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THE "ZOOM-LENS" MODEL: AN APPLIED EXTENSION OF BRUNSWIK'S LENS MODEL TO NATURALLY OCCURRING BEHAVIORS IN A PSYCHIATRIC SETTING

by

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT

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ABSTRACT

An extension of Brunswik's Lens Model of cue utilization in judgment formation is developed and investigated within a psychiatric in-patient hospital setting. Judgments by 6 staff and 15 patient judges (7 male and 14 female) of patients' psychological "well-being" were analyzed with the extended, or "Zoom-lens", model to establish (1) the extent to which judges employ naturally occurring behaviors as a basis for judgment, (2) the extent to which changes in judgmental policy and accuracy are associated with the patients' own progress in therapy, (3) that increased judgmental accuracy is a function of patient-judges' behavioral, attitudinal, and personal characteristics, and (4) that assumed greater familiarity on the part of patient-judges with patient-ratees provides them with a sounder basis for accurate judgment than is afforded staff-judges, even though the latter may possess a greater, absolute amount of information.

Multiple-regression and factor-analytic procedures were used to identify 6 behavioral dimensions along which patients reliably differed. The judgment policies of each judge, together with those of constructed "composite", "average" and "unweighted average" judges, were described by multiple regression techniques.

In general, the results demonstrated the viability of the Zoom-lens Model as an investigation paradigm in a judgment situation where objectively measurable standards of "correct" behavior are not available. It was shown that (a) patient-judges increase in accuracy as they progress through treatment, indicating that judgmental accuracy may serve as a quasi-objective criterion of therapeutic progress, (b) the increased accuracy resulted from increased adroitness in information utilization rather than the amount of criterion information available from the cues, (c) judgmental accuracy is associated with behavioral, attitudinal, and personal characteristics of the judges, but (d) that other types of cues, such as those available to the psychiatric nursing staff, may or may not produce equivalent judgmental validities. This latter question was not adequately investigated in the present study.

The results are discussed as they relate to past and future cue-utilization and judgmental research.

DEDICATION

To Dr. Lorne M. Kendall whose guidance, inspiration, and friendship will be greatly missed

and

To my wife, Marie, who makes all the effort worthwhile.

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CHAPTER 1

INTRODUCTION

Every day, each of us engages in a continual process of decision-making, for there is virtually no area of human involvement which does not include the exercise of judgmental and decision-making abilities. Such judgments may include the apparently simple estimation of the distance of an object from oneself, the relatively more complex exercise of choosing a flattering, color-coordinated outfit, or the seemingly sophisticated evaluation of another's mental state. Most of these judgments are made with a minimum of conscious effort, and often it is not until we are called upon to explain our actions that the manner in which the decisions are arrived at may come into question.

One need do no more than conjure up caricature illustrations of leaders poised at the brink of world crisis, or the increased probability of ulcers among high level executives, or the frustrations of parenthood, to gain an appreciation of the value of understanding judgment processes. Yet, such caricatures tell us little of what comprises the judgmental processes. It is toward an understanding of those processes that the present study

is directed. Such understanding has been of formal interest to psychologists from the early days of the discipline (e.g., Fechner, 1860; Thurstone & Chave, 1929). More recently "an explosion of psychological research" (Ramanaiah & Goldberg, 1977) on the topic has taken place, resulting in an emerging body of research which contains two interrelated facets - one applied and the other theoretical.

The Applied Facet

The emphasis of the applied facet is to supply decision makers with "techniques to help [them] make better decisions in any and all circumstances" (Slovic, Fischhoff & Lichtenstein, 1977). To this end, methods including the assessed probabilities of relevant events (Spetzler & Stael von Holstein, 1975), Multiattribute Utility Theory (von Winterfeldt & Fischer, 1975), decision trees (Schlaifer, 1969), computer graphics systems (Hammond, 1971) or some combinations thereof (e.g., Davis, Weisbrod, Freedy & Weltman, 1975) have been proposed and implemented. Perhaps because so much of this work has taken place within settings such as the military or business, it is difficult to obtain a comprehensive picture of the area. Slovic, et al. (1977) refer to much of the work as "garbage in - garbage

out" but the characterization stems in large part from the difficulty in obtaining sufficient information upon which to make an adequate assessment. "When a technique passes the test of getting someone to pay for it, the result becomes proprietary ... [and] the details of such projects are not divulged, nor are the decision makers' responses to them" (Slovic, et al., 1977, p. 27). For that reason, further comments on the literature will be restricted primarily to work which has taken place within the theoretical domain.

The Theoretical Facet

In their 1966 book Clinical and Social Judgment: The Discrimination of Behavioral Information, Bieri, Atkins, Leaman, Miller & Tripodi begin by noting that "Ever since ... Weber and Fechner ... psychologists have been in the quest of a greater understanding of the judgment process" (p. 4). They outline four historical phases of that quest: (1) the introspective, characterized by the work of such men as Wundt and Freud; (2) the reliability-validity, centering on the validity of diagnostic measures; (3) the statistical, landmarked by the appearance of a book by Meehl (1954) which compared the relative adequacy of clinical and statistical techniques; and (4) the contemporary,

directed towards the development of theoretical models of judgmental processes.

The contemporary phase appears to have emerged in reaction to the relative paucity of conceptualizations and the emphasis on technique typifying the preceeding periods. It has developed within three separate, though interlocking, perspectives: the psychophysical, the psychological, and the psychomotor.

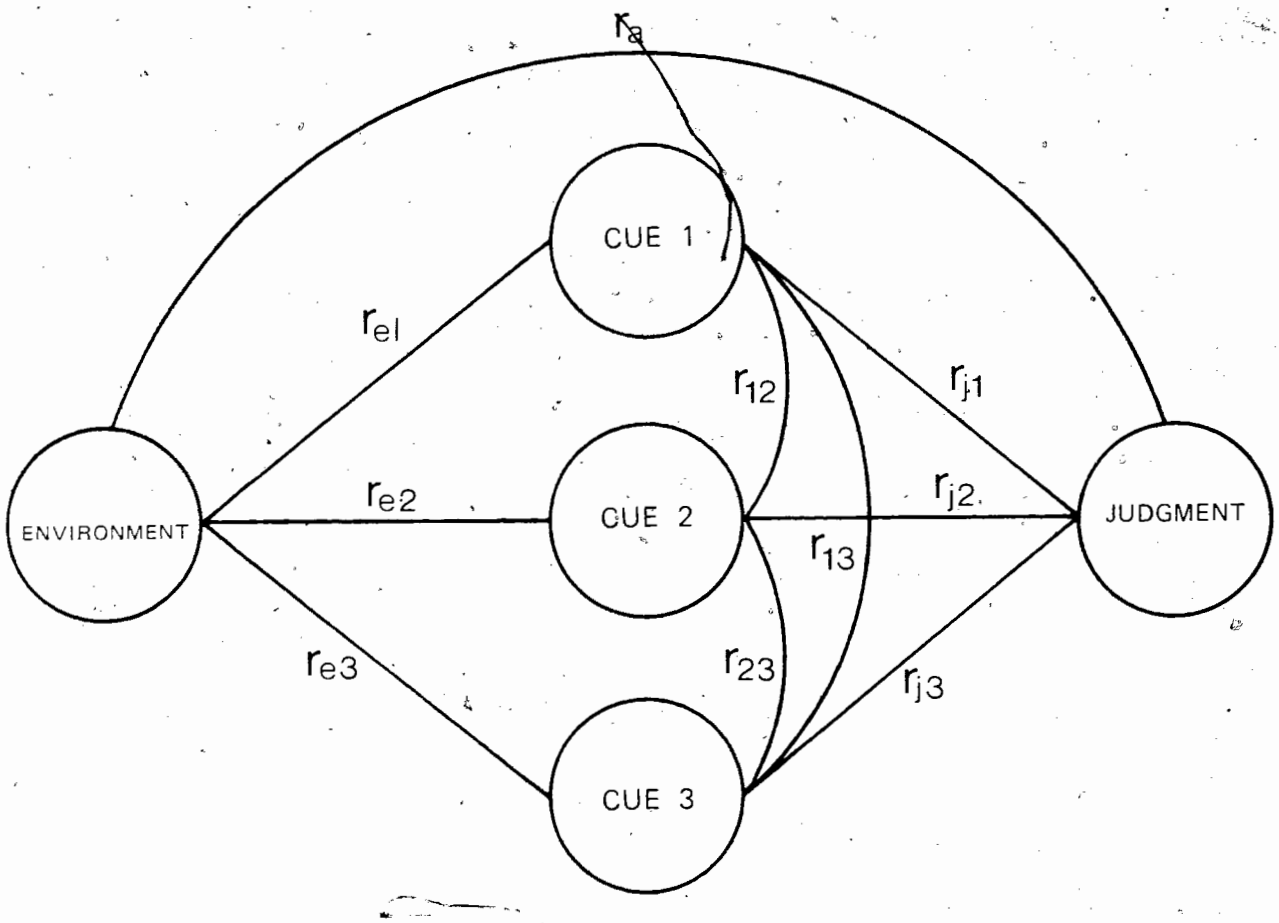
The Psychophysical Perspective. Early work from Thurstone & Chave (1929) to that of Sherif and his associates (Sherif & Hovland, 1961; Sherif, Sherif & Nebergall, 1965) has centered on the stimulus encoding process. It has consisted, primarily, of direct extrapolations of psychophysical scaling procedures to the description of judgment formation. Presumptive in this work is the notion that the cognitive representations resulting from the encoding process are algebraic functions of the stimuli involved (Anderson, 1974a; 1974b), and most recent investigations within this perspective have been devoted to a delineation of the variables which affect the form of such functions. These include one's "involvement" in the judgment task (Zavilloni & Cook, 1965; Eiser, 1973; Eiser & Mower-White, 1974; Sherif, Kelly, Roger, Sarup & Tittler, 1973), one's "reference group" (Upshaw, 1965)

and one's knowledge regarding previous judgments on the same issue (Parducci, 1974; Anderson, 1975).

The Psychological Perspective. Once the valuation function of stimuli has been established, the description of judgment continues to the integration stage at which point the relevent information is amalgamated into a judgment. The most fruitful paradigm within which the amalgamation process has been studied is the "Lens Model" (Figure 1) of Brunswik (1956) - particularly as it has been developed by Hammond and his colleagues (Hammond, 1955; Hammond, Hursch & Todd, 1964; Hursch, Hammond & Hursch, 1964; Tucker, 1964; Hammond, Stewart, Brehmer & Steinmann, 1975). Within this model, it is assumed that judgments depend on a synthesis of analytic and intuitive processes by which judgmental elements, or "cues" as they are called, are weighted. Their functional relationships to the environment, and the judges' responses, can then be described using multiple-regression techniques. Analyses utilizing this approach have resulted in two basic types of statements concerning the judgmental process. Firstly, scant evidence is available to support the use of non-linear models by judges (Goldberg, 1971; Slovic, et al., 1977); secondly, the judgmental models reflecting the judges' weighting schemes produce "better" subsequent predictions than the judges themselves (Goldberg, 1970).

FIGURE 1

BRUNSWIK'S LENS MODEL



r_{e1}, r_{e2}, r_{e3} = CORRELATIONS BETWEEN THE CUES AND THE ECOLOGY; i. e., INFORMATION REGARDING THE ECOLOGY CONTAINED IN THE CUES.

r_{e1}, r_{j2}, r_{j3} = CORRELATIONS BETWEEN THE CUES AND THE JUDGMENTS; i. e., INFORMATION REGARDING THE CUES CONTAINED IN THE JUDGMENTS.

r_{12}, r_{13}, r_{23} = CORRELATIONS BETWEEN THE CUES; i.e., THE EXTENT TO WHICH INFORMATION IN THE VARIOUS CUES IS REDUNDANT.

r_a = CORRELATION BETWEEN THE JUDGMENT AND THE ECOLOGY; i. e., THE VALIDITY OF THE JUDGMENTS – ALSO EXPRESSED AS (Rjc).

The present study will be housed within the the Lens Model paradigm, and for that reason, further comments detailing the procedures involved will be deferred to later sections. The paradigm appears extremely robust, and has been employed successfully in such diverse judgmental situations as business management (Hamner & Carter, 1975; McCann, Miller & Moskowitz, 1975), graduate school admissions (Dawes, 1971; Schmidt & Marshall, 1973) and military operations (Taylor & Wilsted, 1974).

The Psychomotor Perspective. The final stage of the judgment process is the expression of the judgment as behavior. This is the "choice" stage (Bieri, et al., 1966; Bock & Jones, 1968). Much of this type of research has proceeded from a Bayesian-type subjective expected utility approach, as discussed by Lee (1971). A wide range of choice behavior has been investigated including cascaded inference (Schum, 1975), "the law of small numbers" (Tversky & Kahneman, 1973), "risky shift" (Shanteau, 1975), and "elimination by aspects" (Tversky, 1972a; 1972b). In general, researchers who employ this approach appear to have focused on behavioral outcomes rather than the cognitive processes which precipitate those outcomes.

The Lens Model

Within the Lens Model, each of the previously mentioned perspectives is represented. The psychophysical-valuation function is represented by the left-hand side of the lens, and the psychological-amalgamation and psychomotor-choice functions are represented in the right-hand portion. For the latter isomorphism to hold, however, an assumption must be made which relates to a criticism levied by Anderson (1975) regarding the model's failure to distinguish between the cognitive representation of a judgment and the behavioral choice reflecting that judgment. Anderson notes that "the customary approach ... aims at using [the choice] as a direct measure of [the judgment, thereby] ... assuming [the two] to be linearly related." Considering the large body of evidence in the psychophysical scaling literature relating to power functions (e.g., Stevens, 1957; 1964), assumed linearity would, indeed, be untenable were it not for an ever growing collection of empirical demonstrations of the good precision obtained using linear models and the lack of support for configurality in the amalgamation stage (Brehmer, 1973; Goldberg, 1968; Mertz & Doherty, 1974; Ramanaiah & Goldberg, 1977; Wiggins, 1973; Wiggins & Hoffman, 1968). To suppose, then, that configurality is introduced at the point of

translating the judgment into overt behavior appears highly dubious. Such evidence, along with Newton's first law, which states that "We are to admit to no more causes of natural things than such as are both true and sufficient to explain their appearances" (Newton, 1803), strongly suggests that the linearity assumption may be made until evidence is found to the contrary. In any case, analyses performed within the context of the model are sensitive to deviations from linearity, and statements regarding the extent of such non-linearity may (and will) be generated.

The "Zoom-lens" Model

There are, however, two problems with exclusive use of the Lens Model as it stands. The model was developed for investigations in the area of sensation-perception, and it assumes (1) an ecology is available which (2) has associated with it certain identifiable elements (3) based on which persons make inferences regarding the ecology, and that (4) such judgments may be verified against objective measurements of that ecology. The first problem, then, is a heavy reliance of the model on objectively measurable standards against which subjective judgments may be assessed. Much work in psychology is directed

towards the establishment of such standards - particularly standards of mental functioning - and, often, such objective standards are not available.

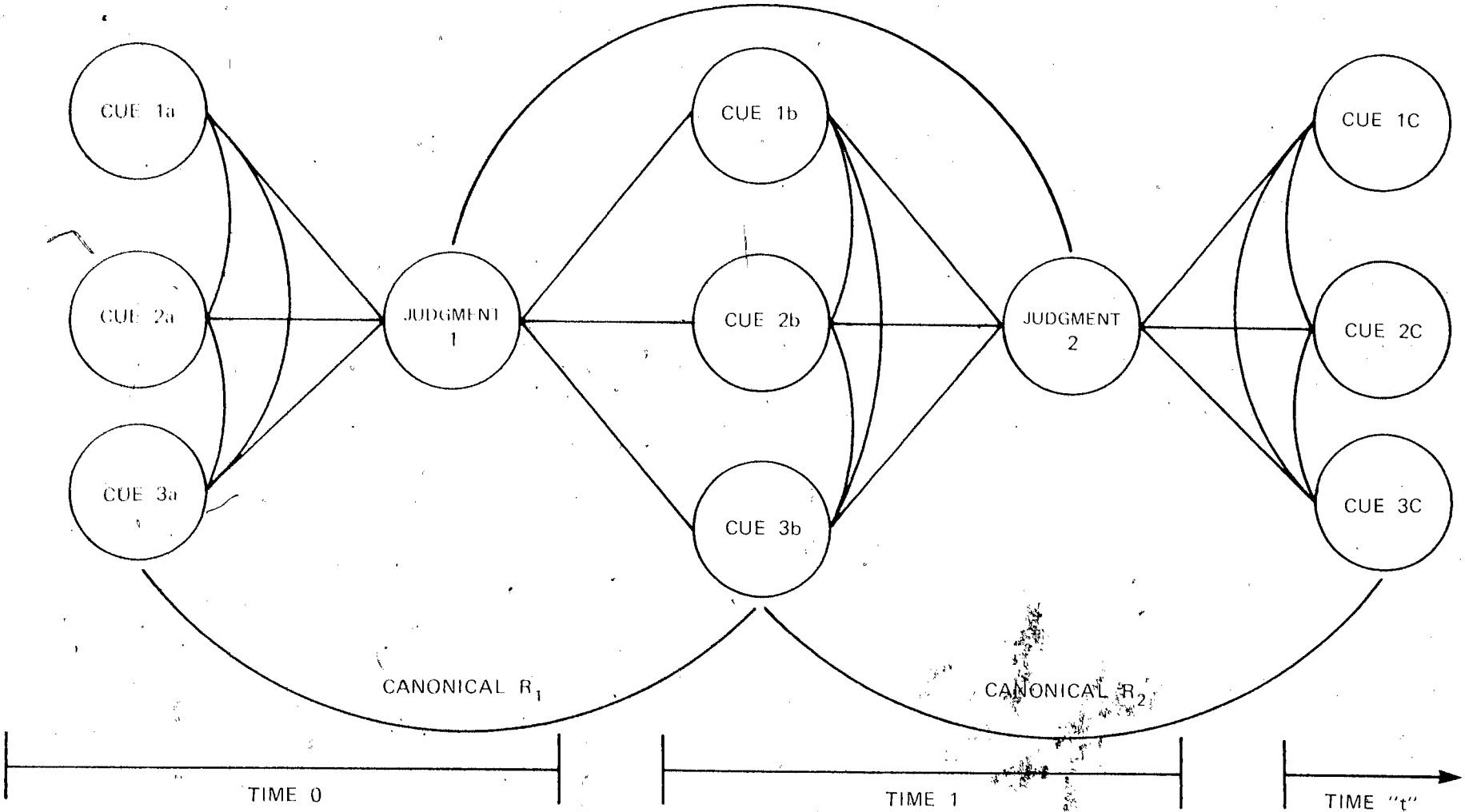
The second problem, though less obvious, is the more critical in that its recognition suggests potential solutions of both problems: the model is incomplete. For example, when a supervisor within an organization is faced with the problem of promoting a junior employee, he might consider various aspects of the employee's past and present job performance. The various aspects, or cues, serve as a basis of the superior's decision to "promote" or "not promote". Assuming for the moment that the supervisor does promote the employee, an assessment of that decision as "good" or "bad" cannot, generally, be made in terms of an objective criterion such as the company's subsequent profits or losses. Too many other factors would influence such a criterion. Rather, the supervisor (or some third person) is likely to wait some appropriate amount of time and assess the judgment based on a repetition of the decision process. The supervisor will obtain more recent "measurements" of the employee's job performance and, probably, assess the initial decision by determining if he would make the same decision again.

Brunswik's model is not representative of such judgmental situations. However, if the model is extended (over time) by the introduction of repeated cue measurements which are, in turn, followed by repeated judgments, a representation of judgmental situations such as the one just described is obtained. Such a model is diagrammed in Figure 2, and has been dubbed the "Zoom-lens" Model.

The Zoom-lens Model takes as its starting point some set of cues available at the present (Time 0), upon which predictions regarding future events are based. These cues are followed by a judgment, also at Time 0, which is, in turn, followed by a later set of cues at Time 1. This sequence may continue through some Time "t" which may be of interest, perhaps the time of maturation of some "ultimate criterion". (Perhaps the employee has become Chairman of the Board and the company's profit-loss statements are a reasonable, objective criterion.) Note that by extending the model in this fashion, logical intermediate criteria are also generated. They are the later cues. As with the original Brunswik model, the contributions of each cue, at each stage, to each judgment may be assessed. In the present study, measures reflective of the naturally occuring behaviors of hospitalized psychiatric patients will be employed as cues.

FIGURE 2

THE ZOOM-LENS MODEL



NOTE UNMARKED CURVED LINES IMPLY THE SAME CORRELATIONS EXPRESSED IN FIGURE 1.

Hypotheses To Be Tested

Given that (a) adequate measurement of patient behaviors at various points in time and (b) descriptions of the extent to which behaviors are utilized by judges in forming evaluations regarding their fellows are possible, the utility of the Zoom-lens model as a heuristic paradigm for the study of human judgment may be assessed at four points.

The first of these is in the establishment of criteria of "success" in psychiatric treatment. If one assumes, with Kelly (1955), that a person's judgmental system provides him or her with a basis for anticipating future events, and that "inner turmoil" (p. 64) is manifest in the choices and judgments that a person makes, one would predict that the more severely disturbed individual will less accurately anticipate future events - such as the behavior of his fellow patients - than will less disturbed patients. Such a position is also congruent with common-sense. We do not, for example, press for decisions from persons who are undergoing an emotional trauma, nor do we necessarily expect accurate perceptions of ongoing events by such individuals. The logical extension of such reasoning is that as a person's psychological functioning

improves, the accuracy of that person's anticipations of future events will also improve.

Hypothesis I. The first specific hypothesis which will be tested within the model, then, is that as the patients advance through progressive phases of treatment, their judgments of the psychological state of their fellow patients will become increasingly accurate. More positive correlations between patient judgments and the criteria at later points in the time sequence than at earlier times will be taken as indications of such increased accuracy.

If patients do become increasingly accurate in their assessments in the manner suggested, the increased accuracy may stem from their own improvement, as Kelly and others suggest (Bach, 1973; Schiffenbaur, 1974; Taylor & Dunnette, 1974). Or, it may be that with increased exposure to their peers and the situation the patients simply acquire additional information on which to base such judgments. The increased judgmental accuracy could then be attributed to the concomitant increase in information available rather than increased adroitness in the utilization of information. Three seperate tests of the increased adroitness hypothesis are available and lead to the

second, third, and fourth hypotheses. If confirmed, the tenability of the alternative, increased information hypothesis will be correspondingly reduced.

Hypothesis II. The second hypothesis to be tested is that characteristics of the judges, such as their own behavior and attitudes, are predicitive of their own accuracy (as indexed by the judgment-criteria correlations) and their cue weighting schemes (as indexed by the corresponding raw-score regression weights). Confirmation of this hypothesis lends credence to the contention that the psychological functioning of the judges is reflected in the accuracy indices.

Hypothesis III. Patient judges wll be no less accurate in predicting the future conditions of their peers than will the nursing staff. Although this hypothesis amounts to "asserting the null", its inclusion is dictated by the logic of the present thesis. Clearly, if it can be shown that the staff judgments are superior to those of the patient-judges, the viability of behaviorally based measures (as defined in the present study) as a basis of criterion establishment comes into serious question. If the staff judgments were found to be superior, it would be reasonable to assert that a "better" basis of such judgments are

other, omitted cues which may include diagnoses, psychological test results, medications prescribed or the patients' case-histories. Such cues are available to the staff, but not to the patients.

Hypothesis IV. As patients progress in treatment, their utilization of cue information becomes increasingly adroit [as indexed by Tucker's (1964) coefficients "G" and "C"], regardless of the amount of criterion information in the cues [as indexed by Tucker's (1964) coefficients "R.c" and "$\sqrt{1 - R.c^2}$"]. A major contribution of Hammond and his colleagues is that they have shown that the coefficient of judgmental accuracy (r_a) may be decomposed into information-availability and information-utilization elements of the form:

$$r_a = (G)(Rj)(Rc) + (C)(\sqrt{1 - Rj^2})(\sqrt{1 - Rc^2})$$

where,

r_a = the judgmental accuracy, or validity, coefficient

Rj = the linear information contained in the cues which is reflected in the judgments

R_c = the linear information contained in the cues which is reflected in the criterion

$\sqrt{1 - R_j^2}$ = the residual information contained in the judgments after the linear information has been removed

$\sqrt{1 - R_c^2}$ = the residual information contained in the criterion after the linear information has been removed

G = linear information utilization coefficient
The correlation between the predicted judgment and criterion values from the cues.

C = non-linear information utilization coefficient.
The correlation between the residual judgment and criterion values after the linearly predicted values have been removed.

Summary

A large body of evidence has been developed over the past few years establishing the feasibility of mathematically modelling the human judgment process. Much of the work has taken place within Brunswik's Lens Model paradigm, which allows for the specification of both the linear and configural components of judgmental accuracy. A revision of that model is presented which extends over time, producing a model which, it is suggested, could be of particular utility in settings where objective standards of improved functioning are poorly defined or unavailable. Adopting Kelly's theory of Personal Constructs as a conceptual base, it is suggested that the utility of the Zoom-lens model for providing indices of improved psychological functioning may be tested in a psychiatric setting under four substantive hypotheses:

Hypothesis I - as the patients advance through progressive phases of treatment, their judgments of the psychological state of their fellow patients will become increasingly accurate.

Hypothesis II - characteristics of the judges, such as their own behavior and attitudes, are predicitive of their own accuracy (as indexed by the judgment-criteria correlations) and their cue weighting schemes (as indexed by the corresponding raw-score regression weights).

Hypothesis III - patient judges wll be no less accurate in predicting the future conditions of their peers than will the nursing staff.

Hypothesis IV - as patients progress in treatment, their utilization of cue information becomes increasingly adroit [as indexed by Tucker's (1964) coefficients "G" and "C"], regardless of the amount of criterion information in the cues [as indexed by Tucker's (1964) coefficients "R.c" and "$\sqrt{1 - R.c^2}$"].

CHAPTER 2

METHOD

Subjects

The 21 judges who served as subjects included three male and three female members of the nursing staff (ages: 25-33; mean = 28.5), and four male and 11 female psychiatric in-patients (ages: 18-68; mean = 39.9) at a general hospital in Vancouver, British Columbia. The patient judges were voluntarily committed, with an average length of stay of 38 days by the termination of the study. All patients on the ward (typically 18-20; ranging from 10 to 30) participated in the study, but not all were included in the sample of judges. Some patients were too severely disturbed to participate in the voting. Others remained on the ward for too brief a stay, or were re-assigned to other facilities. Participation in the study was mandated by the psychiatrist in charge of the particular ward on which the study took place, but both patient and staff support was solicited. Verbal reports of willingness to cooperate were received from all subjects, although these ranged from unemotional acceptance to enthusiastic anticipation.

Setting

As part of the Reality Therapy approach (Glasser, 1965) employed on the ward, patients and staff meet daily to discuss "community business". During these sessions, patients who have placed themselves in nomination are considered for "promotion" to the next phase of the therapy process, there being four such Phases. Promotion to each higher Phase is accompanied by additional hospital, visitation, and absentee privileges, together with associated increased expectations regarding "duties and responsibilities". Advancement through the Phases is determined by public elections held during the community meetings. Both patients and staff present at any given meeting may vote on a requested Phase-change, and typically two to three staff members are present along with 10-30 patients.

The deciding vote is taken by a public show of hands, and a simple majority is required for passage. Abstentions are counted as "No" votes.

Procedure

The Judgment. When a patient requests a Phase change, (a) he states his reasons for the request, including comments on his own progress, (b) pro and con remarks are solicited from the community members present, and (c) the show of hands vote is taken. The formal data collection activities for the study were overlaid on this established procedure.

Immediately following the announcement of a patient's application for Phase change, but prior to the public discussion, the community was polled for the members' private judgments as to the candidate's suitability for the promotion. The judgments were recorded on voting slips provided by the experimenter for that purpose (Appendix A). The group discussion followed, after which a second private vote was called for using the same procedures as before. Once all judges had completed their second vote, the normal public vote was taken. Public votes were recorded by one of the staff members present, also on a form provided by the experimenter for that purpose (Appendix B). This procedure was followed for each requested phase change. The public show-of-hands was retained as the single index of judgment (Note 1).

The Predictors. Of major interest was the extent to which judges utilize the actual behavior of the nominees in forming their judgments. As such, a means by which the daily behaviors of the patients might be quantified was required. An instrument designed expressly for such a purpose is the Malamud-Sands Rating Scale (Malamud & Sands, 1947) as modified by Turner (1963). The modified Malamud-Sands scale (MMS) has reported inter-rater reliabilities which range between .70 and .85 (Turner, Carl, Merlis, & Wilcoxin, 1958; Turner, Krumholz & Merlis, 1962). It was designed for use by ward personnel, such as psychiatric nurses and attendants, and yields behavioral scores on 30 sub-scales (Appendix C). Scale scores are directly tied to a patient behavior by the use of a Glossary of Terms (contained in Turner, 1963) which accompanies the rating forms and provides specific examples and illustrations of behavioral benchmarks and their ratings.

Turner's scoring procedure was modified for the present study. Whereas the original Turner procedure called for a rather convoluted and cumbersome assignment of letter-scores to indicate the extent to which patients engage in the scaled behaviors, the present procedure required only the apportionment of 4 points on each sub-scale (see examples in Appendix C). The rated

categories are weighted (0-3) according to the indicated behavioral dysfunction reflected in the assignment categories and summed, resulting in a 13-point scale along which the patients may differ. The actual scores which entered into the product-sums thus computed, came from two independent ratings made each week by ward staff familiar with the patient concerned, but not participating as judges. These independent ratings formed the basis of the inter-rater reliability estimates of the new scoring procedure. Following log transformations to correct for skewness in the distributions, a regression analysis with the scale scores as the dependent variable was performed (Mendenhall, 1968). Scales whose major variance was attributable to patient differences, rather than to the raters or to residual variance, were subjected to a principle components factor analysis with Normal Varimax rotation in order to reduce the number of variables under consideration.

The Criteria. Two external variables (Note 2) were employed. The first results from the general rationale for revision of the Lens Model into the new Zoom-Lens Model. As has been pointed out, the assumed purpose behind much judgmental/decision processing activity is the enablement of the individual to anticipate future events. Within that context, the judgments made in this study are assumed to have the purpose of

assessing patient behavior at various phases of treatment. The assumed judgment task is to predict the patient's future behavior based on knowledge of his or her present and past behavior. The more "successful" judge is the one who produces judgments (i.e., predictions) which are more highly correlated with such future behavior.

In the present situation, however, we are faced with several subsequent behaviors rather than one, as many as there are behavioral cues. However, since the judge has already "stated" the relative emphasis and importance he places on the cue information (i.e., his judgmental policy), we can place the same relative emphasis on the subsequent behavior or the nominees to produce a Behavioral Composite.

The second criterion is more traditional in nature: the length of time-to-release from the hospital. Gurel (1965; 1966a; 1966b; 1970) has presented substantial evidence in support of time-to-release measures as indicators of treatment effectiveness. The shorter the time-to-release, the longer the subsequent time in the community. Erickson (1975) has criticized the use of such measures as an indicator of actual treatment effectiveness, although he conceded that such a measures relates

to the post-hospital "patient's bizarre and unmanageable behavior". He contends, however, that patient adjustment is regulated by too many other factors to accept this measure as the sole indicator of improvement.

Erickson's arguments not withstanding, it was decided to include the time-to-release measure as a criterion to be investigated for two reasons. As Erickson himself points out, it is a measure which is used throughout the vast majority of treatment evaluation studies and, as such, deserves inclusion in any study where the effects of treatment are at issue. In addition, the present study does not take as its focus the assessment of treatment effectiveness per sé, but rather the association of treatment variables with the judgment process. Time-to-release is certainly an important treatment variable. It is a criterion which is widely employed, and it would be difficult to justify its exclusion.

Analysis

Behavioral Cues. To obtain behavioral cue measures for each of the patients, scores on each of the MMS scales were individually subjected to a regression analysis, with the MMS

scale scores as the dependent variable (Mendenhall, 1968), using the BMD05V program from the UCLA Biomedical computer program package (Note 3). It was reasoned that four potential sources of influence might be responsible for any observed differences in the MMS scale scores: (1) variation due to the behavior of the patients; (2) variation due to the raters, independent of patient behavior; (3) interaction between the raters' and the patients' behavior; and (4) other measurement error. Only items for which the largest portion of variance could be attributed to differences between the patients, and for which intra-class reliability coefficients indicated that variance to be reliably measured, were included for further analysis. Patient variance estimates were obtained by giving priority for sum-of-squares attribution to (a) the patients and (b) the raters. The remaining sums-of-squares, including all higher-order interaction terms, were attributed to the residual and employed as the error term.

Scales which were deemed acceptable following the regression analysis were then factor analyzed using the FACTOR sub-program of the prepared SPSS computer package (Note 4). The principle components solution (PA1) was used, and rotated to simple structure by the Normal Varimax procedure. Factor scores for

each of the three resulting dimensions were taken as measurements of patient behavior.

Three of the MMS scales - EUPHORIA, INSOMNIA and DELUSIONAL - contained substantial unique variance and were retained as independent cues. The phase of treatment to which the nominee had requested promotion was added to the three factor scores and the three unique-scale scores to produce the cue set. This resulted in a total of seven cue variables for analysis.

Policy Description. By regressing the votes, or judgments, onto the behavioral cues, a linear model of each judge at each phase of treatment was produced. The multiple regression program BMD03R (Note 3) was used for this purpose. The resulting regression coefficients were used to estimate the relative weight judges applied to each cue; the resulting multiple correlation between the cues and the votes (Rj) was taken as the index of the extent to which the linear model captured the judges' cognitive amalgamation process (Naylor & Wherry, 1965).

Policy Validation. Validation (Note 2) of the weighting schemes employed by the judges, against the time-to-release criterion, was accomplished by correlating the votes of each

judge with the number of days the nominee remained in-hospital before the termination of the study. Three patients who terminated treatment against the advice of their therapist were assigned the maximum number of days (155) associated with any stay.

The votes were also validated against the Behavioral Composite. The Behavioral Composite was constructed by weighting the cue measures obtained after the judges' votes by the raw-score regression weights developed on cue measures obtained before the judges' votes, and summing the resulting products. The Behavioral Composite scores were then correlated with the votes to obtain the second validity estimate for the judges.

The Individual Judge. The votes cast by each judge were grouped according to the phase of the judge when the votes were cast. For example, all judgments produced by a judge while he was in Phase 2 were analyzed together, but seperately from his judgments while he was at Phase 3 or Phase 4. A judge's Phase 2 policy description was obtained by regressing his Phase 2 judgments on the ratee cue measures obtained prior to his judgments.

His Phase 2, time-to-release validity was obtained by correlating his Phase 2 judgments with the number of days until the ratees were released. The Behavioral Composite validity was obtained by constructing a Behavior Composite score for each ratee in the manner described, and correlating the composites with the judge's corresponding votes.

Judge "L", for example, cast 22 votes while in Phase 2. For 12 of these ratings, prior cue information was available on the ratee. These measures were used to obtain Judge "L's" policy description at Phase 2. The 12 corresponding judgments were correlated against the number of days the ratees remained on the ward to obtain the time-to-release validity for Judge "L" at Phase 2. In addition, the same policy-description, raw-score regression weights were used to combine the cue measures of 15 of the 22 ratees for whom cue measures were obtained while Judge "L" was at Phase 3. These composite scores were correlated with Judge "L's" prior (i.e., Phase 2) judgments to obtain his Behavioral Composite validity coefficient for Phase 2.

The procedure was followed for each judge at each phase of treatment for which data were available.

"Composite", "Average", and "Unweighted Average" Judges. Three hypothetical judges were constructed, and their judgments analyzed in the same manner as the individual judges. A "composite" judge was constructed by grouping all the judges together who appeared at a particular phase of treatment, and proceeding with the analyses as if they were a single judge. The "average" judge was constructed by (1) transforming the individual judges' validity coefficients to Fisher "z" equivalents, (2) weighting the transformed coefficients by the number of ratees on which each was based, (3) summing the resulting products, (4) dividing the sum by the total number of ratees, and (5) transforming the resulting average "z" coefficient into its correlation equivalent. The "unweighted average" judge was constructed by simply taking the arithmetic mean of the individual judges' validity coefficients at each phase.

Linearity and Configurality in Cue Utilization. The judgmental accuracy of each judge for the time-to-release criterion was decomposed into its various components (Hammond, et al., 1964; Tucker, 1964). The accuracy of judgment was taken to be the judge's validity coefficient as previously defined. In addition, the correlation between the vote values predicted from

a judge's linear model of the cues and the time-to-release values predicted by a linear model from those same cues was taken as the judge's linear accuracy component. The configural component was calculated by correlating the residual values obtained after the linear components were removed from the votes and the time-to-release measures.

Moderator Analysis. Measures of patient-judge characteristics were used to predict the raw-score regression weights and the judgmental validity coefficients (transformed to Fisher "z" equivalents) of the patient-judges using a forward "step-wise" multiple regression procedure. Ten attitude measures from the Ward Atmosphere Scale (Moos, 1974), age, sex, and the seven cue measures were employed as the potential predictors of the judges' validities and weighting schemes, with "F-to-enter" = 2.0, "F-to-delete" = 1.0, "tolerance" = .01 (BMD02R, Note 3).

CHAPTER 3

RESULTS

Preliminary Analyses

The distribution of the phase classifications of the patient-judges by the patient-ratees, for all judges, is given in Table I. A test for independence of the judge by ratee classifications resulted in a Chi-square = 1.25 (df = 2, .70 > p > .50), indicating that no systematic relationship exists. These results could be misleading, however, in that many of the ratees were rated by more than one judge.

It is more meaningful to look at the individual judge-by-ratee distributions. Table II presents such a distribution for the judge exhibiting the greatest non-independence (Chi-square = 3.6, df = 2, .25 > p > .10). The individual results appear to support the group findings.

In addition, judgments produced by subjects who were at Phase 1 of treatment were not analyzed. Only six, of 300 individual votes cast by persons at this phase, were negative, i.e., there was nothing to analyze.

TABLE I

CONTINGENCY TABLE OF JUDGES BY RATEES ACCORDING TO PHASE OF TREATMENT

	Phase of Ratees			
Phase of Judges	1	2	3	Row Total
2	75	74	15	164
3-4	141	174	31	346
Column Total	216	248	46	510

TABLE II

CONTINGENCY TABLE OF JUDGE "L" BY RATEES ACCORDINGG
TO PHASE OF TREATMENT

	Phase of Rateas			
Phase of Judge "L"	1	2	3	Row Total
2	12	9	1	22
3-4	25	35	12	72
Column Total	37	44	13	94

Behavioral Cues

Sub-scale Identification. The results of the regression analysis with the MMS scores as dependent variables are given in Tables III and IV. Since the data matrices on which the analyses are based are not orthogonal, different variance estimates are obtained depending on whether Rater or Ratee variances are given priority in the extraction procedure, i.e., which sums-of-squares is estimated first. Therefore, two separate extractions were performed for each MMS sub-scale: one giving Ratees priority, the other giving Raters priority. Table III gives the sums-of-squares attributable to each source of variance on each sub-scale under the two procedures. Table IV gives the estimated proportions of the total variance attributable to differences in Patient behavior under each procedure for each of the sub-scales. Following Myers (1972), the formula

$$p(Vp) = \frac{Vp}{Vp + Vr + (Vres/2)},$$

where

Vp = estimated variance due to patients

Vr = estimated variance due to raters

Vres = residual, including all higher-order interactions

TABLE III

ESTIMATED SUMS-OF-SQUARES ATTRIBUTABLE TO RATERS AND RATEES ON THE MMS RATING SCALES UNDER TWO DIFFERENT EXTRACTION PROCEDURES
(N = 40)

Var. Source	Sub-Scale	Variance Source given Extraction Priority: Ratee	Variance Source given Extraction Priority: Rater	Sub-Scale	Variance Source given Extraction Priority: Ratee	Variance Source given Extraction Priority: Rater
Ratee	1	12.75	7.5	16	165.25	75.8
Rater	1	15.45	20.7	16	34.85	124.3
Ratee	2	169.35	88.5	17	22.45	13.6
Rater	2	13.95	94.8	17	11.55	20.4
Ratee	3	136.2	77.9	18	195.85	74.8
Rater	3	48.0	106.3	18	76.65	197.7
Ratee	4	241.75	112.2	19	99.0	100.0
Rater	4	110.95	240.5	19	74.0	73.0
Ratee	5	69.9	10.9	20	276.35	222.6
Rater	5	66.9	125.9	20	90.15	143.9
Ratee	6	167.0	135.5	21	96.85	57.0
Rater	6	39.9	71.3	21	38.45	78.3
Ratee	7	302.0	121.0	22	248.65	211.7
Rater	7	34.6	215.6	22	50.75	87.7
Ratee	8	127.2	94.8	23	113.15	121.9
Rater	8	66.0	98.4	23	102.65	93.9
Ratee	9	6.3	5.0	24	95.9	46.2
Pater	9	4.2	5.5	24	53.4	103.1
Ratee	10	32.4	31.7	25	7.65	5.5
Rater	10	13.8	14.5	25	2.45	4.6
Ratee	11	229.0	88.9	26	3.6	2.0
Rater	11	33.9	174.0	26	4.0	5.6
Ratee	12	221.35	114.98	27	.23	.60
Rater	12	49.95	156.32	27	.50	.14
Ratee	13	92.4	42.3	28	-------	------
Rater	13	16.1	66.2	28	-------	------
Ratee	14	180.9	47.8	29	289.0	246.3
Rater	14	29.6	162.7	29	30.3	73.0
Ratee	15	3.6	4.0	30	62.2	69.1
Rater	15	2.7	2.3	30	29.9	23.0

TABLE IV

ESTIMATES OF INTRA-CLASS CORRELATION COEFFICIENTS AND PROPORTION OF ITEM VARIANCE ATTRIBUTABLE TO RATEES FOLLOWING TWO EXTRACTION PROCEDURES APPLIED TO THE MMS (N = 40)

Sub-Scale	Variance Proportion: Variance Source given Extraction Priority: Ratee	Rater	Mean	Intra-class Correlation: Variance Source given Extraction Priority: Ratee	Rater	Mean
1	.38	.23	.31	.42	.18	.30
2*	.90	.46	.68	.93	.87	.90
3	.58	.33	.46	.48	.24	.36
4	.66	.30	.48	.95	.89	.92
5	.46	.07	.26	.71	-.03	.34
6*	.71	.57	.64	.74	.69	.72
7*	.83	.32	.58	.85	.65	.75
8*	.57	.42	.50	.67	.58	.62
9	.43	.34	.38	.22	.11	.17
10	.54	.53	.53	.43	.42	.42
11	.82	.20	.51	.88	.72	.80
12*	.70	.36	.53	.68	.47	.58
13*	.67	.35	.51	.81	.63	.72
14	.70	.18	.44	.60	.03	.31
15	.45	.45	.47	.39	.43	.41
16*	.78	.35	.56	.88	.75	.81
17*	.56	.34	.45	.63	.46	.54
18	.61	.23	.42	.64	.27	.46
19*	.55	.55	.55	.93	.93	.93
20*	.70	.56	.63	.84	.80	.82
21	.56	.33	.45	.48	.25	.36
22*	.75	.63	.69	.79	.75	.77
23*	.48	.52	.50	.77	.79	.78
24	.58	.27	.43	.75	.55	.65
25*	.73	.51	.62	.92	.90	.91
26	.46	.25	.36	.99	.99	.99
27	.14	.37	.25	-.16	.14	-.01
28	--	--	--	--	--	--
29*	.83	.70	.77	.83	.80	.81
30	.43	.48	.45	.10	.15	.12

* indicates items retained for further analyses.

was used for the estimates since two independent ratings on each patient were averaged to obtain the sub-scale scores.

Table VI also gives the estimated intra-class reliability coefficients (r') for the measurement of the Patient variance, computed using (Guilford, 1956)

$$r' = \frac{Vp - (Vres/2)}{Vp + (Vres/2)}.$$

On the basis of these analyses, ten of the original 30 scales were eliminated because the largest portion of their variance was not attributable to Ratee differences; two additional scales were eliminated because a substantial portion of their variance was not attributable to Ratees when the Rater influences were given priority in extracting the sums-of-squares; the last three scales to be eliminated did not show large enough intra-class reliability coefficients. As a result, 15 scales remained for further analysis ("*" on TableVI = retained).

The variance due to Ratees on the remaining scales, averaged over both extraction procedures, ranged from 45% - 77%, averaging 58%; the reliability coefficients, also averaged

over both extraction procedures, ranged from .54 to .93, averaging .79.

Sub-scale Factor Analysis. The remaining 15 MMS scale scores were subjected to a principle components factor analysis, with Varimax rotation, to identify the underlying behavioral dimensions. Three orthogonal factors were extracted with eigenvalues greater than one, and factor scores for each patient at each phase of treatment were produced. The three-factor solution, which accounted for 58% of the total variance in the data, is given in Table V.

The first factor, accounting for 49.1% of the shared variance, appeared to represent the social and emotional isolation evident in the behaviors of the patients. High scorers on this dimension are characterized by lack of speech (loading = .80), wooden facial expression (loading = .77), lack of emotional affect (loading = .89), oblivion to surrounding activities (loading = .75), active resistance to approach by the staff (loading = .62) or other patients (loading = .85), and a delusional appearance at times (loading = .47). Given the quality of the behaviors at the extreme of this dimension it was labelled PERSONAL WITHDRAWAL.

TABLE V

VARIMAX ROTATION SOLUTION FOR 15
BEHAVIORAL RATING SUB-SCALES
(N = 106)

	Factor Loadings			
Sub-scale	I	II	III	h^2
Wooden Face	.77	-.13	-.02	.61
Resistive	.62	.35	.14	.52
Isolated	.85	.10	-.06	.74
Mute	.80	.04	.19	.69
No Affect	.89	-.01	.13	.81
Unaffected	.75	.07	.19	.61
Delusional	.47	.24	-.15	.30
Clinging	.14	.70	-.22	.56
Disruptive	-.07	.75	.25	.63
Distractable	.11	.74	.02	.56
Outbursts	.04	.77	.27	.67
Insomnia	.06	.25	.57	.39
Filthy	.36	.27	.58	.55
Gluttonous	.01	-.16	.88	.79
Euphoric	-.38	-.01	-.27	.22
% Variance	49.1	29.8	21.1	57.6

The second factor to emerge accounted for 29.8% of the shared variance. High scorers on this dimension are described as clinging to authority figures such as the staff (loading = .70), easily distracted from activities in which they may be involved (loading = .74), prone to emotional outbursts (loading = .77), and generally disruptive in social situations (loading = .75). The high scorer, here, is like the insecure child who craves attention from his parents and can be quite inconsiderate of others in attempts to gratify his needs. INSECURE ATTENTION SEEKING was the label given to this factor.

The final factor represented 21.1% of the shared variance. Three scales describe the high scorer: highly food-oriented (loading = .88), personally unkempt, with clothes often soiled by food or body wastes (loading = .58), and unable to sleep without frequent medication (loading = .57). The first two variables are suggestive of "oral-regression", in the Freudian sense, and discussions with staff members familiar with patients, who fit the factor descriptions, led to labelling this the AGITATED REGRESSION dimension.

Unique Sub-scales. In addition to the three sets of factor scores produced, three of the sub-scales were retained as individual behavioral cues. These scales, containing substantial unique variance, were: EUPHORIA (78% unique variance), INSOMNIA (61% unique variance), and DELUSIONAL (70% unique variance).

The intercorrelations amongst the factor scores, the unique scales, and the phase classifications of the patients are given in Table VI along with the cue means and standard deviations.

Predictive Validities

Comparisons of the validity coefficients obtained for each patient's judgments against the time-to-release (Mean = 72.3, Standard Deviation = 46.0) and Behavioral Composite (Mean = .69, S.D. = .97) criteria are given in Table VII. These same results are graphically illustrated in Figure 3. It appears from these tables that improvement in judgmental validity occurred as the patient-judges moved from Phase 2 to Phase 3.

In the case of the time-to-release criterion, nine of the 11 judges involved showed increases in the predicted direction (exact binomial probability $< .03$). In addition, the

TABLE VI

MEANS, STANDARD DEVIATIONS, AND INTER-CUE CORRELATIONS OF MEASURES EMPLOYED AS CUES (N = 106)

Variables	I	II	III	4	5	6	7
WITHDRAWAL	1.00	0.00	0.00	-.38	.06	.47	-.14
ATT'N SEEk.	0.00	1.00	0.00	-.01	.25	.24	.12
AGIT'D REG.	0.00	0.00	1.00	-.27	.57	-.15	.28
EUPHORIA	-.38	-.01	-.27	1.00	-.21	-.03	-.31
INSOMNIA	.06	.25	.57	-.21	1.00	.11	-.11
DELUSIONAL	.47	.24	-.15	-.03	.11	1.00	-.19
PHASE	-.14	.12	.28	-.31	-.11	-.19	1.00
MEAN	0.00	0.00	0.00	.93	1.08	1.22	1.58
S. DEV.	1.00	1.00	1.00	.39	.65	.84	.68

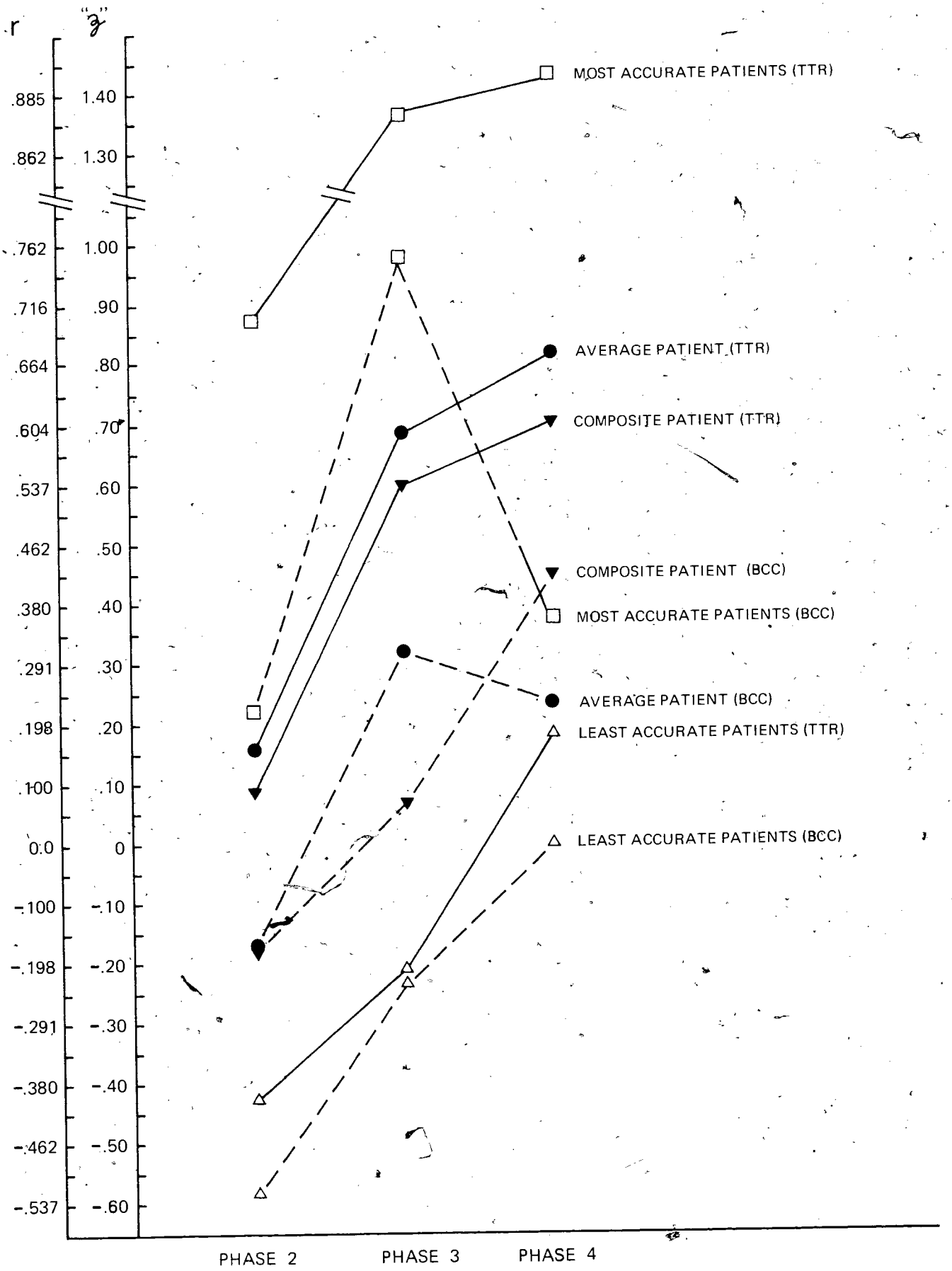
TABLE VII

CORRELATIONS BETWEEN THE BEHAVIORAL COMPOSITE AND TIME-TO-RELEASE MEASURES WITH THE JUDGMENTS OF EACH JUDGE AT EACH PHASE OF TREATMENT (SAMPLE SIZES ARE GIVEN IN PARENTHESES)

Patient	Phase of Judge at the time of Voting. Time-to-release 2	3	4	Beh. Composite 2	3	4
A	-.401 (14)	.372 (34)		-.176 (32)	.717 (32)	
B	-.294 (17)			.208 (23)		
C	.682 (12)	-.187 (19)		.132 (16)	-.219 (11)	
D	.319 (18)	.852 (13)		-.121 (18)	.677 (13)	
E	.702 (15)	-.206 (15)	.186 (10)	-.466 (11)	-.077 (12)	.240 (12)
F	-.063 (16)	.599 (25)	.891 (13)	-.437 (12)	.160 (24)	.001 (15)
G		.601 (13)	.586 (10)		.162 (16)	.325 (23)
H	.349 (16)	.876 (17)		-.168 (16)	.431 (15)	
I	-.194 (22)	.516 (12)		-.106 (15)	.303 (12)	
J	-.232 (17)	.101 (10)		-.400 (16)	.236 (18)	
K	.384 (19)	.841 (10)		-.412 (20)	.750 (8)	
L	.293 (12)	.726 (29)	.684 (13)	-.201 (15)	-.044 (35)	.298 (12)
M	-.039 (24)			-.525 (15)		
N	.600 (12)	.621 (29)		.190 (15)	.471 (20)	
O		.703 (22)			-.023 (22)	
Compst.	.085 (216)	.536 (248)	.604 (46)	-.187 (224)	.061 (238)	.417 (62)
Average	.153	.597	.673	-.184	.299	.228
Unweighted Average	-.191	.273	.216	.162	.493	.587

FIGURE 3

VALIDITY COEFFICIENTS FOR EACH CRITERION
AT EACH PHASE OF TREATMENT
FOR THE COMPOSITE, AVERAGE, MOST ACCURATE
AND LEAST ACCURATE PATIENT JUDGES


r
"z"
.885
1.40
.862
1.30
.762
1.00
.716
.90
.664
.80
.604
.70
.537
.60
.462
.50
.380
.40
.291
.30
.198
.20
.100
.10
0.0
0
-.100
-.10
-.198
-.20
-.291
-.30
-.380
-.40
-.462
-.50
-.537
-.60
MOST ACCURATE PATIENTS (TTR)
AVERAGE PATIENT (TTR)
COMPOSITE PATIENT (TTR)
COMPOSITE PATIENT (BCC)
MOST ACCURATE PATIENTS (BCC)
AVERAGE PATIENT (BCC)
LEAST ACCURATE PATIENTS (TTR)
LEAST ACCURATE PATIENTS (BCC)
PHASE 2
PHASE 3
PHASE 4

"composite", "average" and "unweighted-average" judges showed similar large increases. Changes in the validities of judges who appeared at both Phase 3 and Phase 4 showed substantially smaller increases in the predicted direction.

Virtually identical results were obtained for the Behavioral Composite, even though the two criteria share only 27% of their variance. The validities are generally lower (perhaps due to the much smaller variance of the Composite compared to the time-to-release measure), but the changes in the predicted direction, as treatment progresses, are even more pronounced. Ten of the 11 changes from Phase 2 to Phase 3 were positive (exact binomial probability < .006). Changes by the composite, average and unweighted-average judges are similar (Note 5).

Unlike the results for the time-to-release measure, however, the composite judge showed a large positive change when Phase 3 and Phase 4 validities were compared. In addition, the average judge showed a very small negative change.

Cue Utilization

In an attempt to understand the cognitive processes which contributed to the general increases in judgmental validity, the judgmental policies of the patients were decomposed into their various elements following procedures suggested by Tucker (1964). Tables VIII, IX, and X show the cue analyses for the judges at each of Phases 2, 3 and 4 respectively.

The most interesting feature of these policy descriptions is the apparent configurality evidenced. In all three treatment-phase classifications, the most accurate judges are those who appear to employ BOTH linear and configural information contained in the cues during their amalgamation process (e.g., Judge H, Phase 3). Those judges producing negative validities also appear to be utilizing linear AND configural strategies but reverse the cue information (i.e., high scores become low; low scores become high, e.g., Judge E, Phase 3). Judges producing intermediate validities appear to employ some intermediate strategy such as (a) disregarding available linear information (Judge H, Phase 2), (b) disregarding available configural information (Judge G, Phase 4), (c) both "a" and "b" (Judge E, Phase 4), or (d) utilize both the linear and configural

TABLE VIII

CUE-UTILIZATION POLICY DECOMPOSITION FOR
PHASE 2 JUDGES
AGAINST THE TIME-TO-RELEASE CRITERION

Judge	r_a	= (G)	(Rj)	(Rc)	+ (C)	$(\sqrt{1-Rj^2})$	$(\sqrt{1-Rc^2})$	n	Mean
A	-.401	-.48	.97	.95	.33	.28	.43	14	.71
B	-.294	-.26	.85	.85	-.39	.53	.53	17	.82
C	.682	.80	.92	.98	-.57	.39	.20	12	.67
D	.319	.67	.89	.60	-.11	.46	.80	18	.83
E	.702	.87	.74	.70	.52	.67	.72	15	.47
F	-.063	-.07	.99	.82	-.22	.08	.58	16	.69
H	.349	.19	.64	.68	.48	.76	.73	16	.69
I	-.194	-.22	.70	.66	-.17	.72	.75	22	.90
J	-.232	-.27	.99	.82	-.32	.08	.57	17	.88
K	.384	.80	.72	.52	.17	.59	.86	19	.42
L	.293	.40	.79	.98	-.13	.62	.17	12	.67
M	-.039	.49	.76	.60	-.50	.66	.80	24	.71
N	.600	.66	.44	.81	.69	.90	.58	12	.33
Compt.	.085	.14	.44	.51	.07	.90	.86	216	.71
Aver.	.153	.38	.88	.81	-.42	.47	.59		
Unwgt. Aver.	.162	.28	.80	.77	-.22	.52	.59		

TABLE IX

CUE-UTILIZATION POLICY DECOMPOSITION FOR
PHASE 3 JUDGES
AGAINST THE TIME-TO-RELEASE CRITERION

Judge	r_a	=	(G)	(Rj)	(Rc)	+	(C)	$(\sqrt{1-Rj^2})$	$(\sqrt{1-Rc^2})$	n	Mean
A	.372		-.16	.60	.46		.59	.80	.89	34	.82
C	-.187		-.20	.87	.60		-.21	.50	.80	19	.84
D	.852		.90	.99	.95		.01	.09	.30	13	.31
E	-.206		-.18	.93	.68		-.41	.31	.73	15	.13
F	.599		.73	.65	.56		.53	.76	.82	25	.68
G	.601		.73	.76	.97		.38	.64	.24	13	.92
H	.876		.92	.78	.72		.83	.63	.70	17	.71
I	.516		.68	.57	.86		.43	.82	.50	12	.75
J	.101		----	.91	1.00		----	.42	----	10	.80
K	.841		.85	.99	.99		.14	.04	.01	10	.50
L	.726		.92	.73	.65		.56	.68	.76	29	.55
N	.621		.39	.54	.51		.71	.84	.86	29	.59
O	.703		.99	.62	.71		.43	.87	.70	22	.77
Comp.	.536		.69	.33	.58		.52	.94	.82	248	.68
Aver.	.613		.76	.79	.74		.40	.60	.67		
Unwgt. Aver.	.526		.55	.75	.72		.33	.58	.61		

TABLE X

CUE-UTILIZATION POLICY DECOMPOSITION FOR PHASE 4 JUDGES AGAINST THE TIME-TO-RELEASE CRITERION

Judge	r_a =	(G)	(Rj)	(Rc)	+ (C)	$(\sqrt{1-Rj^2})$	$(\sqrt{1-Rc^2})$	n	Mean
E	.186	.24	.78	.99	.01	.63	.04	10	.50
F	.891	.96	.70	.70	.82	.71	.71	13	.62
G	.586	.95	.66	.95	-.04	.75	.30	10	.90
L	.684	.96	.65	.69	.46	.76	.73	13	.69
Comp.	.604	.97	.48	.49	.63	.88	.69	46	.67
Aver.	.673	.91	.70	.91	.32	.72	.42		
Unwgt. Aver.	.587	.77	.70	.83	.31	.71	.44		

information but reverse one or the other and offset any potential validity (Judge C, Phase 2).

When the composite judge from each Phase is compared, there appears a progressive increase in the utilization of both linear and configural information. For the average judge the same progression can be noted for the linear component of judgmental accuracy. However, the non-linear component changes in sign rather than in magnitude. In addition, as one moves from the earlier Phase to the later phases, the amounts of linear (Rc) and configural ($\sqrt{1 - Rc^2}$) information available in the cues do not appear to change. The changes in information utilization, on the other hand, appear to increase significantly (composite *delta* = +.707, $z = 11.07$, $p < .01$; average *delta* = +.711, $t = 2.3$, $p < .05$, $df = 23$; Notes 5 and 6).

Predicting Judgmental Accuracy

To test Hypothesis II - that accuracy is reflective of the patient-judge characteristics - measures of the patients' own behaviors (three MMS factors and three unique scales), 10 attitude scale scores from Moos' *Ward Atmosphere Scale*, age, sex, and phase classification were entered into a "step-wise" multiple

regression analysis (BMD02R, Note 3) with judgmental accuracy as the dependent variable. The results of the step-wise procedure for both criteria against these 19 measures are given in Table XI. The table also includes the estimated multiple regression correlation coefficients and the associated F-test results.

Two variables entered to predict judgmental accuracy against the time-to-release criterion ($R = .52$; $F = 5.03$, $p < .05$, $df = 2, 27$) - Phase classification and Insomnia. Six judge characteristics appear predictive of accuracy on the Behavioral Composite ($R = .801$; $F = 6.85$; $p < .01$, $df = 6, 23$): Phase, anger, staff control, PERSONAL WITHDRAWAL, sex and spontaneity.

b-weight Prediction

The same procedures, as used in the "step-wise" prediction of the judgmental validities, were employed to determine possible moderator effects on the weighting of the cue information. The results for these seven analyses are given in Table XII. There appear to be varying degrees of moderator effects for all cues but one - DELUSIONAL. Patient attitudes toward the ward appear to have the most pervasive influence; behavioral and personal data augment prediction of the weightings employed for the PERSONAL WITHDRAWAL and Phase-requirements cues only.

TABLE XI

PREDICTION VARIABLES WITH ASSOCIATED REGRESSION WEIGHTS AND MULTIPLE CORRELATION COEFFICIENTS FOR CRITERIA (N = JUDGE x PHASE = 30)

Crit.	Step	Variable Entered	Raw-score b-Weight	R	F(R)	p(R)<
TTR	1	Phase	.37262	.449		
	2	Insomnia	.21187	.521	5.03	.05
BCC	1	Phase	.34111	.589		
	2	Anger	-.15018	.683		
	3	Control	.11407	.752		
	4	Withdrawal	-.25496	.769		
	5	Female	.21715	.785		
	6	Spontaneity	.17857	.801	6.85	.01

Note - degrees of freedom for the F-tests shown were computed using the number of predictors (g) for the numerator df, and using (30 - g - 1) for the denominator df.

TABLE XII

PREDICTION VARIABLES WITH ASSOCIATED REGRESSION WEIGHTS AND MULTIPLE CORRELATION COEFFICIENTS FOR CUES (N = JUDGE x PHASE = 30)

Cue	Step	Variable Entered	b-Weight	R	F(R)	p(R)<
Wthdrwl.	1	Autonomy	.30345	.527		
	2	Anger & Agg.	.36242	.615		
	3	Attn. Seek.	-.10564	.724		
	4	Phase	.09999	.771		
	5	Delusional	-.04386	.783	7.59	.01
Attntn.-Seeking	1	Spontaniety	-.12705	.388		
	2	Insomnia	.12183	.514	4.84	.05
Agitated -Aggr.	1	Autonomy	1.66730	.575		
	2	Spontaniety	-.67476	.654		
	3	Prac. Ornt.	.63538	.698	8.21	.01
Euphoria	1	Prac. Ornt.	.43562	.364	4.26	.05
Insomnia	1	Autonomy	-.70752	.456		
	2	Staff Cntrl.	-.52241	.547	5.75	.01
Delusional		------	------	----	----	---
Phase	1	Spontaniety	-.35384	.330		
	2	Autonomy	.40000	.521		
	3	Delusional	-.15719	.595	4.75	.01

Note - degrees of freedom for the F tests shown were computed using the number of predictors (g) for the numerator df, and using (30 - g - 1) for the denominator df.

Patient-Staff Comparisons

Table XIII shows the cue-utilization models and validity coefficients for both criteria for the six staff-judges. As a test of Hypothesis III, the average staff judgment validities were tested against the overall-average patient judgment validities. Neither test indicated statistically significant differences in the average validities (Note 5).

TABLE XIII

VALIDITIES AND CUE-UTILIZATION DECOMPOSITION
FOR STAFF JUDGES
AGAINST THE TIME-TO-RELEASE CRITERION

Staff	BCC r_a	TTR r_a = (G) (Rj) (Rc) + (C) $(\sqrt{1-Rj^2})$ $(\sqrt{1-Rc^2})$						
U	-.094	.167	-.37	.67	.74	.78	.74	.62
			[N=15, Mean=.47]					
V	.345	.634	.40	.56	.65	.77	.83	.76
			[N=22, Mean=.59]					
W	-.206	-.046	.13	.94	.83	-.77	.34	.53
			[N=16, Mean=.75]					
X	.359	.156	.14	.89	.96	.29	.45	.24
			[N=10, Mean=.60]					
Y	.022	.339	.63	.59	.62	.17	.81	.78
			[N=25, Mean=.76]					
Z	-.041	.355	.48	.80	.99	-.30	.60	.14
			[N=10, Mean=.60]					
Compst.	.143	.265	.42	.56	.47	.21	.83	.88
			[N=98, Mean=.64]					
Average	.077	.318	.37	.75	.82	.24	.66	.57
Unweighted Average	.064	.268	.24	.74	.80	.16	.63	.51

CHAPTER 4
DISCUSSION

Support for Hypotheses

The results of the present study are taken as supportive of the experimental hypotheses. Judgmental validity increased as patient-judges progressed in treatment (Hypothesis I); the increases in judgmental validity, as well as the weighting schemes applied to the behavioral cues by the judges, appear to be associated with characteristics and attitudes of the judges themselves (Hypothesis II); increased adroitness in cue-utilization, rather than increases in the criterion-related information contained in the cues, appears to be responsible for the increased validities (Hypothesis IV). Support for the "absence of differences" between the patient and staff judges (Hypothesis III) was not expected, given its nature, and is not claimed. The patient and staff validities were tested for differences to augment the "increased adroitness" contentions of Hypotheses II and IV.

Criterion Development

It appears from the results that, as patients advance from Phase 2 to Phase 3, they become increasingly accurate in their judgments. This result was obtained using both the time-to-release (a Brunswik approach) and the Behavioral Composite (a Zoom-lens approach) measures as criteria. In addition, results for the Behavioral Composite showed a significant positive change for the composite judge when moving from Phase 3 to Phase 4, and a slight negative shift for the average judge. Inspection of the data revealed that the Phase 4 judges differed somewhat in their voting patterns, as well as in the nominees for whom they cast votes. That is, two of the judges cast a disproportionately greater number of "Yes" votes and appeared to be voting on patients who tended to have better-than-average BCC scores. This situation was reversed for the one judge who cast a greater number of "No" votes. These differences in pattern tended to cancel each other out when the judges were combined to form the composite, but not when the average judge was constructed - thereby producing the anomalous results.

In general, the results of both approaches to the question of judgmental validity have produced results which lead to the same conclusions regarding the hypothesis. The inferences which may be drawn from these findings is that a patient's judgmental accuracy is reflective of his own psychological adjustment, and that a "reading" of that adjustment may be obtained from the patient's judgments. Such a statement has the broad implication that, in some psychiatric settings, a quasi-objective index of the improvement of a patient may be obtained from that patient's behaviors and verbal reports, particularly where they involve judgments of other patients.

Before such an index should be developed or recommended for widespread use, however, it is necessary to establish the extent to which the present findings have generality to other, similar and divergent situations. Ramanaiah and Goldberg (1977) report judgmental accuracy to be highly task specific. If future study indicates such task specificity to be characteristic of judgmental indices based on behavioral data, it may be more productive to pursue such "index" research along other lines, such as judgmental-consistency.

Configurality. An unexpected finding of the study is the apparent degree of configural cue-utilization evidenced in the judgmental policies. Such findings are contrary to the vast bulk of cue-utilization research, yet are so pervasive here as to require inspection of the procedures involved for a reasonable explanation. The present study has deviated from previous methods in four important aspects. First, the usual procedure in cue-utilization research calls for judgments to be based on information (usually in written form) on experimenter-selected variables of interest. The presently-employed procedures "allowed" the judges to select whatever information they desired from the situation and from the naturally occurring behaviors of the ratees. It is possible, and reasonable, that judges utilize information which they themselves select in a more configural fashion than they do information supplied them by an experimenter.

Second, most traditional procedures call for judgments from "expert" judges. Such "experts" may be professional clinicians or business managers who are, generally, well-trained or educated. It is possible, though unlikely, that an unexpected consequence of such training and education is some "learning" to disregard configural information. The subjects for the present

study, on the other hand, were a highly heterogenous cross-section of blue-collar Vancouver. Three of the judges (for whom such information could be obtained) had some college experience, but none was a college or university graduate. Several were elderly, and all had reported problems with finding adequate employment. Clearly, this sample was not typical of the population from which most cue-utilization subjects are drawn, which suggests the configurality results may be peculiar to this type of population.

Third, the nature of the data may contribute to the configurality findings. Goldberg (1976), in a re-analysis of dichotomous judgment data presented by Libby, concluded that configurality did evidence itself and that futher study was warranted. The present study also called for dichotomous responding. It may be that the configurality in such responses is reflective of uncertainty on the part of the judges which they can only resolve by resorting to configural cue-utilization strategies.

The usual means of handling such data is to obtain "certainty" or "confidence" statements from the judges, which effectively transforms the dichotomous variable to a continuous.

one. Such a procedure was not possible within the constraints of this study, but should be considered in future work along these lines.

The fourth explanation, which must be seriously entertained, is that the small numbers of judgments, on which the individual analyses are based, have distorted the results. For the purpose of providing clues, to the reasons for increased judgmental validities, these sample sizes have been tolerated. However, as a basis for addressing the configurality issue, the results must be characterized as ONLY suggestive.

Additional Research

Several avenues of future research suggest themselves. The natural setting employed in the present study prevented sufficient control over the subjects to obtain complete judgment and behavior information for each judge-ratee combination. As a result, a detailed cue-utilization analysis of the Behavioral Composite was not possible. A study in which such a cue decomposition is performed would involve a canonical correlation between the behavioral measures at the various time stages to establish the linear predictability of the criterion (see Figure

2), but other than that the procedures for the analysis remain straightforward. The extent to which laboratory control over the judges (which is required for such a study) alters the utilization of cues remains an empirical question, but the present study may provide a reference point, along with the more traditional results already noted, for the results of such studies.

Ultimate Criteria. It has been suggested throughout this report that the Behavioral Composite may serve as an interim criterion in therapy assessment settings. The Zoom-lens Model, however, naturally extends beyond the immediate setting, and follow-up studies of community adjustment of the subjects is the logical next step in the complete establishment of the model's utility. The "ultimate criterion" in the present case is, of course, the eventual "psychological adjustment" of the patients, a criterion which cannot be adequately assessed from behaviors exhibited over a short twelve-week period.

Also, it would be of value to attempt a replication of the present study in a less clinically-oriented setting. Industrial personnel selection and promotion practices rely heavily on human judgment for action decisions. With minor modifications, the

Zoom-Lens may provide a tool whereby quasi-objective criteria of job performance may be established, especially for middle and upper management positions. Satisfactory performance in such types of positions is almost always assessed by means of some type of rating by senior personnel. The results of the present study suggest that these ratings may be used to establish the level of functioning of the senior personnel themselves. This could be done by obtaining independent measures of employee performance which would constitute the cues of a Zoom-lens paradigm. These independent measures could then serve as the "criteria" against which the rating of the senior personnel might be evaluated. If, as in the present study, it can be shown that such ratings are reflective of the performance of the senior personnel, the ratings may be incorporated into the senior personnel assessment procedures.

CHAPTER 5

CONCLUSIONS

Based on the findings of the present study, several conclusions may be drawn. When psychiatric in-patients are asked to make judgments regarding the adequate functioning of their fellows, the basis for such judgments appears to be the observed behavior of their fellows modified by the atmosphere in which it takes place. Different judges may attach different levels of importance to different behaviors under different circumstances, but knowledge of the behaviors and circumstances of the persons to be judged is sufficient to obtain predictions of the judgments.

In line with Kelly's theory of Personal Constructs, as the judges themselves are assessed by their peers to be making progress in treatment, the judges become increasingly accurate in judging the relative position of others on the independent criteria of length-of-hospitalization and future in-hospital behaviors. Further, this increased accuracy does not appear to be a function of increased information available in the cues regarding the "criteria". That is, the behavior of the patients judged had not appeared to change in such a way as to provided

the judges with more information on which to base a judgment as the judges progressed. Rather, the cue-utilization analysis indicates that the judges used available information more adroitly. Such an interpretation is further supported by the fact that identifiable differences in judge characteristics are predictive of the accuracy of the judges and the weighting schemes they will employ to obtain that accuracy.

The results obtained from the parallel analyses involving the time-to-release and Behavioral Composite "criteria" provide support for the contention that the Zoom-lens Model is a viable alternative to the traditional Brunswik Lens Model in situations where objective standards of performance or functioning are not available. The time-to-release analyses (a Brunswik approach) and the Behavioral Composite analyses (a Zoom-lens approach) led to conclusions regarding the hypotheses tested which were, virtually, identical.

APPENDICES

APPENDIX A

VOTING BALLOTS

#1

Date _____/_____/ 1977

_____ has requested a Phase change from

PHASE _____ to PHASE _____.

I am (check one):

_____ IN FAVOUR

_____ NOT IN FAVOUR

of such a change.

_____ _____.
First name Last initial

APPENDIX B

PUBLIC VOTE RECORD FORM

Staff Recording Form: Show-of-hands Voting
on Phase Changes in Community Meetings

Instructions: During a Phase Change vote, while the hands of the voters are raised, quickly jot down the names of those patients who vote "in-favour" or "not-in-favour", which ever is FEWER. After the names have been recored, indicate whether the votes of the persons listed were "in-favour" or "not-in-favour" by checking the appropriate box. This sheet may be used to record the results of two Phase Change votes.

Date: _____/_____/ 1977
day month

A change from

Phase _____ to Phase _____
has been requested by

_____.
The following patients
voted (check one):

_____ in-favour

_____ not-in-favour.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

A change from

Phase _____ to Phase _____
has been requested by

_____.
The following patients
voted (check one):

_____ in-favour

_____ not-in-favour.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

APPENDIX C

BEHAVIORAL-CUE RATING SCALE

MODIFIED MALAMUD-SANDS PSYCHIATRIC RATING FORM
St. Paul's Hospital Community Meeting Study

Patient: _____ ____. Date of rating: _____/_____/ 19___
First name L.I. day mo. yr.

Observer: _____ ____. Observation:
First name L.I. Time: from _____ to _____
Dates: from _____ to _____

APPEARANCE		MOTOR ACTIVITY	
(1)	(2)	(3)	(4)
____Bizarre	____Filthy	____Excited	____Stuporous
____Decorative	____Slovenly	____Agitated	____Retarded
____Over-Meticulous	____Untidy	____Restless	____Underactive
____None of above	____None of above	____None of above	____None of above

MIMETIC EXPRESSION		RESPONSE TO AUTHORITY	
(5)	(6)	(7)	(8)
____In-congruous	____Wooden	____Clinging	____Negativ-istic
____Dramatizes	____Waxen	____Suggestive	____Restive
____Exagger-ated	____Stiff	____Depend-ent	____Indiffer-ent
____None of above	____None of above	____None of above	____None of above

OVERT HOSTILITY		PEER SOCIALIZATION	
Outward (9)	(10) Inward	(11)	(12)
____Destruct-ive	____Suicidal	____Disruptive	____Inaccessible
____Combative	____Self-Mutilating	____Meddlesome	____Isolated
____Belligerent	____Self-Depricating	____Outreaching	____Shut-in
____None of above	____None of above	____None of above	____None of above

ATTENTION		SPEECH	
(13)	(14)	(15)	(16)
____Un-controlled	____Completely Withdrawn	____Incessantly Productive	____Mute
____Flighty	____Persistent	____Push-of-Speech	____Markedly Retarded
____Distract-ible	____Pre-occupied	____Over-Talkative	____Under-Talkative
____None of above	____None of above	____None of above	____None of above

MOOD		EMOTIONAL DISPLAY	
(17)	(18)	(19)	(20)
____Ecstatic	____Despondent	____In-appropriate	____Flat (rigid)
____Euphoric	____Depressed	____Explosive	____Bland
____Happy	____Sad	____Labile	____Inadequate
____None of above	____None of above	____None of above	____None of above

OVERT ANXIETY (21)	(22)	SLEEP (23)	(24)
____Panic	____Apathetic	____Severe Insomnia	____Coma
____Anxious	____Stolid	____Moderate Insomnia	____Sleeps a lot
____Tense	____Dull	____Restless Sleep	____Somnolent
____None of above	____None of above	____None of above	____None of above

NUTRITION (25)	(26)	SEXUALITY Hetero (27)	(28) Homo
____Omniphagic	____Tube-fed	____Openly Active	____Openly Active
____Voracious	____Refuses	____Soliciting	____Seductive
____Gluttonous	____Anorexia	____Seductive	____Passive
____None of above	____None of above	____None of above	____None of above

DELUSIONS (29)	HALLUCINATIONS (30)
____Certain	____Certain
____Probable	____Probable
____Apparent	____Apparent
____None of above	____None of above

INSTRUCTIONS

for Completing the MALAMUD-SANDS PSYCHIATRIC RATING FORM

Each of the categories of the Malamud-Sands Rating Form consists of four (4) descriptive words or expressions. Each description is an adjective associated with a broader activity heading. The categories are arranged in odd- and even-numbered pairs: the ODD-numbered columns concern outward or increased activity; the EVEN-numbered columns concern inward or decreased activity. For example, a patient's SPEECH activities may be described as "Incessantly Productive" (from column 15) indicating increased outward activity, or "Markedly Retarded" (from column 16) indicating a decreased speech activity which is more inwardly directed. However, the pairs of columns are NOT mutually exclusive. A patient's HOSTILE behaviour, for instance, may be BOTH outwardly "Destructive" (column 9) and inwardly "Suicidal" (column 10). For that reason, each column of four (4) descriptors is rated seperately.

The adjectives themselves are to be considered as "memory pegs" which will help remind the rater of the degrees of disturbance in the patients' activities which are to be identified. The adjective labels are not to be taken as strict definitions of the levels they identify, but as labels for the descriptive categories presented in the accompanying GLOSSARY OF TERMS. The GLOSSARY should by studied carefully before any ratings are made, and referenced whenever one is unclear of label distinctions. If you feel there is a conflict between the meaning of the label and the GLOSSARY definition, make your rating according to the GLOSSARY definition which the label is intended to represent.

Prevalence of Behaviour

To describe the prevalence of the observed behaviours, a total of 4 points are distributed in each column. The 4 points may be alloted to the descriptions in whatever manner the observer deems appropriate. However, the number of points in each column MUST SUM TO EXACTLY 4 POINTS.

As a guide to the allotment of points, the following scale should be used:

4 = the adjective is descriptive of the patient's CONSISTANT behaviour (i.e., 75% of the time or more).

3 = the adjective is descriptive of the patient's OFTEN behaviour (i.e., 50-75% of the time)

2 = the adjective is descriptive of the patient's SOMETIMES behaviour (i.e., 25-50% of the time)

1 = the adjective is descriptive of the patient's RARE behaviour (i.e., less than 25% of the time)

Example #1.

In rating a patient on the APPEARANCE trait, it was noted that he made a point of being careless in his dress. His clothing was usually soiled, his shirt hung out, and his fly would be open. At almost every meal he would spill food on himself. In addition, on rare occasions he would ornament his clothing with ribbons or unnecessary buttons, or wear a towel on his head like a turban.

The following ratings would be made for APPEARANCE:

APPEARANCE		MOTOR ACTIVITY	
(1)	(2)	(3)	(4)
_1__Bizarre	_4__Filthy	____Excited	____Stuporous
____Decorative	____Slovenly	____Agitated	____Retarded
____Over-Meticulous	____Untidy	____Restless	____Underactive
_3__None of above	____None of above	____None of above	____None of above

Example #2.

It was noted, in rating this patient on the SEXUALITY scale, that she excessively exposed her body in the presence of men. She made very few, if any, physical advances, but her speech left no doubt as to her intentions. Her actions would have been considered entirely appropriate had they been made to a husband or fiance in private, but were wholely inappropriate given the situation. In addition, on occasion she had shown "excessive friendliness" to other women on the ward, but this was never accompanied by any overt homosexual actions.

The patient might be rated as follows on SEXUALITY:

NUTRITION		SEXUALITY	
(25)	(26)	Hetero (27)	(28) Homo
____Omniphagic	____Tube-fed	____Openly Active	____Openly Active
____Voracious	____Refuses	_3__Soliciting	____Seductive
____Gluttonous	____Anorexia	____Seductive	_2__Passive
____None of above	____None of above	_1__None of above	_2__None of above

Note that the ratings for SEXUALITY indicate that this patient is "soliciting" men more than 50% of the time - which is unreasonable if one considers both sexes. The rater must keep in mind, however, that it is the OPPORTUNITIES for the behaviour described in the columns which is considered. For SEXUALITY, this means "opportunities for heterosexual behaviour", and "opportunities for homosexual behaviour".

Feel comfortable about using the descriptive phrase "None of above" whenever it is appropriate. If some of a patient's MOODs, for example, are not properly described by any of the GLOSSARY definitions labeled on the rating form, do not feel you must pigeon-hole him or her as "happy", "depressed", or anything else. Describe that portion of the patients' behavior as "None of above". Clinical experience, and the behviour of patients, is too rich and varied to be rigidly circumscribed by the constraints imposed by a rating form of this sort. All patient behaviour cannot be captured in any form, and that fact is recognized. However, a great deal of information and insight can be gained by thoughtful and conscientious recording of the behaviours described.

Needless to say, the validity and value of such an instrument stems directly from the care and efforts of those who use it.

APPENDIX D

WARD ATMOSPHERE ATTITUDE SCALE

W-A-S Questionnaire

St. Paul's Phase Program Study

The following are a list of sentences which might be used to describe a hospital ward. Some of these sentences may be true of the ward on which you are staying, others may be false. If you believe that a statement is true of the ward on which you are staying, write the word "TRUE" in the space in front of that sentence. If you believe that a statement is not true of the ward on which you are staying, write "FALSE" in the space in front of that sentence.

_____1. Patients put a lot of energy into what they do around here.

_____2. Doctors have very little time to encourage patients.

_____3. Patients tend to hide their feelings from one another.

_____4. The staff acts on patient suggestions.

_____5. New treatment approaches are often tried on this ward.

_____6. Patients hardly ever discuss their sexual lives.

_____7. Patients often gripe.

_____8. Patients' activities are carefully planned.

_____9. The patients know then the doctor will be on the ward.

_____10. The staff very rarely punishes patients by restricting them

_____11. This is a lively ward.

_____12. The staff knows what the patients want.

_____13. Patients say anything they want to the doctors.

_____14. Very few patients have any responsibility.

_____15. There is very little emphasis on making patients more practical.

_____16. Patients tell each other about their personal problems.

_____17. Patients often criticize or joke about the ward staff.

_____18. This is a very well organized ward.

_____19. Doctors don't explain what treatment is about to patients.

_____20. Patients may interupt a doctor when he is talking.

_____21. The patients are proud of this ward.

_____22. The staff is interested in following up patients once they leave the hospital.

_____23. It is hard to tell how patients are feeling on this ward.

_____24. Patients are expected to take leadership on the ward.

_____25. Patients are encouraged to plan for the future.

_____25. Personal problems are openly talked about.

_____27. Patients on the ward rarely argue.

_____28. The staff makes sure that the ward is always neat.

_____29. If a patient's medicine is changed, a nurse or doctor always tells him why.

_____30. Patients who break the ward rules are punished for it.

_____31. There is very little group spirit on this ward.

_____32. Nurses have very little time to encourage patients.

_____33. Patients are careful about what they say when the staff is around.

_____34. Patients are encouraged to be independent.

NOTES AND REFERENCES

NOTES

1. Patient-judge voting records indicated such high agreement between the first private, the second private, and the public votes that inferences drawn based on differences between any of the three would be highly suspect. The phi correlation between the public vote and the second private vote was .94 (N = 428; Chi-square = 378.2; $p<.001$). The phi coefficients between the first private vote and the second (phi = .66; Chi-square = 186.4; $p<.001$) and between the first private vote and the public vote (phi = .65; Chi-square = 180.8; $p<.001$) were misleadingly lower in magnitude. These latter two coefficients must be interpreted in light of the maximum correlation possible, given the marginal splits in the contingency tables, which was phi = .74 (Lord & Novick, 1974, pp.346-349).

2. The terms "criterion" and "validity" are used in a, somewhat, unusual sense with respect to the present measures. Typical judgment studies employ criteria which are made explicite to the judges. That is, the judges are aware of the "standards" against which their judgments will be assessed, and it is their task to "match" that standard as closely as possible. In the present situation, however, the judges are unaware of the "criteria", and the judgment task of predicting the criteria is not made explicite. Nevertheless, the external variables employed, and the judgmental situation encountered by the judges, represent the logical counterparts of the traditional approach. Therefore, the traditional nomenclature will be retained.

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5. Considerable caution must be exercised in the interpretation of these significance tests. The correlations, on which the tests are based, were computed on samples which were not, truly, independent. Some "overlap" of samples occurred; sample independence averaged 92%, ranging from 80% to 100%.

6. The policy description for Judge "J", Phase 3, could not be computed due to perfect partial correlations in the linear prediction of the criterion from the cues.

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