions; thus semiotic psychotherapy and psychoanalytic therapy have some resemblance in certain methods. Semiotic principles underlie almost any kind of psychotherapy. As most types of psychotherapy operate by means of words, it would be advantageous for psychotherapists of any school to know more about their most important tool: Language.

The patient's misconception of psychotherapy has been noted in this study. On the one side there is a wide-spread belief in the magic of words; words are equated with facts for which they stand; on the other side, patients have a profound mistrust of any treatment by means of words and resist it. This attitude deserves attention; neglect to consider it may lead to failure of treatment.

The results of this study might be of some interest to the teaching physician. In bedside teaching, in lectures, and on ward rounds, it is often unavoidable that some statements about the patient's illness are made to students in front of the patient. This need not be harmful to the patient; it may even happen that when no statements are made anxiety is aroused over such silence. The teaching clinician ought to be aware of the impression which his behavior and his remarks make on the patient. This problem has found too little attention in medical circles. In the papers of Kahn and Powers<sup>14</sup> and of Romano,<sup>25</sup> it is stressed that clinical teaching should be bene-



ficial and not traumatic to the patient, but no agreement exists as to how this aim should be achieved.

It will be noted that the word "meaning" has been avoided in this study. This follows the example of Ogden and Richards<sup>23</sup> who, in their classical treatise on the subject "The Meaning of Meaning," attempt to eliminate the term. Morris<sup>22</sup> has analyzed "meaning" and finds that this confusing term can be replaced by syntactic, semantic, pragmatic, i.e., semiotic rules according to the type of the discourse. Such procedure has been found superior to an indiscriminate use of the term "meaning." A statement such as "tuberculosis is an infectious disease" has meaning because it conforms with syntactical rules of the English language; it has "semantic meaning" because it can be verified operationally by clinical and laboratory observations. It may have "pragmatic meaning" to interpreters (patients and physicians) if it raises certain expectations and elicits certain responses. The physician ought to know which responses to expect in his patient.

It is believed that the knowledge of the principles of semiotics will be helpful in the field of medicine and in the field of psychiatry in particular. Most likely, psychiatry, in turn, can contribute to the development of semiotics. The language of schizophrenics and of aphasics ought to be of interest for the development of syntactics. Undoubtedly in psychology in particular and in psychiatry, there is great confusion of basic terms and of classifications. A semantic review of such basic terms may not solve any empirical problems, but will help to avoid pseudo-problems and lead to operational methods (Carnap,<sup>4</sup> Feigl<sup>9</sup>). The principle of operationalism (Bridgman,<sup>2</sup> Stevens<sup>26</sup>) has hardly been utilized in psychiatry as yet. Pragmatics, "the biotic aspect of language" (Morris<sup>22</sup>) ought to be of great interest to the psychiatrist. The study of interpreters of signs, of their behavior, and particularly of their symbolic substitutive behavior (Masserman<sup>20</sup>), constitutes an important part of the field of psychiatry. The present study of interpretations of medical terms with the stress on some practical considerations is an attempt to apply semiotic principles to a medical problem.

### *Summary*

Twenty-five patients with neuropsychiatric disorders were asked to define 60 medical terms as they are used at the bed-side. The responses of every fourth patient admitted to the Department were

included in this study; deteriorated, psychotic, and aphasic patients were excluded. None of the patients had more than a high school education; all came from an urban American environment. The I. Q. of the patients varied from 80 to 134 with a mean of 110 and a standard deviation of 16. The definitions of the patients were subjected to a qualitative and, to some extent, to a quantitative analysis. The correlation between definition and I. Q. (Wechsler-Bellevue test verbal scale) was +0.3.

It seemed that the medical knowledge of these patients was chiefly gained on the ward; school education contributed very little to the patient's medical knowledge. The cultural and ecological background, curiosity about somatic functions, anxiety, and hypochondriacal trends were important motivations for patients to acquire medical knowledge. An analysis was made of medical terms which are (a) generally known, (b) virtually unknown, (c) terms giving rise to semiotic confusion, and (d) terms giving rise to semiotic confusion and anxiety. The majority of patients were not adequately informed; they knew either too much or too little and had striking misconceptions leading to maladjustment and a poor patient-physician relationship. This was particularly evident in the misuse of terms such as nerve, nervous, nervous breakdown, neurosis, psychopathy, psychiatrist, neurologist, psychologist, nervous disease, and mental disease. Such terms, and actually the majority of commonly used medical terms, received an emotive rather than a cognitive interpretation by patients. Physicians are not sufficiently aware of this fact. The importance of semiotics for medical teaching is stressed. Principles and limitations of semiotic psychotherapy are reviewed. The methods and results of the present study are discussed from the viewpoint of semiotics.

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