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An experimental perception-recognition test in ambiguity : a comparison of medical and psychiatric patients

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AN EXPERIMENTAL PERCEPTION-RECOGNITION TEST IN AMBIGUITY: A COMPARISON OF MEDICAL AND PSYCHIATRIC PATIENTS

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INTRODUCTION AND REVIEW

Recently investigators of human behavior have turned to the field of perception in hopes of illuminating new phases and functions of the personality. Perception is defined simply by the dictionary as an awareness of objects or a direct acquaintance of anything through the senses. Psychology would expand this somewhat to include a concept of environmental impact upon perception as well as some explanation of the factors within the personality which allow for individual differences in perceiving. As Blake (1) says, the world never registers on two people in exactly the same way; each man is only an individual representation of reality, and as behavior is largely the response of an organism to its environment, it is these individual differences in perceiving that environment which underlie many of the differences in behavior. Thus for a proper study of behavior one must first have some conception of the "determinants of individual differences in perceiving." With this idea of a working definition we may ask, what then, is the process of perception, and what are the many factors determining perceptual activity? The answer to this question is as complex as the human being itself, and though no one theory will account for it,

some review of present concepts is needed to help explain the work of this paper.

Considering the determinants of perception one is first reminded that the basis of perception lies in certain anatomic and physiologic structural units which are the means of obtaining sensory information about our environment. Thus we see, hear, taste, feel, or in other ways sense the more tangible portions of our world. One asks then, what receptors does one use to perceive the more abstract environment containing such qualities as friendliness, cheerfulness, anger, hostility, etc.? At any rate within broad limits everyone, unless somehow handicapped, is endowed with quite the same sensory units which are used with marked individual variation. The structural field is not the place to look for differences in perception but rather the more central portions of mind where information is organized, integrated, and finally response-oriented.

One of the oldest questions asked of perception is, what part of it is inherent or native in our personalities and what part is the result of our past experiences and learning? Certainly some of our sensory preferences and perceptive reactions lie in instinct and heredity, but many investigators have concluded that probably the vast proportion come from empirical learning.

Lawrence (2) points out from the Ames experiments using distorted rooms and figures that apparently perception is based on statistical averages gained in many past experiences and used as presumptions for purposeful action. Many experiments involving judgment of size and distance show that accurate perception is gained by experience with many different cues such as shadow, diminishing size, color, convergence of parallel lines, etc. Hilgard (3) purposes as the goals of perception environmental stability and definiteness, and shows that our learning and experience is oriented toward the achievement and maintenance of these goals. Thus we attempt to keep our environment a stable one in which things are definite and can be known easily. He further shows that interpretation of data is influenced by the frequency of occurrence of past events but even more so by "set" or the peculiar experience one has had and by the past implications or "loading" (whether reassuring or anxiety-producing etc.) of this experience.

As seen from a somewhat different point of view there are several general aspects of the environment which should be mentioned as determinants in perception. Certainly culture has an impact upon perception both by dictating the form our experiences take and the learning we receive as well as prescribing how our perceptions

will be utilized. Similarly the influence of religious groups, schools and certainly the family can be shown. Some evidence will be presented later describing how these and other factors are related to perception by the individual with his singular attitudes, prejudices, and emotional needs and desires.

Turning from some of the factors influencing perception, we may now examine the mechanism of the perceptual process itself. Bruner (4) outlines a theory of perception which involves three basic steps. First perception begins with expectancy or a hypothesis. This is evoked on order of the many obscure motivational factors of the personality. Secondly the process involves input of information by sensory receptors. The third step is one of checking or confirming the operative hypothesis. If this hypothesis is not confirmed by the total of information, experience, and motivational factors it is altered or a secondary hypothesis is formed. A theory of this sort invokes many questions about the differences in hypotheses, types of information, and the utilization of it in adjusting the hypotheses. For example, hypotheses must vary in strength and according to Bruner they do on such bases as the frequency of past confirmation, number of them formed at any one time, the presence of supporting hypotheses, and final

consequences.. The input of information implies the ability to recognize relevant and irrelevant information. Bruner realized the immense variability of all these elements and in attempting to discover why related his theory to the general personality field. He pointed out that differences in the kinds and strength of hypotheses that different individuals employ would tend to reflect differences in past history, and personality structure as well as major personality trends.

As Bruner (4) has stated in his theory of perception, much of it is related to personality structure and behavior. Present theories of personality functioning have much of their foundations in the early work of Freud. Later experimentation, such as with the Rorschach cards, has helped to substantiate these theories. In general it is thought that the "subconscious" tends to reflect many of the singular needs, wishes, and emotional drives of the personality in predictable mechanisms and behavior patterns which if analyzed point to specific personality patterns. Thus weapons (guns, knives, etc.) may represent aggression or hostility structures in the personality, and by studying individuals' reactions and affinity for weapons one may predict certain things about their adjustments of hostile and agressive feelings. Klein (5) effectively relates perception to the psycho-

analytic theory of personality by considering the perceptual apparatus as an adaptive control; that is, perception is part of the problem-solving, tension-reducing, equilibrating mechanism of the organism. The perceptual attitudes of an individual are thus one way that he comes to grips with reality and serve as a type of defense. The psycho-analytic system of defense mechanisms are likewise "tension-reduction" devices. Thus both the perceptual attitudes and psycho-analytic defenses serve an organism in the same fashion (adaptation) and may even have similar origins in personality function. Klein nevertheless admits the need for evaluating the influence of these perceptual attitudes upon behavior and for relating them further to the personality.

The correlation of perception with a general motivational-personality theory is interesting and highly important for the two cannot really be separated and in their interdependence lie new explanations and study methods of behavior and the whole gamut of personality variables. Many workers have applied themselves to personality-oriented research to define the extent that behavorial and motivational factors influence perception.

Evidence of the value of the above investigations comes from the field of personality evaluation itself,

particularly from the projective techniques. These tests, the Rorschach and Thematic Apperception Test, for example use highly ambiguous stimuli by means of which the subject is able to project much of his inner and often deeply hidden motivation--his unconscious attitudes, needs, wishes, drives, and emotional adjustments. Eriksen and Lazarus (6) using Bruner and Postman's (7) concept of perceptual defense (failure to recognize things which threaten the individual) found that subjects showing emotional disturbance, especially in areas of aggression and succorance, tended to reject the corresponding Rorschach concepts. In other words, failure of both perception and interpretation of projective material may reflect emotional disturbance toward that material.

The premise that perception of projective or highly ambiguous material is influenced by emotional or motivational factors may be further substantiated by experimental evidence. Bruner and Postman (7) concluded that effective recognition and ultimate reaction is closely associated with selective emotional preferences. Stating the proposition in somewhat different terms, Levitt (8) provides an interesting experiment in which he attempts to corroborate the propositions set forth by another author (Krech and Crutchfield (9)). These are: (1) "Where reality conflicts with the individuals' strong need or motivation or belief, that is, with ego involvement

cognitive distortion may result. (2) The magnitude of cognitive distortion is proportionate to the degree of ego involvement, that is, to the strength of the underlying need. (3) The resistance of cognitive distortion to change is proportionate to the degree of ego involvement." These are quite applicable to the general perceptive field, though the author theoretically distinguishes between perception and cognition. Using data from college students' estimates of personal and group future income he found evidence supporting each of the premises.

Hastings (10) examined the relationship between personality and perception and found that the relatively more insecure person tends to see objects as being closer to him. Here is a specific example of perception varying almost in proportion to the variance in a specific personality trait. Similarly Bruner (4) has found that "apparent size(of objects) is accentuated in judgments of valuable or need relevant objects." This again shows how perceptual behavior varies in accordance with individual motivation.

Others have expanded perception to include social and personal fields. Here perhaps even more striking examples of the influence of motivational states upon judgment and accurate cognition appear. Else Frenkel-

Brunswik (11) in her studies of self-perception and perception of others found that "functional realities of one's own behavior are distorted when they enter consciousness." Thus she was actually examining methods of self-deception. She attempted to correlate motivational aspects of behavior with actual overt behavior by analytic methods. She found marked distortions in one's self-perception, which is deceived by such mechanisms as exaggeration, distortion to the opposite, omission, and projection. She concludes that "we do not always see ourselves as we are, but instead perceive the environment in terms of our own needs." The motivational factors within our personalities are often the basis of our distorted perceptions of ourselves and those around us. Considering more specifically the personality traits responsible for distortions, Frenkel-Brunswik (12) has found that in motivational categories aggressive tendencies and their degree of expression and acceptance are one highly important determinant of perceptual accuracies. Her experiments have shown that in general the rigid, highly prejudiced group showing marked aggressive factors are those who tolerate ambiguity poorly and whose perceptual accuracy is limited by their demands for rigid, rapid stable conceptions of environment.

Almost all of the research we have considered has been oriented from behavior or motivation to perception. That is, it attempts to discover what changes different motivations or behavior variables will produce in perception. Postman and Bruner (13) have reversed this orientation. In considering perception as goal-directed, they wondered what would happen to one's behavior and motivations when his perceptual goals were frustrated. Thus they vary perception and study the resulting behavior. Using a tachistoscope they presented stimuli at subthreshold levels, at the same time adversely criticizing the subjects' attempts to identify the stimuli. The resulting frustration markedly disrupted perceptual activity. Perceptions become reckless, increase in number, show aggressive or escape tendencies and in other ways revert to maladjustment. Here is an experimental picture of what happens in life situations in which goals are frustrated. On this basis one could assume that psychiatric patients having evidenced a maladjustment to their life situation should therefore show a measurable distortion of perceptual behavior.

Taking a somewhat different approach Korzybski (14) explains how maladjustment (social, cultural, etc.) as evidenced by psychotic or psychoneurotic manifestations may result from the confusion of abstractions with reality.

The persistent tendency to treat abstract formulations as reality and the basing of action upon these abstractions which one accepts as reality can only lead to ultimate maladjustment. The power to abstract, when it is recognized as such, is the most useful of man's mental tools; when it is labeled as reality man finds himself in trouble.

Although these research studies have successfully depicted the interaction of perception and personality, almost all authors indicate emphatically the need for further research and correlation, even diagramming possible approaches for this work. Bruner (4) states for example, "If we wish to work on personality factors in perceiving, then we must concentrate upon the investigation of those environmental cues which are appropriate to the confirmation of hypotheses which reflect basic personality patterns. They are cues which aid more directly in our interpersonal adjustment: the apparent warmth or coldness of people, the apparent threateningness of situations, the apparent intelligence or apparent sincerity of others." Klein (5) shows the need for future investigations into the relationships between perceptual attitudes and the importance of linking perceptual behaviors into a functional whole appropriate for the individual. Many others have pointed to the

need for better methods of evaluating the degree of perceptual distortion and its importance to personality adjustments; in other words, adding a quantative scale to the various perceptual qualities. With these considerations as a background we are able to begin defining the methods and objectives of our present research problem.

Purpose

This study is intended as a preliminary investigation of a scaled, readily quantifiable perceptive test emphasizing one aspect of personality-motivation. The primary objective is a comparison of the differences in perception between psychiatric and medical patients. The assumption was that psychiatric patients, in view of their apparent difficulties of adjustment, would show greater variability and distortion of perception than would medical patients. There fore the operation involved not only investigating the perceptual activities of two groups of subjects but also designing and assaying a testing method in the light of present theories of perception.

The major considerations in developing the present testing material were:

(1) The test should be easily administered and of reasonable cost.

(2) The test should tap at least one major area of emotional conflict, more specifically that of the passive-aggressive structure.

(3) The test should provide readily quantifiable results within a context of ambiguous stimuli, as well as offering ease of intrepretation.

(4) The method and materials should be easily adapted for use with both group and individuals.

The majority of previous perceptive experiments involving ambiguous situations and hypothesis formation such as the Ames experiments (Lawrence (2)) with distorted figures and rooms or Bruner's and Postman's card experiments (15) were elaborate or purely experimental, with no intent to use them clinically. Other studies involved the routine use of the tachistoscope in observing perceptual responses. Two investigators, Wyatt and Campbell (16) and Galloway (17), studying ambiguous stimuli used slides projected upon a screen. The focus of the projector could be varied at will thus achieving different stages of ambiguity. This also allowed them to test large numbers of subjects simultaneously. These tests, though not applicable for our purpose, in general all involved the common use of ambiguous stimuli.

Many similar experiments consisted of ambiguous stimuli or low-grade information arranged and presented

so that results might illuminate a particular area of perception. The use of this type of testing material allows one, as Bruner (4) states, to study more of the motivational and experiential factors which underlie perception. Bruner (4) found by experiment with color and background that decreasing the ambiguity of information resulted in a decreased use of past experience and increased the use of stimulus information to confirm perceptual hypotheses. Thus the less a subject can rely on stimulus information, the more he must use his own resources (experience, learning, set, etc.) to complete his perceptual formulation.

Our proposed test intended to make use of this doctrine by simply varying the clarity of stimuli; thus the possibility of inherent factors common to the personalities of either group of subjects could be explored, and differences compared. An accurate quantitative determination of these differences would be possible by varying the blurredness or stimulus information in a series of standard stages. Thus significant variants of response and their degree could be determined by the stage at which recognition occurred. In addition marked inability to recognize the test objects could be found by maintaining some degree of ambiguity even in the last or clearest parts of the series.

Several considerations were necessary in selecting the objects to be photographed for the test. Both Wyatt and Campbell (16) and Galloway (17) in their studies had used rather complex slides, some of which depicted situations rather than objects. This type of complex material may not always have occurred equally in each subject's past experiences, and would therefore limit his perceptual responses. For the purposes of the test we therefore used rather simple objects which had the greatest probability of occurring in most subjects' past experience. Thus if most of the subjects had contacted these objects in their particular perceptual experiences, one of the many variables involved in perception could be somewhat ruled out. In addition as we have discussed many objects have foundations within the singular needs, wishes, and emotions which make up an individual personality. Accordingly some of the objects were picked especially for the emotional implications they might have. Other objects were included similarily because they were expected to have little or no emotional significance.

METHODS

The test itself consisted of a series of pictures taken of ten objects. Each object was photographed in ten stages of focus and this series arranged with the most blurred at the beginning and clearest at the end. Thus the test contained one hundred pictures arranged in groups of ten. Each group of ten pictures were of the same object, varying only in degree of clarity. These ten pictures were fastened together in a loose-leaf folder in progression from most blurred to clearest. They could then be shown picture by picture to a subject.

The objects to be photographed were: a doll which was approximately the size and appearance of a baby, a vase of flowers, a babies' nursing bottle, a clock, a toy doll bed, a small toy monkey, a toy tractor with a man driving it, a butcher knife, a toy pistol, and a toy black mouse. These objects were then place on a neutral background and photographed.

Considerable experiment was necessary in photographing the objects to obtain the ten constant stages of focus. A 35mm Contax camera was used with appropriate lighting. The problem of focus was solved by calibrating the camera so that the focal length of the lens

varied in stages which were mechanically constant. The pictures were taken at these stages of focus, which remained constant for all ten objects, and mounted. The negatives could later be mounted as slides to be used in a projector in applying the test to group use.

SUBJECTS AND PROCEDURE

Subjects

In order to compare adequately the perceptual responses of mentally ill patients with normal controls the test was given to a series of eighty subjects, one group of forty psychiatric patients and another of forty medical patients, with twenty males and twenty females in each group. The age range and distribution were closely comparable for the two groups. These ages ranged from approximately twenty to seventy with the majority in the thirty to fifty year span. In view of the lack of data on these two groups of subjects no attempt was made to correlate intelligence or socio-economic status. However, the majority of both groups were seen at Nebraska charity institutions which would help confirm a similarity of background in these subjects.

Psychiatric

The group of forty psychiatric patients was seen

at the Norfork State Psychiatric Hospital and at The University of Nebraska Psychiatric Unit. Only the most recently admitted patients suitable for testing were seen. The group represented a variety of psychiatric diagnoses, including samples of schizophrenia, paranoia, manic-depression, and psychoneurosis. An attempt was made to avoid patients with organic brain syndromes but three patients with mild organic involvement were used. However, because of their recent arrival, some of the patients were undiagnosed at the time of testing. A few of the patients were receiving insulin therapy, but it was felt this would not unduly influence the test results.

Controls

The control group represented forty of the most recent medical or surgical admissions at the University of Nebraska Hospital and Clarkson Hospital. As a group they were matched with the psychiatric patients on the basis of age. They too represented a variety of medical diagnoses and complaints, but patients having disease with added psychic factors were avoided. Also patients on medications tending to produce cerebral effects (Phenobarbital, ephedrine, etc.) were avoided. Of course only patients whose illness would not handicap the test were used.

Procedure

The experimental test as presented to the subjects consisted of ten groups of ten pictures each. The groups of pictures were numbered from one to ten and were rotated regularly through this cycle so that the order of presentation of the various objects might have no effect on the response. The pictures were arranged on loose-leaf holders and were shown one at a time to the subject progressing from most blurred to clearest.

The psychiatric subjects were interviewed separately in a private room, while most of the medical patients were interviewed in bed, usually situated in a general ward. Every attempt was made to restrict contact between those patients having taken the test and future subjects. Whenever possible all the desirable patients on one ward were seen consecutively the same day. This reduced to a minimum any exchange of information which would influence the test.

Each subject was instructed that these were an experimental series of pictures, and the use of the word "test" was avoided. Specific instructions were as follows: "These are a series of pictures in groups. All of the pictures in one group are of the same thing. They begin with some pictures which are not very clear and they get clearer as you go along. As I show you

the pictures, I would like to have you tell me what you think they are, and tell me when you are sure what they are. I will show you each picture for about five seconds. Do you have any questions?"

The entire ten groups of pictures were then shown to the subject. The responses were recorded during each series. Subjects were shown the whole series of pictures in each group regardless of whether they responded correctly to the first picture or had not replied at all. If the subject did not respond to the series of pictures he was asked a leading question with the last picture such as, "Do you see anything there?" or "This is the last picture." The interviewer took care not to indicate right or wrong responses. The correct answer was not revealed to the patient, explaining instead that there were no right or wrong answers. The actual time taken by the test was not recorded, but a probable average would be between twenty and thirty minutes. Thus the procedure was short, and involved enough change so that the subject's interest was held quite well.

RESULTS

The results of this study were used primarily to compare a group of psychiatric patients with a group of medical patients in determining the differences and degree of variability between the two groups using a perception-recognition test. The groups were also divided equally into males and females so that an analysis of sex differences both within and between the groups could be made. The data will be presented either under psychiatric and medical groups or under the subgroups called psychiatric males, medical males, psychiatric females, and medical females.

On the basis of preliminary testing it was assumed that most of the subjects of the study would correctly identify the objects somewhere through the series of pictures. As can be seen in Table I, the medians of the distributions of correct identification varied markedly from series to series for both the medical and psychiatric groups. In addition more than half of the subjects failed to identify several of the objects and in other instances the distributions of scores (points along the scale at which correct identifications were made) were markedly skewed. For these reasons exact statistical comparisons of group variability and of mean scores were not applicable. Chi square was

therefore used to determine the likelihood that the medical and psychiatric patients represent samples from a homogeneous group (Edwards (18)). For this statistical technique the criterion was whether or not correct identification was made of the objects. For these computations a Chi square value of 3.84 (5% level of confidence) or greater indicates that there are five chances or less in one hundred that the two compared samples were drawn from a homogeneous group; a value of 6.64 (1% level of confidence) or greater indicates that there is one chance or less in one hundred.

There were a total of 400 possible responses, for which all but 14 definite answers were given, for medical patients (200 male and 200 female). Out of a possible 392 responses, for the psychiatric patients , all but 15 were positive identifications. Four psychiatric patients (one male and three females) did not see the last two picture groups, the gun and mouse. Out of a possible total of 792 responses only 29 were no-response or "I-don't-know" answers. In comparing only total right and wrong answers, we found a total of 288 right and 112 wrong for medical patients and 205 right and 187 wrong for psychiatric patients. The chi square for this was 32.8 showing significance below the 1% level. Reviewing the total right and wrong responses for each

separate object group we find that the bottle, bed, tractor, knife and gun showed significant differences between the psychiatric and medical patients (Table I). In every case the right answers were weighted in favor of the medical patients.

When the groups were divided by sex, comparing psychiatric females with medical females and likewise tabulating the males, the following results were obtained (Table II): The male group showed no significant difference of response for any of the individual series, although the total of responses was significant at the 5% level.. In contrast differences between the females of the two groups were significant for many of the picture groups as well as markedly so for the totals. Most important of these objects were the gun, bed, knife, flowers, bottle, and monkey. Finally the difference between the medical males and medical females was not significant either for individual series or for the total (Table III). This means that the perceptual activities of the male and female medical subjects are quite comparable. However, as one would expect, there is a marked difference between the male and female psychiatric patients with significance occurring for the gun, mouse, tractor, and flowers.

TABLE I

Comparison of total right and wrong answers between medical and psychiatric groups. Median of distribution included.

Object	Right and Wrong Chi^2	Median Medical	Median Psychiatric
Doll	2.52	5	8
Flowers	1.08	incor#	incor#
Bottle	5.34*	7	10
Clock	3.50	8	10
Bed	10.02**	10	incor
Monkey	2.52	5	6
Tractor	3.96*	2	3
Knife	4.12*	10	incor
Gun	5.30*	9	incor
Mouse	1.98	incor	incor
Total	32.80**		

* Significant at 5% level (Chi^2 3.84)
** Significant at 1% level (Chi^2 6.64)
\# Median fell in incorrect level

TABLE II

Comparison of right and wrong responses: psychiatric males with medical males, psychiatric females with medical females. Chi Squares.

Object:	Males	Females
Doll	---	2.96
Flower	.1	3.94*
Bottle	1.66	3.94*
Clock	1.66	1.92
Bed	2.50	8.60**
Monkey	---	3.92*
Tractor	.60	2.84
Knife	.90	3.96*
Gun	.38	14.40**
Mouse	.26	2.04
Total	6.34*	31.02**

* Significant at 5% level
** Significant at 1% level

TABLE III

Comparison of right and wrong responses:
Psychiatric males and females,
Medical males and females.
Chi Squares

Object:	Psychiatric	Medical
Doll	.278	---
Flower	3.96*	.09
Bottle	---	.54
Clock	.40	.54
Bed	---	2.13
Monkey	.624	.26
Tractor	6.14*	2.70
Knife	2.84	.40
Gun	7.74**	1.04
Mouse	4.22*	2.56
Total	11.0**	.05

* Significant at 5% level
** Significant at 1% level

DISCUSSION

Reviewing these results one finds first of all in the test a marked difference in the total right answers between the medical and psychiatric patients, significantly in favor of the medical group. That is, the psychiatric patients even though they gave responses had much greater difficulty in giving correct responses to the ambiguous stimuli.. Thus the original assumption that greater distortion was expected in the psychiatric group was substantiated. In addition the right and wrong responses for each object showed similar differences, significant especially for the gun, knife, bed, bottle, and tractor, with the right answers weighted in every case for the medical patients. The medians,too, reflect the greater difficulty experienced by the psychiatric patients in perceiving the ambiguous stimuli, for in every case the median was lower or toward the most blurred end of the series for the medical patients. One may infer from these data that psychiatric patients tend to reflect their maladjustment, frustration, withdrawal, and in general their inability to grasp reality in their perceptual processes.

It has been pointed out that the male psychiatric patients showed little or no difference from the male medical patients while the female psychiatric patients

showed marked and significant deviations toward incorrectness from the female medical patients in many of the series (gun, bed, knife, flower, bottle, and monkey). A review of the data on diagnoses gave several reasons for this apparent discrepancy between men and women. In considering the psychiatric group it was found that six of the males were diagnosed as alcholics, all of whom had passed the acute stage, one was a sex deviant, two were psychoneurotics, and one was undiagnosed. Thus from a total of twenty male patients, about half (9-10) were only mildly disturbed or showed very minor deviations from normal. On the other hand the group of twenty female psychiatric patients showed only two psychoneurotics and two undiagnosed, so that only one-fifth of the group were in the same mild categories as the males. Thus over three-forths of the female patients were diagnosed as psychotic and markedly disturbed while only about one-half of the male patients could be placed in this category. This alone probably accounts for the discrepancy in the marked distortion of the female psychiatric patients, but other causes were considered. There was no reason to assume that the deviation was due to a difference of intelligence, background, or socio-economic factors, for the majority of patients in both groups were seen in Nebraska State charity

institutions which would imply a similarity of these factors. In addition the majority of patients were drawn from rural areas of similar background and economic status. The greater difference between the female groups would therefore seem to further substantiate the postulation that psychotic patients show a distortion of perceptual activity.

Finally it is seen that there is no significant difference between the responses of the medical male and female patients, while there is a definite difference between psychiatric males and females with the females showing the poorest responses. This further verifies our postulation above that the reason for perceptual distortion by females and not males was in degree of psychic disturbance.

Considering the extent to which other workers have found perception to be influenced by the behaviorial-motivational states of the personality it is evident that the research reported here concurs in general with other recent work. Recalling Korzybski's (14) concept of abstraction treated as reality in producing psychiatric maladjustments, we can apply his general idea to this test. These pictures represent a form of reality, not the most definite or concrete form to be sure, but still a recognizable one. By analyzing the results

obtained with the test one may obtain a general idea of the subject's perspective of reality and his use of abstraction. Again we point out the tendency of the psychiatric patients to distort the pictures, to produce erroneous conclusions, and to act on these conclusions, by giving definite answers, though they may be incorrect. These results further substantiate the assumption that psychiatric patients have greater difficulty maintaining a grasp of reality and tend instead to abstractions which are confused with reality.

Bruner's (4), (7) work on hypothesis formation may help illuminate an interesting finding. It was noted that out of a possible 400 responses for the forty psychiatric patients there were only 15 which received no answer at all (10 male and 5 female). Similarly for the medical patients there were only 14 "I-don't-know" responses (9male and 5 female). The predominant reaction was to give an answer of some kind, whether correct or incorrect. Bruner (4) agrees that the formation of a hypothesis precedes any further cognitive process which may lead to action. Here it seems that the desire for a working perception, right or wrong, is greater than the desire for wholly accurate cognition, especially for the psychiatric patients who certainly produced more wrong answers. This concept

can be applied to Hilgard's (3) idea that the goals of perception are stability and definiteness of the environment. Here we see both groups of patients attempting to maintain a stable and definite knowledge of the ambiguous stimuli, even to the point of deceiving themselves as to the accurate reality of the stimuli. Only the relative lack of disturbances in their need-motivation has permitted the medical patients to make more accurate perceptions.

No discussion of self-deception can ignore Frenkel-Brunswik's (11) work, for our results certainly agree with her opinion that disturbed motivations of the personality can bring marked changes in the ability of one to perceive his environment. Bruner (7) has described a similar mechanism in his idea of "perceptual defense", the ignoring of stimuli, which activate disturbed motivations. Klein (5) too has shown how perceptual attitudes may serve as a defense. In this investigation we see additional evidence supporting this point of view. The psychiatric patients, particularly the females, were unable to recognize some of the objects which appear to impinge most severely upon the peculiar need-structures of their personalities. The organism is not permitted to perceive objects recalling disturbed need-structures for to do so would cause him more distress than incorrect

perceptions do.

The evaluation of specific test objects shows that the objects in which the greatest difference occurred between medical and psychiatric patients were the knife, gun, bed, and bottle. We have pointed out how weapons may have implications in the aggressive-hostile areas of the personality, and how one may draw inferences of a person's ability to handle these feelings and the degree of conflictive value by sonsidering his reactions to weapon-objects. Similarly among the ten objects used the bed and bottle most nearly represent the passive-dependent need-structure, giving evidence of another emotional conflict area. This study would indicate therefore that the area of passive-aggressive conflict is one of the most important in psychiatric maladjustments. Frenkel-Brunswik's (12) findings have a pertinent application here, for she likewise has found that personalities with aggressive disturbances tolerate ambiguity poorly and show this in their limited perceptual accuracies. Further analysis revealed that in general the disturbances were in terms of objects and very little in terms of animate human-like perceptions. The doll and monkey showed little distortion. However it is well known that interpersonal adjustments at mature levels are some of the most strained in

psychiatric patients. The use of child-like or infant-recalling objects may have permitted correct identification; subsequent investigation can be used to explore this particular point.

The results of this preliminary investigation have indicated some of the difficulties in our attempts to provide a quantitative scale of perceptual distortion as related to personality. However there are indications that further work along the lines of this experiment would prove fruitful. The test is short, easily administered, and quite adaptable for group or individual use. A proper quantitative scale would there fore provide a rapid means of judging the severity of perceptual maladjustment and determining its cause. To provide these quantitative scales some of the appropriate series can be extended adequately to include greater or lesser degrees of ambiguity. In addition new objects can be substituted for those which did not seem to explore a differential area. The test could be adapted by making projector slides for group use. Finally it would seem that with some further experimentation standardization of the test would not be difficult. One possible result of additional investigation is that the individual series of pictures can be shortened, thus permitting more economical use of time.

SUMMARY AND CONCLUSIONS

In the introduction we considered a general outline of perception, its theory, and present concepts. We reviewed the needs for relating perception to the general field of behavior and motivation and for a better evaluation of perceptual processes. This paper was intended as an effort in this direction, especially as an experiment in quantitative evaluation of perceptual processes. Working on the assumption that psychiatric patients would show greater distortion in perception than medical patients, a comparative investigation of these two groups of subjects using an experimental perception-recognition test of our own design was carried out.

The major considerations concerned in the material and methods of the test were:

(1) Reasonable cost and ease of administration.

(2) One major area of emotional conflict would be tapped, specifically the passive-aggressive structure.

(3) Readily quantifiable results should be provided.

(4) Adaptation to group or individual use.

The test consisted of 10 groups of 10 pictures each; each series of 10 pictures were all of the same object but varied in their stage of focus or amount of

ambiguity from most blurred to clearest. The objects photographed were: a doll, flowers, baby bottle, clock, bed, monkey, tractor, knife, gun, and mouse, The series of pictures were then shown to a group of forty psychiatric patients and a group of forty medical patients, each group containing twenty men and twenty women.

The results which were analyzed by means of the Chi square method indicated:

(1) On total right and wrong answers the Psychiatric patients did significantly poorer.

(2) Total right and wrong answers for each object showed that the psychiatric patients again did significantly poorer, especially on the bottle, bed, tractor, knife, and gun.

(3) Median distributions showed that the medical patients tended to recognize the objects in every case at an earlier stage.

(4) Sex differences between the groups for total right answers showed that the greatest distortion was between the psychiatric and medical females, especially for the gun, knife, bed, bottle, flower, and monkey; the males showed no significant difference.

(5) Finally sex differences within the groups showed no significant difference between the medical

males and females but as expected some areas of difference existed in the psychiatric group.

The results were analyzed and reviewed and we arrived at these intrepretations and conclusions:

(1) The assumption that psychiatric patients would show greater perceptual distortion than medical patients was substantiated.

(2) The psychiatric female patients showed the greatest significant distortion because their diagnostic categories implied greater general psychic disturbances than the male psychiatric patients. Perceptual distortion therefore tends to vary with degree of motivational and emotional maladjustment.

(3) Analysis of the objects themselves gave evidence that the area of passive-agressive conflict was highly important in psychiatric maladjustment.

(4) Attempts to deliniate a quantitative scale were unfruitful because of the skewed distributions obtained.

(5) The test fulfilled the majority of its requirements. The significant results obtained indicate the potential usefulness of it, particularly upon attainment of more appropriately scaled picture series.

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