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THE DEVELOPMENT OF A MULTI-DIMENSIONAL RATING SCALE FOR MEASURING PSYCHOPHARMACOLOGICAL EFFECTS ON THE BEHAVIOR OF INSTITUTIONALIZED MENTALLY RETARDED CHILDREN

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THE DEVELOPMENT OF
A MULTI-DIMENSIONAL RATING SCALE
FOR MEASURING PSYCHOPHARMACOLOGICAL EFFECTS
ON THE BEHAVIOR OF INSTITUTIONALIZED
MENTALLY RETARDED CHILDREN

A Thesis Submitted to the Graduate Division in Partial
Fulfillment of the Requirements for the
Degree of Master of Science

By
Ross A. Evans

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KANSAS STATE COLLEGE OF PITTSBURG
Pittsburg, Kansas
July, 1961

ABSTRACT

The present study selected as its objective the development of a rating scale for use by psychologists wishing to measure psychopharmacologically-induced changes in the behavior of institutionalized mentally retarded children. The need for such a scale is evidenced by the recent interest these drugs have created in the field of mental retardation.

In constructing the rating scale, the investigator was guided by the neurophysiological theories of drug action and the findings of experimental and non-experimental empirical investigations. The specific content of the scale was procured primarily by: (1) circulating a questionnaire designed to elicit behavior descriptions of atypical mentally retarded children, to ninety-six psychiatric aides employed at the Parsons State Hospital and Training Center, Parsons, Kansas; and (2) reviewing existing rating scales and check lists used as criterion measures in psychopharmacological research studies.

From the above data, 174 items (descriptive statements) were designed for eight categories of behavior which represent the major postulated effects of psychothropic drugs. These

items were then subjected to two refinement procedures:
(1) content analysis, using a group of ten psychologists as judges, and (2) item analysis, following the administration of the experimental form of the scale to a sample of the population of the aforementioned institution.

The final form of the rating scale is composed of eight sub-scales which collectively contain 110 items. Each item is to be rated in regard to how well it describes the designated patient using a 3, 2, 1, 0 system. The score for each sub-scale is the arithmetic sum of the ratings for the items included within.

In its present form, the rating scale is considered a non-validated instrument. It was the writer's intention that other investigators interested in this area would conduct appropriate studies to determine the empirical validity of the scale.

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CHAPTER I

INTRODUCTION

Introduction to the Problem

Within the past decade, the field of psychiatry has been inundated by a new group of drugs to be used in the treatment and management of mental disorders. These pharmaceuticals, which are usually subsumed under a general heading, e.g., "psychopharmacological agents" (although other rubrics are frequently applied) can be sub-categorized in terms of the psychological reaction they presumably evoke.¹

Early reports were highly encouraging in their evaluation of these new drugs, although as Rosenblum and his colleagues point out, "many of the impressive results published now seem spurious in light of careful analyses that reveal methodologically naive experimental designs, contaminated rating, and over-generalizations not completely warranted by the data at hand."² However, despite

¹J. O. Cole & C. J. Carr, A Synoptic Review of Psychoactive Drugs. Chapter I in Fisher (Ed.) Child Research in Psychopharmacology, Springfield, Illinois: Charles C. Thomas, 1959, p. 3.

²S. Rosenblum, J. Callahan, P. Buoniconti, B. Braham, & R. Deatrick, The Effects of Tranquillizing Medication (Reserpine) on Behavior and Test Performance of Maladjusted, High Grade Retarded Children, American Journal of Mental Deficiency, LXIV, 1958, p. 663.

the questionability of early observations, many investigators agree that, as a group, "psychopharmacological drugs" are not a "flash in the pan" and when judiciously used can serve as an effective adjunct in the treatment and management of disturbed mental patients.³ Nevertheless, much remains to be done in regard to understanding the neurophysiological action of these agents and its effect on human behavior.⁴

As Cole and Carr suggest, the task of evaluation appears to be the legacy of four major disciplines; namely, (1) the organic chemist for synthesis of chemical compounds; (2) the psychologist for assessment of behavioral characteristics; (3) the pharmacologist for studies involving the mechanism of action, patterns of excretion and metabolism, and toxicity; and (4) the psychiatrist and clinical psychologist for eventual clinical evaluation.⁵

While (1) and (3) are beyond the scope of this paper, they will be given peripheral coverage as they become particularly germane. A comprehensive discussion of physiological and biochemical aspects can be found in Wikler's

³Ibid.

⁴H. Himwich, Psychopharmacologic Drugs, Science, CXXVII, 1958, 59-72.

⁵Cole & Carr, Op. Cit. p. 4.

The Relations of Psychiatry to Pharmacology.⁶ It is the present writer's opinion that (2) and (4) are closely interdependent and, for the purpose of this study, can be treated simultaneously.

Generally, when the fields of psychology and psychopharmacology are considered together, the emphasis is placed on the former's contribution to the latter (as will be the case in the present paper); nevertheless, it should be pointed out that this relationship is indeed reciprocal. Psychologists contribute their knowledge of behavioral measurement, research design, and statistics, and in return, they are provided with valuable tools for behavioral research; thus, psychological interest in psychopharmacology is two-fold.⁷

Statement of the Problem

In psychopharmacological research, the most commonly used criterion for behavioral change has been observation, with clinical intuition as the guidepost.⁸ However,

⁶A. Wikler, The Relations of Psychiatry to Pharmacology, Baltimore: Williams & Wilkins, 1957.

⁷R. Russell, Drugs as Tools in Behavioral Research, Chapter I in Uhr and Miller (Eds.), Drugs and Behavior, New York: John Wiley & Sons, Inc., 1960 p. 19.

⁸L. Borstelmann, Populations, Behaviors, and Situations; Some Ecological Considerations in Child Drug Research, Chapter IV in Fisher (Ed.), Op. Cit., 62-74.

Borstelmann asserts that "when we are utilizing the clinician as the principal measuring device, we are relying upon a procedure that is notably uncalibrated and unreliable."⁹ Of course, he does not contend that the clinician is an "inappropriate tool for research," but rather, as he puts it:

...we do disservice to him as an important element of the research design and consequently to the research itself unless we utilize his perceptiveness with more precision. Thus, an oversimplified statement of relative improvement will result in a rather low order of interjudge consistency when the criteria of improvement are not specific and the kaleidoscopic multiplicity of observations and cognitive inferences are actually obscured thereby. What I am proposing is that we need more thoughtful delineation of the processes involved in clinical judgement and more careful specification of the behaviors to which the clinician attends. Observation is a basic procedure of scientific inquiry, but it should be distinguished by establishing conditions for reliably obtaining and clearly communicating the resultant data. (p. 70)¹⁰

Although Borstelmann is primarily concerned with the clinician as an observer, the present writer feels the same is applicable to nurses, aides, and other personnel when used in a similar capacity.

It is true that great strides have been taken toward developing instruments for objectifying observation. Never-

⁹Ibid.

¹⁰Idem., p. 70.

theless, additional research in this area is direly needed.¹¹ It is the writer's intention that this paper shall serve as a contribution to that need.

Specifically, the purpose of this study is to develop a rating scale for the assessment of drug-induced behavioral changes in institutionalized mentally retarded children. The need for such a scale is two-fold:

(1) As Jones points out, "...measurement has no value when considered apart from the purpose of (the) research study: Measurement is not an end in itself."¹² The purpose of measurement is to provide data relevant to the questions set forth by the research design. A major disadvantage of "traditional" rating scales, as used in drug research, is that their general nature frequently prevents consideration of specific factors that may be pertinent to the questions which the research study seeks to answer.¹³ Therefore, Katz has suggested that "in most investigations for some time to come, we shall need many new instruments developed to suit the objectives of the study."¹⁴

¹¹H. Peak, Problems of Objective Observation, Chapter VI in Festinger & Katz (Eds.) Research Methods in the Behavioral Sciences. New York: The Dryden Press, 1953, 243-296.

¹²L. Jones, Problems of Devising and Selecting Appropriate Measurement Tools, American Journal of Mental Deficiency, LXIV, 1959, p. 386.

¹³M. Lorr, Rating Scales, Behavior Inventories, and Drugs, Chapter XXXVIII in Uhr & Miller, Op. Cit., 519-539.

¹⁴D. Katz, Field Studies, in Festinger & Katz, Op. Cit., p. 83.

(2) In an effort to satisfy the above need, many investigators have been forced, as Cole describes it, to "...invent their own scales or drastically modify those used by others, thereby providing large amounts of non-comparable data."¹⁵ Many times these instruments are "filed" upon completion of the study, and because of their "bi-product" nature are never used again, either by the originator or other investigators; consequently, little progress has been made toward developing a consistent criterion suitable for use in similar studies.¹⁶ On this point, Newcomb predicts that:

When we shall have achieved more satisfactory and more 'standardized' methods of investigation, with clearer criteria concerning the range of appropriateness of various methods and tools, we shall, of course be in a much better position to make genuinely comparable studies which are a necessary precondition to high level abstraction. And, similarly, a more satisfactory armamentarium of tools and methods will facilitate the replication of significant studies.
(p. 7)¹⁷

In the present study, the investigator will attempt to satisfy both the need for specificity and generalizability

¹⁵J. Cole. The Evaluation of the Effectiveness of Treatment in Psychiatry, Chapter VI in Cole and Gerald (Eds.), Psychopharmacology: Problems in Evaluation, Washington, D.C.: National Academy of Sciences--National Research Council, 1959, p. 7.

¹⁶F. Heyns, Systematic Observational Techniques Chapter X in Lindzey (Ed.) Handbook of Social Psychology, Vol. I, Cambridge: Addison-Westley Co., Inc., 1954, 370-403.

¹⁷T. Newcomb, The Interdependence of Social-Psychological Theory and Methods: A Brief Overview Introduction in Festinger & Katz, (Eds.) Op. Cit., p. 7.

which are implicit in the foregoing discussion. First, the proposed scale will be designed for use with institutionalized, mentally retarded children in psychopharmacological research studies (although it is conceivable that it may be applicable for other settings.) Secondly, the rating scale will be the primary objective of the study, permitting the investigator to devote his undivided attention to refining the instrument. Hopefully, the final product will be available for use in appropriate research studies.

Methodology in Drug Research

Looking again at Jones' statement, i.e., "measurement has no value when considered apart from the research study,"¹⁸ it becomes increasingly evident why at least peripheral familiarity with the nomenclature of research in psychopharmacology is a requisite for readers of this study. The present section will present some of the principles that have been found useful in psychopharmacological research; however, of necessity it will be limited in scope. For a more comprehensive review, the reader is referred to standard texts in research methodology in addition to publications dealing specifically with drug experimentation.

¹⁸Idem. p. 4.

The majority of the projects concerned with pharmacological effects on behavior can be classified as "browsing research", i.e., "that field of inquiry that lies between pre-clinical testing, on the one hand, and the area of controlled clinical trial and the testing of specific hypotheses on the other."¹⁹ Studies that meet the standards of "controlled" experiments are generally very complex. The complexity arises from attempts to isolate and control experimental error that tends to vitiate the results and conclusions of the study. The ensuing discussion will consider several likely sources of error and possible methods for circumvention.

Following the lead of the behavioral sciences, psychopharmacology has given much consideration to the selection of subjects to be included in the research project. Primarily, this concern is rooted in the need for the results obtained from an experimental sample to, in fact, be generalizable to the population it purports to represent. This first necessitates locating the population of interest, which is perhaps more challenging than one may suspect. Many times the experimenter is forced to select his subjects from "captive"

¹⁹p. Feldman, Reflections on Research in Psychopharmacotherapy, Chapter XXIX in Cole & Gerald (Eds.) Op. Cit., 454-466.

populations because of their availability. However, this is not always satisfying, in that, as Nash puts it, "... the main interest of the investigator too often lies in some group other than the one which happens to be available."²⁰ Some investigators have chosen to work with volunteer subjects, but as Lasagna and von Felsinger have shown, a disproportionately high percentage of persons who volunteer for certain drug experiments suffer from severe psychological maladjustment and are therefore quite atypical of the general population.²¹

After the problem of locating a population has been unriddled, the investigator is often confronted with the task of selecting a sample representative of the larger body, since many times it is impractical if not impossible to study the entire population. Recognizing that complete volumes have been given to the discussion of sampling techniques, the present writer will not attempt to cover the topic in this limited space. Suffice it to say that any method chosen must be as free from bias as resources permit.

²⁰H. Nash, The Design and Conduct of Experiments on the Psychological Effects of Drugs, Journal of Nervous and Mental Disorders, CXXVIII, 1959, p. 129.

²¹L. Lasagna & J. von Felsinger, The Volunteer Subject in Research, Science, CXX, 1954, 359-361.

Also, in order to avoid confounding the effects of the experimental variable (drugs) with those related to extraneous factors (for example, suggestion) observations obtained under experimental conditions should be compared with those under standard conditions.²² Historically, in drug research this has been accomplished by the use of a placebo and/or a non-drug group. A classical feature of this type of experimental setup has been the "double-blind" procedure, i.e., where knowledge of which group is receiving the actual drug is withheld from both subject and examiner.²³ While acknowledging its merits, Nash cautions that "the effectiveness of the double-blind may be vitiated somewhat by drug effects which may provide clues, to the subject or to the examiner, regarding the treatment given to the subject."²⁴ Other methods of controlling for extraneous variation include factorial designs, randomized blocks, "crossover" or "switchback" designs and Latin Square arrangements. For a fuller discussion, the reader is referred to the aforecited article by Nash.²⁵

²²Nash, Op. Cit. 129-147.

²³Ibid.

²⁴Idem., p. 139.

²⁵Idem., pp. 129-147

Definitions:

In rounding out this introductory chapter, the writer will list and define some of those terms that are considered to be nebulous or to have a specific meaning for this phase of the present study.²⁶

Mental Retardation:

refers to subaverage general intellectual functioning which originates during the developmental period and is associated with impairment in one or more of the following: (1) maturation, (2) learning, and (3) social adjustment. (p. 3)²⁷

Psychopharmacological agent:

refers to those chemical compounds that selectively affect behavior in man and animal, excluding anesthetics, narcotics, hypnotics, and hallucinogens or psychotomimetics. This group includes the major tranquilizers, minor tranquilizers, non-barbiturate sedatives and calmatives, and antidepressive agents. (p. 3)²⁸

Measurement:

refers to any process by which a quantity is attributed to something; the assignment of numerals to things, in accordance with certain conventional rules, so to represent their magnitude. (p. 311)²⁹

²⁶See page 42 for further definitions of terms used in a later phase.

²⁷R. Heber, A Manual on Terminology and Classification in Mental Retardation, American Journal of Mental Deficiency, Monograph Supplement, LXIV, 1959, p. 3.

²⁸Cole & Carr, Op. Cit., p. 3.

²⁹H. English & A. English., A Comprehensive Dictionary of Psychological and Psychoanalytical Terms. New York: Longmans, Green & Co., Inc., 1958, p. 311.

Observation:

refers to the directed or intentional awareness or scrutiny of particulars or facts. (p. 353)³⁰

Rating Scale:

a device by which a rater can record, for the case in question, the estimated magnitude of the trait or quality rated. Most scales provide procedures designed to make the estimate more careful and objective. (p. 437)³¹

In summary, this chapter was designed to give the reader his "bearings" in regard to the need for this study and its ramifications for psychopharmacological research. The specific purpose and expected end-product was also discussed. In addition, background information was covered in brief, including some discussion of research design. Finally, several of the key terms to be used throughout the presentation were defined in an attempt to circumvent needless ambiguity.

³⁰Idem. p. 353.

³¹Idem. p. 437.

CHAPTER II

OVERVIEW OF BEHAVIORAL MEASUREMENTS

This chapter will include first, a brief review of historical developments in the field of psychological measurement; second, a resume of some of the current thinking regarding behavioral assessment; third, a discussion of problems involved in observation; and fourth, a critique of existing rating techniques.

Historical Developments

Thorndike and Hagen state that "the roots of measurement of man lie in antiquity;" and they continue:

...we must believe that even in prehistoric times Og, the cave man, made rudimentary appraisals of his fellows. He saw Zog go by, made some judgement as 'Big, strong, keep out of way,' and acted upon it; or he came upon the campfire of Wog, observed 'Small, weak, take dinner,' and did so forthwith. But for much of recorded history, the appraisals that man has made of his fellows have been of this crude subjective type."
(p. 1)³²

"It was only a hundred years ago," Nunnally reminds, "that the first systematic attacks were made on psychological measurement."³³ Many attribute this lag to the widespread

³²R. Thorndike & E. Hagen, Measurement and Evaluation in Psychology and Education, New York: John Wiley & Sons, Inc., 1955, p. 1.

³³J. Nunnally, Tests and Measurements, New York: McGraw-Hill, Inc., 1959, p. 14.

dublety concerning the amenability of behavior to quantification. Again Thorndike and Hagen's words are exemplary, as they point out that:

Psychology in 1850 was still in large measure a part of philosophy. Courses dealing with man and his actions were presented under the title 'moral Philosophy,' and discussed in an armchair fashion the nature of the Mind and the soul. Psychology was almost non-experimental, and the idea that one could measure in quantitative terms the speed of responding, the amount of forgetting, or the level of intelligence would have been received in most quarters with hostility or more probably, ignored as not worthy of rebuttal.
(p. 2)³⁴

However, as psychology more and more sought to become a science, in the full sense of the word, it discovered the necessity of using the precise, objective language of mathematics and thus it set out to quantify itself.³⁵ Initially, it relied heavily upon the tools and concepts developed for application in the biological and physical sciences. As a result, the field of psychophysics was born, representing one of the two major sources from which the burgeoning science of psychometry drew its nourishment.³⁶ The other major influence can be traced to the clinical movement that pursued methods of measuring emotional stability and intelligence; eventually, these two traditions merged, forming what

³⁴Thorndike & Hagen, Op. Cit., p. 2.

³⁵J. Guilford, Psychometric Methods, New York, McGraw-Hill, 1954, p. 1.

³⁶Nunnally, Op. Cit.

became the heart of modern psychometric methodology.³⁷ As the plethora of books and articles given to its consideration testify, the field of behavioral measurement has markedly grown since its upsurge in the mid-nineteenth century; however, it cannot be assumed by any stretch of the imagination, that a state of perfection has been reached or will likely be reached in the near future.³⁸ This, of course, is regrettable but understandable; for as Ross and Stanley point out, "measurement in the social sciences present a difficult problem. The social sciences are not only newer than the natural sciences but their data are more complex. They study human beings, the most complex of all biological organisms..³⁹

Measuring Behavior

The first problem one encounters when attempting to measure human behavior presents itself as soon as the phenomenon to be assessed is designated. "Something is to be measured, and the investigator must start with hypotheses about the way in which the process or event manifests itself in behavior, as well as the conditions under which such relevant

³⁷Ibid.

³⁸C. Ross & J. Stanley, Measurement in Today's Schools, 3rd Ed., New York: Prentice-Hall, Inc., 1954, p. 12.

³⁹Idem., p. 9.

behavior will appear..."⁴⁰ And later:

...if we assume that every behavior is a function of many antecedent conditions, the ideal of objective measurement requires the identification and observation of as many of the relevant antecedents of the event as necessary to yield stable measures of it. (246)⁴¹

However, a caution should be added that merely selecting the behavior does not necessarily solve the problem of "what to measure." For as Guilford points out:

Behavior that is exhibited under prescribed conditions may be quantified in a variety of ways. For example, the oration of a speaker might be evaluated in terms of the average loudness, the rate of speaking in words or syllables per unit of time, the frequency of gestures, their extent of movement, and so on. There are many other possible 'dimensions' of his performance that might be singled out for quantification. The question of choice of dimensions is an important problem. The choice is usually determined by accessibility of the aspect to be observed, its susceptibility to quantitative description, and its relevance for the purposes for which the measurements are taken. (p. 243)⁴²

Thus, only after the enigma of "what to measure" is clarified does the problem of "how to measure" become the critical issue.

There are, of course, many different approaches to behavioral assessment; and as a result, a variety of instruments

⁴⁰Peak, Op. Cit., p. 246

⁴¹Ibid.

⁴²Guilford, Op. Cit., p. 243

have evolved that can legitimately be classified as "measuring instruments," i.e., display evidence of validity (measures what it purports to measure), and reliability (does it with consistency).⁴³

Of the numerous ways in which behavioral measurements can be categorized, the present writer finds the division proposed by Thorndike and Hagen the most parsimonious, i.e., (1) those that depend upon setting up special test situations and (2) those that depend upon observing behavior in the actual natural occurring situation of life.⁴⁴ The expected end-product of this study falls within the dominion of the latter group; thus, it will be given exclusive attention.

Direct Observation as a Measurement Device

As Thorndike and Hagen point out:

In thinking about the evaluation and measurement of man, we are likely to think primarily of tests narrowly defined, a test of arithmetic, a test of scholastic aptitude, or a test of auditory acuity. But we must remember that many of the important appraisals we make of people have always been, and will continue to be based on observation of them as they live from day to day.....Evaluation based on these observations have serious limitations. We are likely to find little uniformity from person to person in either the situations observed or the standards of judgment of the observers. But for some kinds of behavior we have no adequate tests to substitute for observations of natural situations -- and very likely never will have.
(p. 16)⁴⁵

⁴³R. Travers, An Introduction to Educational Research, New York: The MacMillan Co., 1958, p. 149.

⁴⁴Thorndike & Hagen, *Cp. Cit.*, p. 13.

⁴⁵Idem., p. 16.

Observation is the most direct way in which one may learn of another's behavior. The precision with which this is accomplished is limited only by the skill of the individual and the lucidity of this task.⁴⁶

If observations are to be maximally effective, they must be organized, directed, and systematic so as to produce, objectively and dependably, information about the subject; in Peak's terms, they must have "functional utility."⁴⁷ There are several techniques that have been found to increase the functional utility of observational procedures. Namely:

(1) In systematic observation, behavior should be categorized in regard to characteristics they have in common, thus providing the observer a carefully delineated scheme of "what to look for."⁴⁸ These commonalities should be functionally related rather than superficial.⁴⁹

(2) Behavior categories should be carefully defined so as to provide advance agreement in regard to what act or acts constitute what behavior.⁵⁰

⁴⁶L. Cronbach, Essentials of Psychological Testing, New York: Harper & Brothers, 1949, p. 386.

⁴⁷Peak, Op. Cit., p. 248.

⁴⁸Thorndike & Hagen, Op. Cit., p. 312.

⁴⁹Peak, Op. Cit.

⁵⁰Thorndike & Hagen, Op. Cit.

(3) Within the limits of practicality, observers should be "well-trained" in order to prevent multiformity of interpretation due to differing frames of reference.⁵¹

(4) Observations should be quantified with respect to the practical limitations involved in assigning values to acts, e.g., is a slap on the face as "aggressive" as a kick on the shin?⁵²

(5) In any program of systematic observation, there should be provision for concise, efficient recording of the data.⁵³

Although observational methods are frequently mentioned as instruments that are useful "when other measurement devices are unavailable or inappropriate," they are often the most efficacious way of obtaining relevant information.⁵⁴ One important advantage is that observation can be used in natural situations, often without disturbing or altering the environment of the subject.⁵⁵ Another important asset of direct observation is its amenability to use with young and/or non-communicative children.⁵⁶

⁵¹Ibid.

⁵²Ibid.

⁵³Idem., p. 314

⁵⁴Idem., p. 320

⁵⁵Idem., p. 321

⁵⁶Ibid.

On the other hand, there are some very serious limitations to observational techniques. Perhaps the most prominent is the element of subjectivity that is a pre-supposed concomitant of "judgment." Although ideally, the observer is to function "purely as a recording instrument," it cannot be overlooked that, in fact, he is a human being.

In an effort to overcome many of the deficiencies in observation--particularly subjectivity--rating procedures were introduced.⁵⁷ Although rating scales are the most popular of all methods of dealing with judgment, they too have their weak points.⁵⁸ Methods by which many of these weak points may be avoided will be discussed in Chapter IV.

Forms of Rating Scales

Guilford's Psychometric Methods includes a chapter on rating scales in which the five categories of scales are reviewed and illustrated.⁵⁹ Below, the present writer will summarize Guilford's discussion as well as present a representative example for each of the general categories.

Numerical Scales

Typically, a numerical scale is composed of a sequence of defined numbers regarding the phenomenon to be rated.

⁵⁷ Guilford, Op. Cit., p. 263.

⁵⁸ Cronbach, Op. Cit., p. 397.

⁵⁹ Guilford, Op. Cit., p. 263.

Sometimes the numbers are omitted. One of the advantages of this type of scale is its ease of construction and application.

Example⁶⁰

Very heavy
Heavy
Medium
Light
Very light

Guilford concludes that:

Numerical ratings are often rejected in favor of other types because it is believed that they are more vulnerable to many biases and errors. In fact, other types were devised for the purpose of overcoming some of those biases and consequent errors. It depends a great deal upon the kind of stimuli rated and the continuum in question. It is also possible that if as much attention were given to the construction of other types, numerical scales would be found satisfactory in a great variety of situations. (p. 265)⁶¹

Graphic Scales

In the graphic type of rating scale, the observer is to locate his subject on a continuum of descriptive terms.

Example⁶²

Is he slow or quick thinking?

Extremely slow	Sluggish Plodding	Thinks with ordinary speed	Agile- minded	Exceeding rapid
-------------------	----------------------	-------------------------------	------------------	--------------------

⁶⁰ Idem., p. 264

⁶¹ Idem., p. 265

⁶² Ibid.

Guilford's comment:

The virtues of graphic rating scales are many; their faults are relatively few. Among the advantages frequently cited in their favor are the facts that they are simple and easily administered; they are interesting and require little added motivation; they are quickly filled out; and they do not require the rater to bother with numbers. These features the rater finds attractive. From the point of view of the investigator, the graphic scale provides opportunity for as fine discrimination as that of which the rater is capable and the fineness of scoring can be as great as desire. As for disadvantages, there are none that do not apply to most other types of scales, except for greater of scoring in connection with some formats. (p. 268)⁶³

Standard Scales

The identifying characteristic of this type of scale is that the rater is provided an actual standard or "yardstick" with which to compare his subject. For example, instead of using abstract numbers or descriptions, the rater is given the names of persons with whom he is acquainted.

Example⁶⁴

(An Army Officer's "Yardstick" for Leadership)

Highest.....	Captain Spence.....	15
Highest.....	Lieutenant More.....	12
Middle.....	Captain Travers.....	9
Low.....	Lieutenant Johns.....	6
Lowest.....	Lieutenant Conrad.....	3

⁶³Idem., p. 268

⁶⁴Ibid.

Guilford concludes that "the development of a scale of standards is something of a task...(later)...Granted a good set of standards that have wide application, as in the case of handwriting scales, the standard-scale approach to measurement has considerable merit."⁶⁵

Rating by Cumulated Points

Scales of this sort usually contain a list of favorable and unfavorable qualities which are assigned numerical value (positive or negative). The score for the ratee is the algebraic sum for the list of traits.

Example⁶⁶

Statement	Scale Value	Variance
Is outstanding in every way	10.6	1.05
Has real creative ability	9.6	1.34
Is very energetic	8.5	1.95
Has a pleasing personality	8.0	3.60
Is nearly always well prepared	7.0	2.15
Is a good routing worker	6.0	1.25
Usually lets other people do the talking	5.0	.95
Is always asking for advice	4.0	1.00
Is conceited	3.2	1.36
Aims just to "get by"	2.6	1.95
Is inclined to make trouble	2.0	1.35
Is a complete failure	1.0	.01

⁶⁵Idem., p. 272

⁶⁶Idem., p. 273

Guilford's comment:

Check-list instruments are relatively new and would seem to be growing in favor. Their simplicity of administration is one of their strongest points. In terms of quantitative judgment they require minimum discrimination on the part of the raters. One might say that for each item the rater has only a two-step scale. Only cases near the rater's limen should be difficult for him to judge. Scoring is also very easy, at least where items are weighted merely 1 and -1. The chief application is to very complex variables such as the value of an employee to his organization, and in this connection it is possible by the check-list approach to cover large areas in a short time...(p. 273)⁶⁷

Forced-choice Ratings

Essentially, forced-choice scales "force" the rater to decide which of a pair or several traits is the most prevalent in his ratee.

Example⁶⁸

(Choose the one that is most characteristic of the subject)

- _____ careless
- _____ serious-minded
- _____ energetic
- _____ snobbish

⁶⁷Idem., p. 273

⁶⁸Idem., p. 275

Guilford's comment:

There has been some criticism of the force-choice technique. It is recognized that the research work involved in constructing a scale of this type is considerable and that each device must be constructed for a particular purpose for use in a particular population. Even so, if it can be demonstrated that the expected benefits (reduce tendency to rate too high or low and counter-act tendency for "halo-effect") follow, the price may not be too great. As yet, the demonstrated gains have been unspectacular and we do not know whether when the novelty of the new form wears off raters will again drift back into undesired habits shown with older rating forms. (p. 277)⁶⁹

In summary, this chapter presented an overview of behavioral measurements, with particular emphasis on observation, in general, and rating scales, in specific. It included (1) a brief review of historical developments (2) a resume of some of the current thinking in behavioral measurement (3) a discussion of problems involved in observation and (4) a critique of existing rating methods.

⁶⁹Guilford, Idem., p. 277

CHAPTER III

THEORY OF PSYCHOPHARMACOLOGIC ACTION

This chapter will include an overview of the theory and general use of psychopharmacological drugs, awarding special attention to their application to the mentally retarded. It does not purport to be a "critique," but rather seeks to catalogue data from which behaviors that are believed to be affected by drug inducement can be identified and isolated. It will include three sections: (1) Introduction to neurophysiological theories (2) Tranquilizers: mode of action and effect on behavior, and (3) Energizers: mode of action and effect on behavior.

Introduction to Neurophysiological Theories

Since its inception, psychopharmacology has produced many studies dealing with the action of drugs and their effect on human behavior. Eysenck has categorized these studies according to whether they derive from "notional", "empirical", or "rational" basis.⁷⁰ In his thinking:

'Notional'...means a procedure which is based simply on a hunch or a vaguely felt analogy. A procedure is called 'empirical' when there is some independent evidence that it does what it claims for it, although any theoretical background there may be for such a procedure is

⁷⁰H. Eysenck, Drugs and Personality, Journal of Mental Science, CIII, 1957, 119-132

purely ad hoc. A procedure is called 'rational' when it derives from an empirically supported and theoretically integrated set of postulates, theorems, and axioms. (p. 119)⁷¹

Continuing, he suggests that:

...in this field (psychopharmacology)...progress has been delayed by the prevalence of notional and purely empirical studies, and the comparative absence of any rational system which would allow us to predict the effect of groups of drugs, and to test these predictions in terms of the usual hypothetic-deductive method of science. (p. 119)⁷²

This, of course, is not to deny the contribution that empiricism has made to the field of psychopharmacology; in fact, the construction of adequate theories of drug action (or any theory for that matter) is largely dependent upon the availability of empirical data regarding the variables that are involved.⁷³ In this capacity, the notional and empirical studies have been instrumental in revealing a multiplicity of variables that are related to drug action and behavior, as well as providing valuable information about these variables.⁷⁴ Nevertheless, as Wikler states:

⁷¹Ibid., p. 119.

⁷²Ibid.

⁷³Travers, Op. Cit., p. 7.

⁷⁴Wikler, Op. Cit., p. 267.

...it would be absurd to contend that our present knowledge about such variables is so complete that only a good theory is needed to explain human behavior or the effect of drugs thereon. However, it is the continuous reformulating and retesting of theory that makes possible the orderly discovery of new variables that are relevant to behavior (p. 267)⁷⁵

Of the existing theories regarding drug effects on behavior, a large proportion is encompassed by the term "neurophysiological theories." Although there are other approaches to the question of "how drugs effect behavior," space limitations preclude their coverage herewithin.

The essence of neurophysiological theories is succinctly presented in the following paragraph by Wikler:

In the 'clinical' literature particularly, neurophysiological theories about the behavioral effects of drugs have been formulated mainly in terms of interaction between anatomically defined 'centers' with specified functions, upon which chemical agents act 'selectively,' thereby altering the balance of excitation and inhibition in the nervous system, and in consequence, disturbing or restoring 'homeostasis'.
(p. 126)⁷⁵

Thus, if a particular behavior is manifest following the ingestion of drug X, the contention is that drug X selectively affects the center(s) upon which the resultant behavior is dependent, e.g., if "emotional disturbance" ensues, the drug is said to "release the subcortex," or if "tranquillization"

⁷⁵Ibid.

⁷⁶Idem., p. 126.

results it is considered to "depress the hypothalamus." If opposite reactions are observed, the drug is said to have affected the center(s) conversely.⁷⁷

Theories founded on the above contingencies have, however, been subject to severe criticism. (1) There are those who challenge the assumption that a specific function "resides" in a restricted locus, thus implying that other portions of the nervous system have no role in the execution of that particular function. These dissenters are more willing to accept a modification of the aforestated assumption, i.e., there are delineated loci "which are more or less essential in the organization of cerebral activity appropriate to the function under consideration."⁷⁸ (2) Others take issue with the rationale that a locus has "a" function regardless of "...the biography of the organism, the object of its activities, the stimulus arrangements... (or) ...the conditions of the internal and external environment."⁷⁹ These critics consider this assumption untenable in view of clinical observations to the contrary; however, they do concede that certain loci are absolutely essential for the

⁷⁷Ibid.

⁷⁸Ibid.

⁷⁹Idem., p. 127

execution of certain functions under any conditions.⁸⁰

(3) Also, objection is raised to the contention that circumscribed loci in the nervous system will be affected by drug stimulation or depression in the same manner as with other methods, e.g., electrical stimulation or surgery. The contrary supposition is advanced that if "detailed" comparisons of patients treated by diverse methods were made, the resultant data would be dissimilar in most respects.⁸¹

As can be concluded from the foregoing discussion, neurophysiological theories, in general, cannot be accepted unequivocally; although perhaps equally apparent is the fact that their usefulness is not totally vitiated by the above criticism. Nevertheless, even with the tenability of such theories granted, the problem of determining the mechanism and location of drug action is a difficult and uncertain matter. Location of the "precise" neurophysiological action of psychopharmaceutic agents prerequisites the utilization of animal experiments via radioactive labeling of drugs, electro-encephalographic studies, and related techniques. Behavioral reactions may then be observed and functional relationships established.⁸²

⁸⁰ Ibid.

⁸¹ _____, Methods for CNS Localization of Drug-Action Sites, Current Studies on the Nature of Brain Function, No. 8, Schering Corp., Bloomfield, New Jersey, 196.

⁸² Ibid.

At this juncture it is essential to point out that immediate generalization to human subjects is staunchly disadvised, for analogous reasoning renders the resultant inferences vulnerable to serious error.⁸³ Thus, the importance of careful clinical observation and replicable experimentation with human subject is exceedingly evident.

Tranquilizers: Mode of Action and Effect on Behavior

The neurophysiologic effects of psychoactive drugs can be roughly divided into two categories: (1) stimulation of the central and/or peripheral nervous system, and (2) depression of the same.^{84,85}

Central nervous system depressants have long been used in the treatment of mental patients. Although the barbiturates, e.g., paraldehyde and chloralhydrate, were utilized extensively for the purpose of effecting sedation, their anesthetic or hypnotic action limited their therapeutic usefulness.⁸⁶ Primarily, these shortcomings provided the impetus for the "discovery" of "tranquilizing drugs," e.i.,

⁸³Ibid.

⁸⁴Eysenck, Op. Cit., p. 123.

⁸⁵Recently, a new drug has been introduced that does not fit the depressant-stimulant dichotomy. The term "thymoleptic agent" is its rubric although for expediency it can be classed with the stimulants under the broader epithet, "energizers", viz., F. Ayd, "Tofranil, a New Anti-depressant," Bulletin of the School of Medicine, University of Maryland, XXXIV, 1959, 29-32.

⁸⁶E. Killam, The Pharmacological Aspect of Certain Drugs Useful in Psychiatry, Chapter II in Cole & Gerard (Eds.) Op. Cit., 20-45.

compounds that would produce a quasi-sedative action without the ataxic effects characteristic of the barbiturates.⁸⁷ These new agents were greeted by a wave of credulity and from the point of their auspicious debut "grew like Topsy." Today, clinical literature is replete with "experimental" and "non-experimental" accounts of tranquilizing medication. Smith Kline & French Laboratories report, for example, that they presently include two thousand papers in their "primary" bibliography on chlorpromazine alone. Furthermore, "there are more than 6,000 other papers from the world literature that discuss the drug."⁸⁸ Considering that chlorpromazine is just one of many tranquilizing drugs in clinical use, one can readily imagine the impact these agents have made on the field.

From the many investigations, formal and informal, concerning ataraxic medication, a number of theories regarding possible site and mechanism of action have emerged.⁸⁹ Himwich's review of the literature adds supportative evidence to the viewpoint that although tranquilizers exert some action on the cerebral cortex, their most potent actions are exerted on "the subcortical structures regarded as parts

⁸⁷ Mimeographed letter by Walter Munns, President, Smith Kline & French Laboratories, February 3, 1961.

⁸⁸ Himwich, Op. Cit.

⁸⁹ Idem., p. 65

of the anatomic substrate of emotion: the midbrain reticular formation, the hypothalamus, and the components of the rhiencephalon."⁹⁰ This does not imply that all ataraxic drugs effect "each" of the areas, or for that part, they effect any one area in an identical manner. As a matter of fact, the converse is offered as an explanation of why drugs with divergent pharmacologic "make-up" and action can induce similar reactions. However, in the larger sense, all of these drugs do achieve their end via the same process, viz., by removing part of the mobilization mechanism, which originally creates the anxiety and its manifestations.⁹¹

Since the introduction of tranquilizing medication, numerous studies have appeared in the literature proclaiming the value of these drugs in cases ranging in severity from conditions of mild anxiety and tension to chronic psycho-neurotic and psychotic states.⁹² This enthusiasm soon pervaded the field of mental retardation and little by little studies indigenous to the mentally retarded began to find their way to the printed page.⁹³ At present, enough studies are available to allow the formulation of hypotheses concerning

⁹⁰Idem., 59-72

⁹¹Ibid.

⁹²Rosenblum, et. al., Op. Cit.

⁹³T. Greiner, Problems of Methodology in Research with Drugs, American Journal of Mental Deficiency, LXIV, 1959, 346-352.

the effects of tranquilizers specifically on the behavior of the mentally retarded. From these studies the following observations were noted: (1) decreased psychomotor over-activity,^{94,95} (2) calming and quieting,^{96,97} (3) diminution of combativeness,^{98,99} (4) reduced anxiety,¹⁰⁰ (5) increased accessability,¹⁰¹ (6) improved appetite and resulted in weight gain,¹⁰² (7) diminished destructiveness,^{103,104} (8) suppressed

⁹⁴S. Horestein, Reserpine and Chlorpromazine in Hyper-active Mental Defectives, American Journal of Mental Deficiency, LXII, 1957, 252-257.

⁹⁵R. Noce, D. Williams & W. Rapaport, Reserpine (Serpasil) in the Management of the Mentally Ill and Mentally Retarded, Journal of the American Medical Association, CLVI, 1954, 821-824.

⁹⁶W. Timberlake, E. Belmont, & J. Ogonic, The Effects of Reserpine in 200 Mentally Retarded Children, American Journal of Mental Deficiency, LXVI, 1957, 61-66.

⁹⁷Horestein, Op. Cit.

⁹⁸M. Craft, Mental Disorder in the Defective: The Use of Tranquilizers, American Journal of Mental Deficiency, LXIV, 1959, 63-71.

⁹⁹A. Johnston & C. Martin, The Clinical Use of Reserpine and Chlorpromazine in the Care of the Mentally Deficient, American Journal of Mental Deficiency, LXII, 1957, 292-294.

¹⁰⁰Ibid.

¹⁰¹Timberlake, et. al., Op. Cit.

¹⁰²Noce, et. al., Op. Cit.

¹⁰³Johnston & Martin, Op. Cit.

¹⁰⁴J. Rettig, Chlorpromazine for the Control of Psychomotor Excitement in the Mentally Deficient, Journal of Nervous and Mental Disease, CXXII, 1955, 190-193.

noisiness,^{105,106} and in general (9) increased manageability.^{107,108,109}

In addition to these positive effects, several negative responses have been noted, e.g., transient drowsiness, anorexia, vomiting, hypotension, dizziness, and allergic dermatitis.^{110,111}

Energizers: Mode of Action and Effect on Behavior

The value of stimulant drugs in the therapeutic process has been subject to much skepticism. For example, in 1954,

¹⁰⁵H. Bair & W. Herold, Efficacy of Chlorpromazine in Hyperactive Mentally Retarded Children, American Medical Association Archives of Neurology and Psychiatry, LXXIV, 1955, 363-364.

¹⁰⁶G. Sporgis, V. Lezdins, S. White, C. Ming, M. Lanning, M. Drake, G. Wyckoff, Comparative Study on Thorazine and Serpasil in the Mental Defective, American Journal of Mental Deficiency, LXI, 1957, 737-742.

¹⁰⁷H. Bair, B. Goldberg, & H. Leland, Mental Retardation-Results with Triflupromazine (Vesprin) in the Treatment of Mentally Retarded Children, Journal of the Kansas Medical Society, LXI, 1960, 386-393.

¹⁰⁸Rettig, Op. Cit.

¹⁰⁹Timberlake, et. al., Op. Cit.

¹¹⁰Rettig, Op. Cit.

¹¹¹Timberlake, et. al., Op. Cit.

Gilman wrote:

...they (stimulants) are relatively unimportant from the therapeutic point of view...(in that) ...it is not possible to stimulate the nervous system over a long period of time, for heightened nervous activity is followed by depression, proportional in degree to the intensity and duration of stimulation. (p. 324)¹¹²

Undaunted, psychopharmacology continued its quest for an "energizing" compound that would eventually prove effective in the treatment of depressive states. Gradually there accrued a class of drugs that shared the common property of effecting an increase in the activity of various portions of the central nervous system although their neurophysiological modes of action were markedly dissimilar.¹¹³

Several theories have been advanced in an attempt to explain the "energizine" potential of these agents. One of such theories is offered by the proponents of the "neurohormonal concept." This group postulated the existence of a "subcortical system" which has two antagonistic subdivisions that resemble the sympathetic and parasympathetic division of the autonomic nervous system. The first (ergotropic division), subserved by the hormone norepinephrine, causes excitement; the second (trophotropic division), subserved by serotonin, induces apathy. Thus, the energizing drug is said to act by

¹¹²L. Goodman & A. Gilman, The Pharmacological Basis of Therapeutics, New York: The MacMillan Co., 1955, p. 324.

¹¹³Ibid.

"releasing" or "blocking" the appropriate hormone.¹¹⁴

Early observations regarding the effects of energizing medication of behavior, generally, indicate that although these agents were successful in activating certain aspects of behavior, often negative side reactions were incurred that tended to seriously limit their usefulness.¹¹⁵ On the positive side, it was observed that these compounds (1) relieved symptoms of depression,^{116,117} (2) diminished drowsiness,^{118,119} (3) increased alertness,¹²⁰ (4) induced feelings of well being,^{121,122}

¹¹⁴_____, Serotonin and Norepinephrine, Current Studies on the Nature of Brain Function, No. 1, Schering Corp., Bloomfield, New Jersey, 1959.

¹¹⁵J. Levy, B. Jones, & H. Croley, Effects of Methylphenidate (Ritalin) on Drug-Induced Drowsiness in Mentally Retarded Patients, American Journal of Mental Deficiency, LXII, 1957, 284-287.

¹¹⁶J. Gottlieb, Antidepressive action of 5-(1,3-dimethyl-butyl)-5-ethylbarbituric acid, American Medical Association Archives of Neurology and Psychiatry, LXVI, 1951, 318-328.

¹¹⁷F. Ayd, A Preliminary Report on Marsilid, American Journal of Psychiatry, CXIV, 1957, 459-460.

¹¹⁸J. Gottlieb, The Use of Sodium Amytal and Benzedrine Sulfate in the Symptomatic Treatment of Depression, Diseases of the Nervous System, X, 1949, 2-4.

¹¹⁹H. Fabing, Clinical Experience with Meratran (A New Central Nervous System Stimulant), Diseases of the Nervous System, XVI, 1955, 10-15.

¹²⁰A. Jacobson, Ritalin--A New Agent for Mild Depressions, Medical Annals of the District of Columbia, XXV, 1956, 491-494.

¹²¹Ibid.

¹²²Gottlieb, 1951, Op. Cit.

accelerated speech productivity,¹²³ and (6) improve motor activity, particularly in cases of psychomotor retardation associated with "over-sedation."^{124,125}

On the other hand, there have also been cases of loss of weight, dizziness, tremors, jaundice, hypotension, hypomania, constipation, sexual impotency and neuritis.^{126,127} The more recently developed energizing (thymoleptic) drugs have aroused considerable interest by the reported efficacy with which they ameliorate manifestations of depression without illiciting the negative effects.¹²⁸

The present writer has been able to locate a few studies of energizing effects on the behavior of the mentally retarded; however, there appears to be general consistency with the above findings.¹²⁹

¹²³Fabing, Op. Cit.

¹²⁴Ibid.

¹²⁵Jacobson, Op. Cit.

¹²⁶W. Furst, Iproniazid in Depression, Diseases of the Nervous System, XIX, 1958, 47-48.

¹²⁷W. Scanlon & W. White, Iproniazid (Marsilid): Its Use in Office Treatment of Depression, American Journal of Psychiatry, CXIV, 1958, 1036-1037.

¹²⁸H. Azima, Imipramine (Tofranil): A New Drug for the Depressed, Canadian Medical Association Journal, LXXX, 1959, 535-540.

¹²⁹Levy, et. al., Op. Cit.

In summary, this chapter has presented an overview of some of the activity that has taken place in the field of psychopharmacology, both theoretical and empirical. No attempt was made to evaluate the design and conduct of the studies included; nor was there an attempt to include studies that produced non-significant results. The sole purpose was to discover as many behavior variables as possible, that may be functionally related to the variable of drug inducement.

CHAPTER IV

THEORY OF RATING

The purpose of this chapter is to present a statement of rating theory regarding (1) scale construction and (2) scale administration. This statement, which includes fourteen theorems and seventeen corollaries, will be preceded by the definitions of key terms as they apply herewithin.

Categorically, rating scales have been recommended primarily when more "objective" forms of measurement were unavailable or inappropriate.¹³⁰ Yet, even as "expedients", their contribution to the field of measurement has long been subject to doubt. For example, some workers have declared that scales for rating behavior tend to be unreliable devices which often provide "only an illusion" of objectivity.¹³¹ At one point, this position apparently became quite extreme, as Ross and Stanely recall that "for a while it seemed that... rating scales as scientific instruments would be completely discarded."¹³² However, this attitude has since given way to

¹³⁰ Guilford, Op. Cit., p. 296

¹³¹ Borstelmann, Op. Cit.

¹³² Ross & Stanely, Op. Cit., p. 48

the point of view that "in spite of all of their limitations, evaluation of persons through ratings will undoubtedly continue to be widely used for ...psychological research."¹³³ Resigned to this supposition, the logical conclusion seems to be that rating procedures should therefore be made as valid and reliable as possible.

Of the numerous criticism hurled at rating techniques in the past, an overwhelming majority are directly attributable to the standing absence of a systematic theory of rating.¹³⁴ Until recently, rules of thumb, smatterings of empirical evidence, and/or isolated segments of theory provided the foundation upon which rating instruments were constructed; theory in the formal sense was non-existent.¹³⁵ However, as of late, great strides have been taken toward rectifying this deficiency, and as a result, in less than a decade an encouraging reservoir of theoretical data has accumulated.¹³⁶

The following theory stems mainly from the research findings of the Personnel Research Branch of the Adjutant General's Office.¹³⁷ In addition, other resources were used primarily to supplement and support the above assemblage.

¹³³Thorndike & Hagen, Op. Cit., p. 336.

¹³⁴The Adjutant General's Office, "A Theory of Rating", Control of Bias in Rating, PRB Report No. 922, Department of Army, 1952.

¹³⁵Ibid.

¹³⁶Ibid.

¹³⁷Ibid.

Definition of Terms

Within the context of the theorems and corollaries to be stated, the following key terms are defined thusly:

Behavior refers to any activity of an organism, i.e., anything the organism does.¹³⁸

Rating refers to an estimate, made under a prescribed, systematic procedure regarding the characteristics of a phenomenon.¹³⁹

Rating stimuli refers to the word (s) or phrase (s) that describe the qualities to be rated.¹⁴⁰

Recall refers to a process in which a representation of a previous experience is elicited.¹⁴¹

Accuracy refers to the correspondence between a measure of phenomenon and the fact or actual state of the same.¹⁴²

Objectivity refers to freedom from bias.¹⁴³

Bias refers to the tendency to err in a certain direction due to an attitudinal set which distorts the recall of an experience.¹⁴⁴

¹³⁸English & English, Op. Cit., p. 61.

¹³⁹Idem., p. 437.

¹⁴⁰Thorndike & Hagen, Op. Cit., p. 348.

¹⁴¹English & English, Op. Cit., p. 443.

¹⁴²Idem. p. 6.

¹⁴³Idem., p. 353.

¹⁴⁴Idem., p. 65.

Judgement refers to a process in which one subjectively evaluates or appraises a phenomenon.¹⁴⁵

Mathematic properties refers to characteristics which allow certain mathematical operations to be performed.¹⁴⁶

Dimension of behavior refers to a more or less singular or unitary attribute.¹⁴⁷

Functional relationship refers to a relationship between variables in which a change in one effects a change in one or more of the others.¹⁴⁸

A Statement of Theory

The following theorems and corollaries offer suggestions for enhancing the efficacy of the rating process via careful design and construction of the rating instrument. These theorems are:

First, the only behavioral phenomena that enter into the final ratings are those elicited through recall by the rating stimuli.¹⁴⁹

¹⁴⁵Idem., p. 282.

¹⁴⁶S. Stevens, On the Theory of Scales of Measurement, Science, CIII, 1949, 667-680.

¹⁴⁷English & English, Op. Cit., p. 153.

¹⁴⁸Idem., p. 219.

¹⁴⁹The Adjutant General's Office, Op. Cit., p. 10.

Second, physical characteristics of the rating instrument which facilitate recall of the actual perception of behavior will increase the accuracy of ratings.¹⁵⁰ That is, (a) the clearer, more "un-ambiguous" the rating instrument, the more likely that accurate ratings will result,¹⁵¹ (b) longer objective descriptive statements will be more effective than single words or simple phrases in defining the phenomenon to be rated,¹⁵² and (c) behaviors that are described univocally, objectively and specifically will result in more accurate ratings than those described conversely.¹⁵³

Third, rating scale items which refer to easy-to-observe behaviors will result in more accurate ratings than will those which refer to hard-to-observe behaviors.¹⁵⁴ Thus, ratings will be more accurate when the phenomena to be appraised are presented in terms of concrete and relatively specific behaviors rather than covert, inferential characteristics.¹⁵⁵

¹⁵⁰Idem., p. 13.

¹⁵¹Ibid.

¹⁵²Ibid.

¹⁵³Guilford, Op. Cit. p. 296.

¹⁵⁴Thorndike & Hagen, Op. Cit., p. 348.

¹⁵⁵Borstelmann, Op. Cit., p. 62.

On the other hand:

Fourth, for meaningful interpretation, rating scale items should be relevant to the objectives of measurement; and often (a) concrete, easy-to-observe behaviors are irrelevant to the objectives of measurement.^{156,157} Also, (b) many times when overall behavior is broken into its smaller, concrete components, the actual significance of the behavior is lost.¹⁵⁸

Thus:

Fifth, for maximally effective ratings, items should be composed of easy-to-observe behaviors that are relevant to the objectives of measurement.¹⁵⁹

Sixth, items that require minimal discrimination or judgment on the part of the rater will produce more objective ratings than those requiring great discrimination or judgment.¹⁶⁰ Thus, items that require indication of presense, absence or applicability of a behavior are less vulnerable to subjectivity than those requiring qualitative "decision-making."

¹⁵⁶Thorndike & Hagen, Op. Cit., p. 366.

¹⁵⁷Borstelmann, Op. Cit., p. 62.

¹⁵⁸Ibid.

¹⁵⁹Guilford, Op. Cit., p. 290.

¹⁶⁰Ibid.

Seventh, by the rating process, the rater's observation of the ratee's behavior can be expressed quantitatively.¹⁶¹ Thus, the results obtained from ratings can be treated statistically according to their mathematic properties.¹⁶²

Eighth, rating scale items can be grouped homogeneously to yield a unitary measure of a single dimension of behavior.¹⁶³ However, (a) items included in a unitary category should be functionally related rather than superficially similar; (b) the functional relationship of a class of items is determinable by statistical techniques.¹⁶⁴

Ninth, a multi-item measure of a behavior is more reliable than a single-item measure of the same.¹⁶⁵

The theorems and corollaries to follow suggest ways in which the efficiency of ratings may be facilitated by careful consideration of administration procedures. Continuing:

Tenth, the accuracy of ratings given will vary in direct proportion to the number of previous relevant opportunities for the rater to observe the ratee.¹⁶⁶ Therefore, the maximal

¹⁶¹The Adjutant General's Office, Op. Cit., p. 1.

¹⁶²Peak, Op. Cit., p. 25.

¹⁶³Idem., p. 248.

¹⁶⁴Ibid.

¹⁶⁵The Adjutant General's Office, Op. Cit., p. 36.

¹⁶⁶Idem., p. 11.

accuracy, rating scales should be administered to those in the best position to give the most accurate ratings.

Eleventh, observation of a subject's behavior with intention to remember will facilitate accurate recall of that behavior.¹⁶⁷ Thus, (a) the rater will give more accurate ratings when he has been pre-informed that such ratings will be taken,¹⁶⁸ and (b) the rater will give more accurate ratings when he has been forewarned concerning the type of behavior to be rated.¹⁶⁹

Twelfth, if the rater is provided with a set of clues regarding the type of behavior to be rated, he will be better able to properly focus his attention.¹⁷⁰ Furthermore, the keeping of a record of specifically observed critical incidents regarding the behavior to be rated will facilitate the objectivity of recall.¹⁷¹

Thirteenth, any phenomenon that mitigates the influence of bias will increase the accuracy of ratings.¹⁷² Therefore, (a) a conscious effort on the part of the rater to be more

¹⁶⁷The Adjutant General's Office, Op. Cit., p. 14.

¹⁶⁸Ibid.

¹⁶⁹Idem., p. 12.

¹⁷⁰Idem., p. 13.

¹⁷¹Ibid.

¹⁷²Ibid.

objective will tend to reduce the influence of bias, and (b) deliberate direction of the rater's attention to the possibility of bias may serve to mitigate the biasing effect.¹⁷³

Fourteenth, and last, the rater's general attitude toward the rating situation can affect the accuracy of the resultant ratings.¹⁷⁴ Thus (a) instructions to the rater that emphasize the importance of the ratings to the organization or institution in lieu of their immediate effect on the ratee will tend to reduce bias, and (b) rating scale administered under experimental conditions (i.e., to improve the instrument for the good of the institution, etc.) will be more accurate than those obtained under conditions where administrative action may ensue.¹⁷⁵

In summary, many criticisms of rating techniques as measurement devices stem from the long-standing absence of a comprehensive theory of rating. Recently, there has been considerable research effort devoted to the discovery of methods for improving the effectiveness of ratings. The above theorems and corollaries represent many of the findings resultant from this activity.

¹⁷³Idem., p. 12.

¹⁷⁴Idem., p. 13.

¹⁷⁵Ibid.

CHAPTER V

PROCEDURE

This chapter will outline and discuss the methodology used in constructing the rating scale. The procedure was divided into two phases: (1) data collection and design of the items and (2) preliminary investigation and refinement of the scale.

Data Collection and Design of the Items

First, the theory of psychopharmacological agents and empirical studies were reviewed (see chapter three), and eight categories of behavior were selected. Each was given a definitive heading reflecting the unifying element(s) of the behaviors included within, vis., (1) hyperactivity (2) hypoactivity (3) depression (4) euphoria (5) withdrawal (6) interpersonal relations (7) intrapersonal relations and (8) personal care and hygiene.¹⁷⁶ It is readily evident that while the first five categories refer to specific attributes, the remaining three tend to be rather general. This stems

¹⁷⁶Before the beginning of phase two, the writer found it necessary to re-name three of the original categories that seemed to be somewhat ambiguous, vis., (5) withdrawal to "submission-withdrawal", (6) interpersonal relations to "aggressive-resistance" and (7) intrapersonal relations to "manifest anxiety-self destruction." See below page 52.

from the fact that although these categories are not "truly" undimensional, the subsumed behaviors appear sufficiently related to be legitimately represented by a single score. Also it should be mentioned that while some of the above categories seem to fall at opposite ends of the same continuum, e.g., hyperactivity and hypoactivity, the writer has followed the recommendation of Jenkins and Lorr, that, in such cases, each symptom be regarded as an individual dimension since it is often difficult to decide whether or not both tails in fact belong in the same scale.¹⁷⁷

Following the development of the categories, a questionnaire designed to elicit specific behaviors characteristic of each category was prepared and distributed to three shifts of psychiatric aides employed at Parsons State Hospital and Training Center, in Parsons, Kansas.¹⁷⁸ (See Appendix I).

¹⁷⁷R. Jenkins & M. Lorr, Symptoms Scales and Check Lists for Improvement in Psychotic Patients, Chapter XXXI in Cole & Gerard (Eds.) Op. Cit., p. 470.

¹⁷⁸Parsons State Hospital and Training Center (PSH&TC) is a residential institution for mentally retarded and/or emotionally disturbed children of the state of Kansas between the ages of six and twenty-one. It purports to extend examination, treatment, and training facilities to 600+ patients, viz., D.A. Smith, Experimental Program for the Moderately and Severely Mentally Retarded Children, unpublished Master's thesis, Kansas State College of Pittsburg, 1959, p. 26.

Ninety-six questionnaires were completed by the aides and the information was used as the primary source for the contents of the scale.

In addition, the investigator reviewed several existing rating scales and check lists that have been used as criterion measures in past psychopharmacological research. Behaviors that appeared to fit into the aforementioned categories were recorded for possible inclusion in the present scale. Also, behaviors were listed which the investigator felt were relevant although they did not result from the above processes.

Concluding phase one, 174 descriptive statements were written; each was designed for one of the eight categories and reflected one of the characteristic derived from the questionnaires and other data gathering techniques.

Preliminary Investigation and Refinement of the Scale

The 174 descriptive statements were placed on a 3x5 card and a sorting scheme was devised with eight divisions (one for each category). The cards were then given in random order to ten research and clinical psychologists employed at PSH&TC who independently sorted the items into the categories that seemed "most appropriate." There was no way in which the judges could know the category for which the investigator had written the items. Prior to the sorting the psychologists were assembled and the following typewritten definitions of categories were distributed and discussed:

Hyperactivity. This category is to include those behaviors that "primarily" reflect an excess of activity.

Hypoactivity. This category is to include those behaviors that "primarily" reflect a paucity of activity.

Euphoria. This category is to include those behaviors that "primarily" reflect exaggerated feelings of well-being.

Depression. This category is to include those behaviors that "primarily" reflect feelings of dejection, deflation and pessimism.

Submission-Withdrawal. This category is to include those behaviors that "primarily" reflect (A) extreme timidity or lack of assertiveness and/or (B) avoidance of social contact.

Aggression-Resistance. This category is to include those behaviors that "primarily" reflect (A) unrestrained expression of hostile or infantile promptings and/or (B) negativism or rebellion against authority figures or peers.

Manifest Anxiety-Self Destruction. This category is to include those behaviors that "primarily" reflect (A) apprehension and ominousness and/or (B) internalized aggression.

Personal Care and Hygiene. This category is to include those behaviors that "primarily" reflect poor eating, cleanliness, and/or grooming habits.

Following the sorting, the percentage of agreement between psychologists was calculated for each item. Originally,

the investigator had planned to use seventy per cent as the cutting point, i.e., retain only those items that were placed in the same category by at least seven of ten judges; however, after inspection of the data it was decided that a cutting point of eighty per cent could be used without sacrificing many more of the items. As a result of the sorting process, 41 items were discarded, leaving 133 items that were placed randomly into their categories to constitute the experimental form of the rating scale. (See Appendix II)

The experimental form of the rating scale was then administered to the respective aides of 130 patients at PSH&TC. The sample was taken from the overall population by selecting twenty per cent of the population from each cottage, using a table of random numbers. Patients are assigned to the different cottages according to their age and level of adaptive behavior. (see table I) The stratification of the male and female populations along with the number of patients on the cottages and the number included in the sample is presented in Tables II and III.

The aides were instructed to rate how well each of the 133 items described the designated patient, using the following system:

- 3 Is an excellent description of the patient
- 2 Describes the patient fairly well
- 1 Does apply but very little
- 0 Does not apply at all

The score for each category was computed separately, i.e., each was considered to be an independent sub-scale. For each of the sub-scales, the patients scoring in the highest 27 per cent and the lowest 27 per cent were selected. The aides' response to each item was dichotomized according to whether or not the item fit the patient to any extent. The division was made between zero and one.

TABLE I
LEVELS OF ADAPTIVE BEHAVIOR¹⁷⁹

Level	Description
-I	Children of this level are those who are capable of effective social and economic functioning in a low-demand competitive environment and who will need some management of their personal affairs.
-II	Children of this level are those who are capable of effective social and economic functioning in a non-competitive environment and who will need continuing support and supervision in the management of their personal affairs.
-III	Children of this level are those who are capable of limited social and economic functioning and who will be dependent upon total environmental control and support.
-IV	Children of this level are those who are capable of responding only to the simplest of environmental stimuli, and interpersonal relationships, and who will be totally dependent upon nursing care for their survival.
-V	Children of this level are those who are grossly severely physically handicapped, and who require hospitalization in order to receive the continuous medical-nursing care necessary for their survival.

¹⁷⁹C. Gorton, Philosophy of Education and Training at Parsons State Hospital and Training Center, Mimeographed material, PSH&TC, Parsons, Kansas, 1958, p. 7.

TABLE II

STRATIFICATION OF THE PSH&TC MALE POPULATION

Cottage	Level	Age Range	N of Cottage	N of Sample
1 West 1	IV & V	6-12	18	4
2 North	IV & V	16+	34	7
3 North	III	16+	40	8
4 North	IV	12-16	21	4
5 North	I & II	12-16	21	4
8 North I	IV & V	8-12	31	6
8 North II*	IV & V	_____	37	8
Ash	I, II & III	6-12	32	6
Birch	III	12-16	31	6
Cedar	I & II	16-20	28	5
Oak	I & II	16+	23	5
Pine	I & II	8-12	29	6
Elm*	I, II & III	_____	22	4
			367	73

*Intensive treatment units

TABLE III

STRATIFICATION OF THE PSH&TC FEMALE POPULATION

Cottage	Level	Age Range	N of Cottage	N of Sample
Willow	I & II	16+	29	6
4 South	I & II	-16	17	3
3 South	I, II & IV	6-12	40	8
2 South I	III	6-12	15	3
2 South II	III	12-16	25	5
2 South III	III	16+	26	5
I West II	IV & V	16+	47	9
I South I	V	6-12	18	3
I South II*	_____	_____	28	6
I South III	IV & V	12-16	43	9
			288	57

*Intensive treatment unit

In order to determine which items best predicted the total score for each sub-scale, the relationship between each item and the sub-scale total was assessed by the Kendall partial rank correlation coefficient ($r_{xy.z}$) which is frequently referred to as the phi coefficient.¹⁸⁰ These values were obtained from a table prepared by G. E. Jurgensen and are presented in Appendix II.¹⁸¹ Other than providing a measure of item validity, these coefficients can be considered to be indices of internal consistency or homogeneity of content.¹⁸²

It was the investigator's arbitrary decision to retain only those items which were shown to have a correlation coefficient of .50 or greater. Inspection of the data revealed that twenty-three items failed to meet this criterion. The less valid items were discarded and the remaining 110 were retained by category to compose the final form of the rating scale. (See Appendix III).

In summary, this chapter describes the procedure by which the rating scale was constructed. All of the major steps from the initial gathering of content to the final refinement of

¹⁸⁰The phi coefficient may be used with no less than ordinal data. There are no assumptions about the shape of the population of score., viz., S. Siegel, Nonparametric Statistics, New York: McGraw-Hill Book Co., Inc., 1956.

¹⁸¹G. E. Jurgensen, Table for Determining Phi Coefficients, Psychometrika, 1947, II, 17-29.

¹⁸²Peak, Op. Cit., 243-246.

the scale were outlined and discussed. A discussion of the final form of the scale is included in the following chapter.

CHAPTER VI

FINAL CONSIDERATIONS, RECOMMENDATIONS AND SUMMARY

Final Considerations

Validity and reliability are the sine qua non of all instruments that purport to be behavioral measurements. Therefore, a rating scale, like other measuring instruments should provide evidence that it in fact measures that which it was designed to measure, and furthermore, that it does so consistently. These considerations, as they apply to the present study, will be treated in the following paragraphs.

Validity

The validation of rating instruments is often a difficult task in that usually the development of this type of instrument stems from the absence of a more "objective" criterion for the behavior of interest. Thus, the most common method of scale validation, i.e., prediction to a stated criterion is unlikely in this case.¹⁸³ The type of validity that is frequently used with rating scales is "content validity", although it is also known by other

¹⁸³The Adjutant General's Office, Op. Cit., p. 47.

names, e.g., face validity, semantical validity, validity by definition, etc.. In the present study, an index of content validity was provided by the use of expert judges (ten psychologists) who sorted the items into categories according to their apparent content. Furthermore, through item analysis it was determined that each of the eight categories or sub-scales are in fact functional unities, i.e., to a reasonable degree they are measuring the same characteristic. Therefore, it may be assumed that the characteristic they are measuring is the one they were designed to measure; or stated another way, the content of the scale gives definition to the subsuming concept.¹⁸⁴ Of course, it is recognized that this type of validity is no substitute for empirical validation; it was not intended to be. Hopefully in the future, other investigators interested in this area will be motivated to conduct validity studies.

Another problem that should be discussed is that of interpretation. In general, it can be said that interpretation of results obtained from the present scale cannot be made independently of the distribution of scores for some defined group. That is, one cannot designate a particular score on the hyperactivity sub-scale as high low, medium or what have you. However, this instrument was designed explicitly

¹⁸⁴Peak, Op. Cit.

for research use, and since researchers are primarily interested in group changes rather than individual results, this problem is of little consequence.

Reliability

In this present study, no attempt was made to assess the reliability of the final rating scale. However, the phi coefficients, used in item selection, do provide a measure of internal consistency, which is a type of reliability. The two-fold use of these coefficients is based on the assumption that reliability in measurement is a necessary precondition to validity in measurement, i.e., if an item or group of items consistently predict a response or an inferred construct, the same item or items are reliable, ipso facto.¹⁸⁵ However, the utility of the scale would be enhanced if an estimate of inter-judge agreement were provided.

Recommendations

Although the rating scale was designed for use in drug research, it is conceivable that it may be appropriate criterion for other types of therapy. However, the writer will confine his suggestions to needs related to increasing knowledge about the scale and/or enhancing its utility.

¹⁸⁵A. L. Edwards, Techniques of Attitude Scale Construction, New York: Appletcn-Century-Crofts, Inc., 1957, p. 156.

First, a study should be conducted to establish the empirical validity of the instrument. As previously mentioned, there is usually difficulty in locating appropriate outside criterion measures, which is an essential aspect of concurrent and predictive validity. Thus, in lieu of the above, the scale might be employed in a study with a drug that has previously demonstrated its behavioral effect. If such a study found significant results, both the rating scale and the (psychopharmacology) theory upon which it is based is validated to some degree.

Second, a study should be conducted to establish the reliability of the scale. Of the techniques for establishing scale reliability, the present writer feels that an indication of inter-judge agreement would be the most valuable.

Summary

Recently, a new group of drugs has been introduced to the field of psychiatry for the treatment and management of mental patients. Many of the early studies concerning the efficacy of these compounds reported very encouraging results, although frequently these investigations lacked important controls and relied upon questionable criteria of improvement. However, recent studies employing more rigorous experimental designs have supported many of the earlier findings, which seems to indicate that these new drugs are not just a "flash in the pan."

Today, the problem of obtaining valid, reliable and relevant criterion measures for psychopharmacological research remains a crucial as well as formidable consideration. Observation has been the most commonly used criterion in drug studies heretofore and of necessity will probably continue to be used in the future.

There have been several major criticisms made of observation as a scientific process; of these, the problem of subjectivity and bias have been the most often raised. Rating scales were introduced in an effort to render observations more objective and reliable.

Traditional rating scales as used in drug research pose two major problems. First, their general nature frequently precludes consideration of the specific questions set forth by the research design. Second, the grossness of their measurement makes it extremely difficult--and often impossible--to detect the molecular changes in behavior which the drugs are more likely to produce.

On the other hand, the rating scales that have been developed specifically for drug research tend to be ad hoc affairs that are used exclusively by their authors, and succeed only in providing large amounts of non-comparable data. Consequently, a great need exists for rating instruments that are specific enough to answer the critical questions asked by psychopharmacologists, and are available for use in

similar settings, providing researchers the essential tools with which to conduct truly replicable studies.

The present writer purports to contribute to the above need by constructing a rating instrument designed to measure psychopharmacological effects on the behavior of institutionalized mentally retarded children. The need for such a scale is indicated by the recent interest in psychotropic drugs (especially tranquilizers) shown by workers in the field of mental retardation.

Adhering to the principle that all measurement should stem from a theoretical basis, considerable time was devoted to reviewing leading theories of psychopharmacologic action as well as experimental and non-experimental drug studies. Special emphasis was given to studies involving mentally retarded children. From these data eight categories of behavior were selected that appeared to encompass the major postulated effects of both tranquilizing and energizing medication.

Based on the above categories, a questionnaire was prepared and distributed to three shifts of psychiatric aides employed at PSH&TC. The questionnaire data plus a review of existing rating scales that have been used in drug research provided the major source from which the content of the present rating scale was drawn.

Next, 174 statements describing patient behavior were composed and placed on 3x5 cards. A sorting scheme was then

devised and ten clinical and research psychologists were asked to individually sort the items into one of the eight behavioral categories according to which category seemed most appropriate. By this method, the more ambiguous items in terms of face validity were eliminated.

The remaining items constituted the experimental form of the rating scale. The scale was then administered to the respective aides of a randomly selected sample of the patient population at PSH&TC. From the results of these ratings, an item analysis was undertaken using the phi-coefficient as an index of item-total relationship. By this technique, only the most valid items were retained in the final form of the rating scale.

Conclusions

The rating scale developed in this study is considered, in its present form, a non-validated instrument. With this as a limitation, the writer feels that on the basis of face validity it can be used in appropriate psychopharmacological research studies.

The three appendices to follow present respectively a copy of the questionnaire circulated to the psychiatric aides, a copy of the experimental form of the rating scale, and the final form of the rating scale. Appendix II also includes the phi correlation coefficients used in selecting the items for the final scale.

APPENDIX

APPENDIX I

PARSONS STATE HOSPITAL AND TRAINING CENTER PARSONS, KANSAS

To: Psychiatric Aides

From: Psychology Department

It is well recognized that psychiatric aides are the members of the Hospital team who have the closest contact with patients. In their position, they are able to observe many important aspects of patient behavior that may otherwise be missed. For this reason, you are being asked to take part in a research project which has as its goal the development of a new "behavioral rating scale." Although what you are being asked to do will not take much of your time, its importance to the overall project is immeasurable, therefore, your conscientious consideration will be greatly appreciated.

Each of the following pages will contain its own specific instructions so that you will know exactly what to do. When you have finished, check back to make sure that you have completed all of the eight sheets.

Instructions:

Think of the most "hyperactive" patient you know, (i.e., the most overactive, etc.) Once you have him well in mind, list all of his specific behavior that led you to consider him "hyperactive."

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
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- 18.
- 19.
- 20.
- 21.

Instructions:

Think of the most "hypoactive" patient you know, (i.e., the most underactive, etc.) Once you have him well in mind, list all of the specific behavior that led you to consider him "hypoactive."

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
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- 11.
- 12.
- 13.
- 14.
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- 16.
- 17.
- 18.
- 19.
- 20.
- 21.

Instructions:

Think of the most "depressed" patient you know, (i.e., extremely sad and dejected, etc.) Once you have him well in mind, list all of his specific behavior that led you to consider him to be "depressed."

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
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- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.

Instructions:

Think of the most "euphoric" patient you know (i.e., one who is cheerful or elated to the extreme, etc.) Once you have him well in mind, list all of his specific behavior that led you to consider him as "euphoric."

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
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- 11.
- 12.
- 13.
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- 18.
- 19.
- 20.
- 21.

Instructions:

Think of the patient whom you consider to have the poorest "personal care in hygiene", (i.e., the poorest eating habits, training habits, and cleanliness habits, etc.) Once you have him well in mind, list his specific behavior that led you to consider him to have poor personal care and hygiene.

- 1.
- 2.
- 3.
- 4.
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- 6.
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- 11.
- 12.
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- 14.
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- 16.
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- 18.
- 19.
- 20.
- 21.

Instructions:

Think of the patient whom you consider to have the most "internal conflict", (i.e., is extremely anxious, self-involved, and self-destructive, etc.) Once you have him well in mind, list all of his specific behavior that led you to consider him to have "internal conflict."

- 1.
- 2.
- 3.
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- 21.

Instructions:

Think of the most aggressive, rebellious, and acting out patient you know, (i.e., is in constant conflict with his peers and with the staff, etc.) Once you have him well in mind, list all of his specific behavior that led you to consider him to be aggressive and rebellious.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
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- 16.
- 17.
- 18.
- 19.
- 20.
- 21.

Instructions:

Think of the most withdrawn patient you know (prefers to stay to himself and seems to be afraid to interact with either his peers or the staff, etc.) Once you have him well in mind, list all of his specific behavior that led you to consider him to be withdrawn.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
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- 17.
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- 19.
- 20.
- 21.

APPENDIX II

BEHAVIORAL RATING SCALE

(Experimental Form X)

Instructions to Raters:

Patient's Name: _____

On the following pages you will find 133 statements which have been used to describe patient behavior on the cottage. These items are divided into eight sub-categories. You are to rate how well each of the items describe the above patient, using the following system:

- 3 Is an excellent description of the patient
- 2 Describes the patient fairly well
- 1 Does apply but very little
- Does not apply at all

When you have finished with all of the items, add up the scores for each independent section. There is one section on each page and a place at the bottom for the score. Remember, the score for each page is to be taken individually.

(r_{xy.z})

Section I

- .76 1. The patient is usually so in a hurry to get started on an activity it is difficult to slow him down long enough to give instructions.
- .81 2. The patient is very exciteable; with the least provocation he is running all over the ward or jumping up and down.
- .67 3. The patient will not or cannot settle down by bedtime.
- .78 4. The patient is constantly running to the water fountain or bathroom just to be on the go.
- .37 5. The patient never seems to get enough work to do; he constantly asks if there is work to be done.
- .46 6. The patient talks so rapidly that he is unable to collect his thoughts.
- .72 7. The patient doesn't walk to do anything; he always runs.
- .22 8. The patient likes to help the aides, but he ususally does things so rapidly he bungles the job.
- .27 9. Whenever fast music is heard, the patient will shuffle his feet.
- .70 10. The patient is constantly flitting from one activity to another; he cannot stick to one thing for very long.
- .67 11. The patient cannot be at the aide station without picking at things on the desk.
- .79 12. The patient is impatient; he wants to do everything "right now."
- .69 13. Even when sitting, the patient is constantly fidgeting, i.e., makes non-productive movements with some part of the body.
- .53 14. The patient never wants to take a nap.
- .67 15. The patient does everything hurriedly.
- .83 16. The patient cannot sit still, even at meals.
- .84 17. The patient is in constant motion; he seems uncomfortable if required to remain still even for a short period of time

(Score)

Section II

- .81 18. The patient just drags around the ward; it is very difficult to get him to move.
- .88 19. The patient walks at an extremely slow pace.
- .73 20. Nothing seems to excite the patient into moving faster than his normal slow pace.
- .88 21. The patient avoids activities that require much physical energy, e.g., running, jumping, etc.
- .65 22. The patient talks very slowly.
- .60 23. The patient stays in one position for long periods of time.
- .76 24. The patient is lazy; he would sit all day if not directed into an activity.
- .90 25. The patient is extremely slow at everything he does; he cannot be hurried for any reason.
- .79 26. The patient sits or lies down whenever he gets a chance.
- .81 27. The patient is slow to get up in the morning.
- .87 28. All of the patient's movements are slow.
- .79 29. After moderately exhausting activities, the patient seems completely worn out.
- .76 30. The patient eats very slowly.
- .76 31. The patient takes an unusually long time to dress.
- .43 32. The patient complains that he does not get ample time to rest.
- .55 33. The patient sleeps a lot more than the other patients; both day and night.
- .64 34. The patient is content to plod along at one task all day.
- .55 35. In walking to some other building on the hospital grounds, the patient has to be prodded along or picked up and carried.

_____ (score)

Section III

- .82 36. The patient sometimes laughs to himself for no apparent reason.
- .54 37. The patient doesn't seem to have a care.
- .56 38. The patient is frequently telling others how good he feels or how well things are going for him.
- .75 39. The patient giggles a great deal.
- .76 40. The patient is constantly smiling without apparent reason.
- .80 41. The patient gets so happy over little things he frequently has to be controlled.
- .60 42. The patient laughs inappropriately, e.g., at worship services, etc.
- .38 43. The patient often tells jokes that are extremely funny to him but to no one else.
- .70 44. The patient laughs a lot at meals.
- .70 45. Incidents of slight humor are hilarious to the patient.
- .90 46. The patient is extremely happy-go-lucky; he can never place things in a serious vein.
- .73 47. The patient sometimes has laughing "spells" where he laughs for extremely long periods of time seemingly unable to stop.
- .91 48. The patient is easily excited; even at routine activities he is disproportionately happy and enthusiastic.
- .67 49. The patient makes nonsense gestures when talking, to elicit laughter from others.
- .60 50. The other patients consider the patient "silly" and try to avoid him.
- .48 51. The patient is always singing to himself.

_____ (Score)

Section IV

- .34 52. The patient likes slow, sad music.
- .51 53. The patient often indicates that he feels too sad to eat.
- .43 54. The patient verbally indicates that he considers himself worthless or "no good."
- .58 55. The patient has an extremely sad expression on his face most of the time.
- .73 56. The patient is usually so sad that he is not interested in any of the activities on the ward.
- .43 57. It is very unusual to see the patient smile.
- .50 58. The patient has expressed sincere desire to be dead.
- .50 59. The patient seldom expresses joy or happiness about anything.
- .53 60. The patient is pessimistic about his future; he expresses doubt that his life has any hope.
- .56 61. The patient is often homesick.
- .60 62. The patient is very quiet and always seems to have the "blues."
- .60 63. The patient seems to look at the dark side of everything.
- .50 64. The patient never laughs at a joke.
- .60 65. The patient indicates that he feels no one likes him.
- .67 66. The patient is sad and mopish most of the time.
- .51 67. The patient indicates that he does not feel that he can do things as well as the other patients.
- .45 68. The patient cries or moans a lot.

(Score)

Section V

- .64 69. The patient draws away when approached by peers or staff.
- .62 70. The patient keeps in his own room (area) a lot.
- .48 71. The patient does not speak unless spoken to.
- .38 72. The patient does not demand attention from either the aides or his peers.
- .50 73. The patient gets out of the way when others pass.
- .37 74. The patient indicates that he would rather eat alone.
- .58 75. Although the patient has no enemies, he does not have a close friend on the ward.
- .62 76. The patient backs away when he is being talked to.
- .74 77. The patient ignores the activities around him, i.e., he doesn't seem to care as long as it does not include him.
- .50 78. The patient is too shy to ask for anything; he just waits for things to be given to him.
- .60 79. The patient avoids all contact with other persons, peers or staff.
- .64 80. The patient talks very little to peers or staff. He never says more than 3 or 4 words to anyone.
- .76 81. The patient stays by himself a good deal. He does not readily join others in play activities and seems rather disturbed or uncomfortable when others join him.
- .72 82. The patient often plays by himself.
- .71 83. The patient has very few friends on the ward.

(Score)

Section VI

- .85 84. When angered, the patient deliberately destroys the personal property of others.
- .69 85. The patient tries to get his way on the ward by bullying the other patients.
- .67 86. The patient is frequently rebelling against the aide, threatening to do bodily harm or get her (him) fired.
- .97 87. The patient frequently hits and curses other patients.
- .90 88. The patient flies into a rage over even minor matters.
- .84 89. The patient does not cooperate on the ward. He constantly tries to get out of doing his share of the work.
- .57 90. The patient is very stubborn and uncompromising when it comes to things like TV shows, choice of games, etc..
- .74 91. The patient always wants to have his way, e.g., be the first in line, leader of the group, etc..
- .91 92. The patient constantly picks on smaller boys (girls) on the ward.
- .46 93. The patient physically attacks the aide, hitting, kicking, and tearing uniforms.
- .52 94. The patient resists following directions. He has to be pushed to follow the routine on the ward.
- .71 95. The patient is impudent and invariably impolite. He sassses aides and disregards the feelings of other patients.
- .87 96. When the patient is upset, he screams and fights whoever happens to be near, either staff or peers.
- .67 97. The patient is constantly bossing other patients.
- .64 98. The patient expresses his hostile feelings without restraint, tearing up bed spreads, sheets, etc..
- .83 99. The patient quarrels frequently with the other patients. If there is an argument, he is likely to be in it.
- .71 100. The patient frequently has to be separated from the group for the safety of others.

_____ (Score)

Section VII

- .59 101. The patient seems to perspire excessively, especially the palm of the hands and forehead.
- .38 102. The patient reports having feelings that something "bad" is going to happen.
- .78 103. The patient seems to become easily alarmed over even minor incidents.
- .69 104. The patient seems to be very tense; his body movements are tight and he seldom "loosens up."
- .71 105. The patient becomes quite startled at loud or sudden noises, although others who experience the same do not react similarly.
- .60 106. The patient will pick at sores on his arms and legs until they bleed.
- .43 107. The patient is so nervous his hands and arms tremble almost all the time.
- .50 108. The patient constantly complains of having aches and pains for which the doctors can find no medical cause.
- .53 109. The patient bites himself when disturbed.
- .67 110. The patient frequently has headaches and/or upset stomach.
- .50 111. The patient frequently chews his fingernails.
- .48 112. The patient is constantly pulling at his hair as a nervous mannerism.
- .41 113. The patient is extremely afraid of the dark.
- .38 114. The patient is always asking to take more medicine.
- .38 115. The patient indicates that a portion of his body (e.g., heart, brain, etc.) is not functioning properly or is about to cease doing so.

_____ (Score)

Section VIII

- .85 116. The patient takes no interest in his personal appearance, i.e., he makes no effort to groom himself even for visitors.
- .73 117. When left to his own choosing, the patient does not eat an adequate serving at meals; he either eats too little or too much than is conducive to good hygiene.
- .70 118. The patient will put just about anything in his mouth.
- .33 119. The patient will drink out of the stool.
- .77 120. The patient is sloppy about his dress. His clothing is often unbuttoned and he is unconcerned about tears, rips, etc..
- .86 121. The patient will put his hand in his mouth no matter how dirty it is.
- .69 122. The patient does not wash his hands after using the toilet.
- .38 123. The patient eats with his hand rather than use silverware.
- .57 124. The patient has a repugnant body odor.
- .76 125. The patient doesn't like to wash or have his face washed.
- .78 126. The patient has to be forced to brush his teeth or let them be brushed.
- .97 127. The patient will not wipe his nose when it runs.
- .88 128. The patient has to be reminded or forced to change his clothing or else he would be content to wear the same thing over and over.
- .63 129. At meals, the patient plays with his food.
- .78 130. The patient doesn't care if his hair is combed or not.
- .50 131. The patient tries to go to bed in his street clothing.
- .57 132. The patient eats off the floor.
- .60 133. The patient wets or soils himself because of negligence or indifference.

_____(Score)

APPENDIX III

PARSONS BEHAVIORAL RATING SCALE

Instruction to Raters:

Patient's Name: _____

On the following pages you will find 110 statements which have been used to describe patient behavior on the cottage. These items are divided into eight sub-categories. You are to rate how well each of the items describe the above patient, using the following system:

- 3 Is an excellent description of the patient
- 2 Describes the patient fairly well
- 1 Does apply but very little
- 0 Does not apply at all

SECTION I

- ___1. The patient is usually so in a hurry to get started on an activity it is difficult to slow him down long enough to give instructions.
- ___2. The patient is very exciteable; with the least provocation he is running all over the ward or jumping up and down.
- ___3. The patient will not or cannot settle down by bedtime.
- ___4. The patient is constantly running to the water fountain or bathroom just to be on the go.
- ___5. The patient doesn't walk to do anything; he always runs.
- ___6. The patient is constantly flitting from one activity to another; he cannot stick to one thing for very long.
- ___7. The patient cannot be at the aide station without picking at things on the desk.
- ___8. The patient is impatient; he wants to do everything "right now."
- ___9. Even when sitting, the patient is constantly fidgeting, i.e., makes non-productive movements with some part of the body.
- ___10. The patient never wants to take a nap.
- ___11. The patient does everything hurriedly.
- ___12. The patient cannot sit still, even at meals.
- ___13. The patient is in constant motion; he seems uncomfortable if required to remain still even for a short period of time.

_____ (Score)

SECTION II

- ___14. The patient just drags around the ward; it is very difficult to get him to move.
- ___15. The patient walks at an extremely slow pace.
- ___16. Nothing seems to excite the patient into moving faster than his normal slow pace.
- ___17. The patient avoids activities that require much physical energy, e.g., running, jumping, etc..
- ___18. The patient talks very slowly.
- ___19. The patient stays in one position for long periods of time.
- ___20. The patient is lazy; he would sit all day if not directed into an activity.
- ___21. The patient is extremely slow at everything he does; he cannot be hurried for any reason.
- ___22. The patient sits or lies down whenever he gets a chance.
- ___23. The patient is slow to get up in the morning.
- ___24. All of the patient's movements are slow.
- ___25. After moderately exhausting activities, the patient seems completely worn out.
- ___26. The patient eats very slowly.
- ___27. The patient takes an unusually long time to dress.
- ___28. The patient sleeps a lot more than the other patients, both day and night.
- ___29. The patient is content to plod along at one task all day.
- ___30. In walking to some other building on the hospital grounds, the patient has to be prodded along or picked up and carried.

_____(Score)

SECTION III

- ___31. The patient sometimes laughs to himself for no apparent reason.
- ___32. The patient doesn't seem to have a care.
- ___33. The patient is frequently telling others how good he feels or how well things are going for him.
- ___34. The patient giggles a great deal.
- ___35. The patient is constantly smiling without apparent reason.
- ___36. The patient gets so happy over little things he frequently has to be controlled.
- ___37. The patient laughs inappropriately, e.g., at worship services, etc..
- ___38. The patient laughs a lot at meals.
- ___39. Incidents of slight humor are hilarious to the patient.
- ___40. The patient is extremely happy-go-lucky; he can never place things in a serious vein.
- ___41. The patient sometimes has laughing "spells" where he laughs for extremely long periods of time, seemingly unable to stop.
- ___42. The patient is easily excited; even at routine activities he is disproportionately happy and enthusiastic.
- ___43. The patient makes nonsense gestures when talking, to elicit laughter from others.
- ___44. The other patients consider the patient "silly" and try to avoid him.

_____ (Score)

SECTION IV

- ___45. The patient often indicates that he feels too sad to eat.
- ___46. The patient has an extremely sad expression on his face most of the time.
- ___47. The patient is usually so sad that he is not interested in any of the activities on the ward.
- ___48. The patient has expressed a sincere desire to be dead.
- ___49. The patient seldom expresses joy or happiness about anything.
- ___50. The patient is pessimistic about his future; he expresses doubt that his life has any hope.
- ___51. The patient is often homesick.
- ___52. The patient is very quiet and always seems to have the "blues."
- ___53. The patient seems to look at the dark side of everything.
- ___54. The patient never laughs at a joke.
- ___55. The patient indicates that he feels no one likes him.
- ___56. The patient is sad and mopish most of the time.
- ___57. The patient indicates that he does not feel that he can do things as well as the other patients.

_____ (Score)

SECTION V

- ___58. The patient draws away when approached by peers or staff.
- ___59. The patient keeps in his own room (area) a lot.
- ___60. The patient gets out of the way when others pass.
- ___61. Although the patient has no enemies, he does not have a close friend on the ward.
- ___62. The patient backs away when he is being talked to.
- ___63. The patient ignores the activities around him, i.e., he doesn't seem to care as long as it does not include him.
- ___64. The patient is too shy to ask for anything, he just waits for things to be given to him.
- ___65. The patient avoids all contact with other persons, peers or staff.
- ___66. The patient talks very little to peers or staff. He never says more than 3 or 4 words to anyone.
- ___67. The patient stays by himself a good deal. He does not readily join others in play activities and seems rather disturbed or uncomfortable when others join him.
- ___68. The patient often plays by himself.
- ___69. The patient has very few friends on the ward.

_____ (Score)

SECTION VI

- ___70. When angered, the patient deliberately destroys the personal property of others.
- ___71. The patient tries to get his way on the ward by bullying the other patients.
- ___72. The patient is frequently rebelling against the aide, threatening to do bodily harm or get her (him) fired.
- ___73. The patient frequently hits and curses other patients.
- ___74. The patient flies into a rage over even minor matters.
- ___75. The patient does not cooperate on the ward. He constantly tries to get out of doing his share of the work.
- ___76. The patient is very stubborn and uncompromising when it comes to things like TV shows, choice of games, etc..
- ___77. The patient always wants to have his way, e.g., be the first in line, leader of the group, etc..
- ___78. The patient constantly picks on smaller boys (girls) on the ward.
- ___79. The patient resists following directions. He has to be pushed to follow the routine on the ward.
- ___80. The patient is impudent and invariably impolite. He sasses aides and disregards the feelings of other patients.
- ___81. When the patient is upset, he screams and fights whoever happens to be near, either staff or peers.
- ___82. The patient is constantly bossing other patients.
- ___83. The patient expresses his hostile feelings without restraint, tearing up bed spreads, sheets, etc..
- ___84. The patient quarrels frequently with the other patients. If there is an argument, he is likely to be in it.
- ___85. The patient frequently has to be separated from the group for the safety of others.

_____(Score)

SECTION VII

- ___86. The patient seems to perspire excessively, especially the palm of the hands and forehead.
- ___87. The patient seems to become easily alarmed over even minor incidents.
- ___88. The patient seems to be very tense; his body movements are tight and he seldom "loosens up."
- ___89. The patient becomes quite startled at loud or sudden noises, although others who experience the same do not react similarly.
- ___90. The patient will pick at sores on his arms and legs until they bleed.
- ___91. The patient constantly complains of having aches and pains for which the doctors can find no medical cause.
- ___92. The patient bites himself when disturbed.
- ___93. The patient frequently has headaches and/or upset stomach.
- ___94. The patient frequently chews his fingernails.

_____(Score)

SECTION VIII

- ___95. The patient takes no interest in his personal appearance, i.e., he makes no effort to groom himself even for visitors.
- ___96. When left to his own choosing, the patient does not eat an adequate serving at meals; he either gets too little or too much than is conducive to good hygiene.
- ___97. The patient will put just about anything in his mouth.
- ___98. The patient is sloppy about his dress. His clothing is often unbuttoned and he is unconcerned about tears, rips, etc..
- ___99. The patient will put his hand in his mouth, no matter how dirty it is.
- ___100. The patient does not wash his hands after using the toilet.
- ___101. The patient has a repugnant body odor.
- ___102. The patient doesn't like to wash or have his face washed.
- ___103. The patient has to be forced to brush his teeth or let them be brushed.
- ___104. The patient will not wipe his nose when it runs.
- ___105. The patient has to be reminded or forced to change his clothing or else he would be content to wear the same thing over and over.
- ___106. At meals, the patient plays with his food.
- ___107. The patient doesn't care if his hair is combed or not.
- ___108. The patient tries to go to bed in his street clothing.
- ___109. The patient eats off the floor.
- ___110. The patient wets or soils himself because of negligence or indifference.

_____ (Score)

RECORDING SHEET

(Note: This sheet is for the use of the researcher and should not be given to the rater.)

<u>Section</u>	<u>Score</u>
I (Hyperactivity)	_____
II (Hypoactivity)	_____
III (Euphoria)	_____
IV (Depression)	_____
V (Submission-Withdrawal)	_____
VI (Aggression-Resistance)	_____
VII (Manifest Anxiety-Self Destruction)	_____
VIII (Personal Care and Hygiene)	_____

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