

# AN EVALUATION OF THE FELDMAN PROGNOSIS SCALE FOR SHOCK THERAPY\*

By

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## INTRODUCTION

FELDMAN (1951) published a scale for predicting the response of patients to E.C.T. and insulin coma therapy. Using only Minnesota Multiphasic Personality Inventory profiles meeting stated requirements (at least one elevated scale, moderate F scale scores, etc.) he carried out an item analysis of the M.M.P.I. responses of 42 patients who had responded well to shock therapy and 42 patients who had remained unimproved (psychiatrists' ratings). He derived a 52-item scale, scored as an additional M.M.P.I. scale and labelled Ps, high scores indicating poor prognosis. This he cross-validated on a further 100 patients (categorized as recovered, improved or unimproved) and all categories were well discriminated by Ps scale scores.

Pumroy and Kogan (1958) used the Feldman Ps scale (again within the administration of the total M.M.P.I.) as one of a series of prognosis scales given to 23 male patients about to receive E.C.T. and later categorized as Improved or Unimproved by their psychiatrists. They found no significant relationship between their validating criterion and Ps scale scores, but they did not report whether or not their M.M.P.I. profiles met Feldman's requirements.

Roberts (1959), while assessing the prognostic value of a number of physiological measures, gave the *extracted* 52 items of the Ps scale to 41 female patients who were later assessed (1 and 3 months after E.C.T.) as improved or unimproved on a "symptom score basis". No significant relationship was found between Ps scores and symptomatic response as assessed. In this study it is impossible to say whether the full M.M.P.I.s, had they been taken, would have met Feldman's requirements. In considering the literature it should be noted that Roberts mis-reported a later paper by Feldman (1958) as having "modified both the scale and also claims for its predictive value". The 1958 paper reported a new scale designed to evaluate (not prognosticate) the effects of shock therapy. This evaluation of shock therapy (EVS) scale in no way represents a modification

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of the Ps scale and Feldman's comments on its limitations do not refer to the Ps scale.

Gouws (1961) carried out a validation study on 60 patients whose M.M.P.I. profiles met Feldman's requirements (termed "elevated" profiles) and a further 34 patients with M.M.P.I. profiles which did not meet Feldman's requirements (unelevated profiles). The dichotomous criterion of improvement was:

Improved—"improved" rating by psychiatrist on leaving hospital and no re-admission to any hospital over the next five years.

Unimproved—"unimproved" rating by psychiatrist on leaving hospital or "improved" rating but re-admitted to hospital within five years.

For the first group of 60 (elevated profiles) the Ps scale scores differentiated significantly but with higher overlap than was obtained in Feldman's original study; the second group of 34 (unelevated profiles) were not significantly differentiated into improved and unimproved by the Ps scores. This suggests that Feldman's profile requirements need to be met in comparative validation studies.

#### PRESENT STUDY

With the aim of further assessing the validity of the Feldman Ps scale an experiment was carried out as follows:

A population of 33 mental hospital patients who had given M.M.P.I. profiles which met Feldman's requirements from 1 to 21 days before receiving E.C.T. or insulin therapy was used. Follow-up data covering a period of (on average) 6 months from cessation of treatment was assembled. Each of the present authors independently rank ordered the population for response to treatment on the basis of the following instructions. "Allot the patients to four categories which are ranked in descending order as follows:

- (i) Left hospital after treatment and returned to work.
- (ii) Left hospital after treatment but has not returned to work.
- (iii) Remained in hospital after treatment.
- (iv) Remained in hospital after treatment and has since been leucotomized.

Within these four groups' rank order the patients, on the basis of the degree of improvement, indicated by the day to day progress assessments made by the psychiatrists and entered in the case notes."

Working independently to these agreed instructions the authors prepared their rankings, and the rank order correlation (Spearman's rho) between the two was +.93. This interjudge correlation was considered high enough to justify using the second author's rankings (without combination) as validating criterion and to indicate that the criteria of ranking were adequately defined.

It seemed to the authors that, as a judgmental task, comparisons between cases are easier to make than allotments to absolute categories whose boundaries are inevitably ambiguous. This and the use of a series of categories which defined broad rank position probably accounts for the high interjudge agreement.

A rank order correlation was run between the ranking by order of response to treatment and ranking by order of Feldman Ps scores. Spearman's rho for this was  $-0.05$ . Thus there appears to be no significant relationship between Feldman Ps scores and response to treatment as here assessed.

## CONTENT OF THE FELDMAN SCALE

Before comparing the results of the various validation studies a brief investigation of the content of the Feldman Ps scale is reported.

Using 102 M.M.P.I. profiles which met Feldman's requirements a factor analysis of the 52 scale items by Principal Component Analysis was carried out. Three factors emerged accounting for 11·70, 5·94 and 4·81 per cent. of the variance respectively. These factors proved impossible to identify in the form in which they emerged, in addition the third factor had only three rather diverse items exclusively loaded on it. It was possible to achieve apparently meaningful rotation which suggested that Factor I was concerned mainly with items expressive of social hostility while Factor II was characterized by items expressive of social anxiety. Such identification is necessarily speculative and might well fail to replicate. It is, however, broadly consistent with Feldman's general characterization of the scale which he deemed primarily concerned with interpersonal relations. It should be noted that Gouws (1961) in the study previously mentioned found that the Ps scale for his sample correlated +·84 with an Adjustment scale (Fulkerson, 1957) dealing, in part, with the quality of interpersonal relations and +·65 with an Acquiescence scale (Fulkerson, 1958) indicative of a tendency to agree although these three M.M.P.I. scales have relatively few items in common. Both the Adjustment scale and the Acquiescence scale discriminate "improved/unimproved" patients as efficiently as the Ps scale. This and the small amount of variance accounted for by the factor analysis tend to confirm Gouws' suggestion that the "propensity to improve" (a general factor hypothesized by Feldman) may well be a complex entity.

The fact that Feldman found that his Ps scale predicted response to E.C.T. and insulin therapy equally well and response to brief psychotherapy to a significant degree, coupled with Gouws' finding that for his sample the scale predicted response to supportive care as well as response to E.C.T. suggests that it is general prognosis rather than capacity to respond to a specific treatment which is related to the scale.

In parenthesis it should be noted that Feldman's (1958) *evaluation* of shock therapy scale (EVS) which was derived from an item analysis of pre- and post-shock M.M.P.I. responses primarily concerns reported improvements in bodily feelings rather than improved reactions to interpersonal relationships. Thus the nature of the psychological change brought about by shock therapy may not correspond with the precise features prognosticating a good response.

## COMPARISON OF STUDIES

Of the five studies (including the present one) reported to date, two suggest that the Ps scale is to some degree valid and three report no evidence of validity. At least two variables can be examined in relation to these contrasting results. The diagnostic composition of the samples (particularly the ratio of recovered to non-recovered patients within each diagnostic category) and the nature of the response assessment used as validating criterion.

*Diagnostic Composition of Samples*

Both Feldman's groups (criterion and test) consisted largely of Depressives who responded well to treatment and Schizophrenics and Psychoneurotics who did not respond well. Indeed this biased distribution is so marked that had

Feldman merely predicted recovery for each Depressive and non-recovery for each Schizophrenic or Neurotic he would have achieved a chi-square significant at well beyond the 1 per cent. level of confidence. Feldman points out that the mean Ps score of all Schizophrenics and all Neurotics was significantly higher than the mean Ps score of all Depressives. He rightly claims that since *within* each diagnostic group the “improved” are significantly discriminated from the “unimproved” his overall significant discrimination cannot be attributed to his diagnosis/recovery rate proportions. However, it is clear that his discrimination was *improved* by the particular diagnosis/recovery rate proportion of his sample. A sample of Depressives (“naturally” lower scorers) who recover and Schizophrenics/Neurotics (“naturally” higher scorers) who fail to recover maximizes score differences between recovered and unrecovered groups where high scores indicate a bad prognosis.

Pumroy and Kogan (1958) do not report the diagnostic composition of their sample but Roberts’s (1959) sample consisted entirely of Depressives—thus minimizing the hypothesized effect. Gouws’ (1961) sample consisted of Depressives and Schizophrenics who almost equally distributed themselves into recovered and non-recovered and Neurotics who were roughly in ratio of two recovered for every one who failed to recover. Gouws does not report his Ps scores by diagnostic group but if the tendency for all Depressives (recovered and non-recovered) to give lower scores held good then his distribution would have minimized his discrimination levels (which were admittedly lower) rather than maximized them as was the case in Feldman’s study.

In the present study the population consisted of 16 Depressives with 7 recovered and 9 unimproved (defining recovered and improved as the top and bottom half of the response rank ordering respectively) and 17 Schizophrenics/Neurotics with 9 recovering and 8 not. Again the proportion of recovered to non-recovered in the diagnostic groups does not favour discrimination. The mean Ps scores for the two groups are Depressives 19·45, S.D. 4·86 and others 21·12, S.D. 9·43. This difference is not statistically significant but the direction suggests that bias by diagnosis/recovery rate proportions was operating to diminish discrimination.

#### *The Nature of the Validating Criterion*

The second variable which might have affected the comparative results of the studies is the character of the validating criterion. Two studies used psychiatric ratings of recovery, one used ratings of specific symptoms, one psychiatric ratings plus long-term re-admission data and the present study rank ordering by psychologist against overall defined categories. Windle’s (1952) exhortation that “it is necessary to bear in mind that unless measures of outcome are highly correlated, the meanings of prognosis in different studies will differ” seems to have gone unheeded.

The aspect of the validating criterion which, on face inspection, seems most likely to relate to the varying validation fortunes of the Ps scale is the length of time elapsing between treatment and assessment of response. In Feldman’s study the assessment seems to have been based on follow-up data taken up to approximately one year after treatment. In Gouws’ study, the only one which confirmed Feldman’s findings, the recovery assessment was based on a five-year follow up. In the three studies which failed to confirm the scale’s validity assessment was made one month after treatment (Pumroy and Kogan), one and three months after treatment (Robertson) and, on average, six months after treatment

(present study). It is possible, therefore, that the Ps scale is predictive of long-term rather than immediate response to treatment and that short-term validating criteria tend to minimize the scale's effectiveness.

#### CONCLUSIONS

Any definitive attempt to evaluate the Feldman's Ps scale would seem to require an experimental design which permitted the analysis of the scale scores in relation to diagnostic group/recovery rate ratio, the effect of varying time lapses between treatment and assessment of response and the effect of varying techniques of response assessment (psychiatric ratings, symptom ratings, categories based on subsequent work and re-admission history and so forth). Concomitantly, attempts to investigate the psychological content of the scale might utilize Gouws' technique of correlating with other scales chosen in the light of the explanatory hypotheses set up. From a theoretical point of view it might be rewarding to investigate the relationship between responses predicting recovery and responses changing with recovery since, as Feldman suggests in his 1958 study, this might throw light on the nature of what is meant by "getting better"—the differential effects of somatic and psychological treatments might be investigated in this way.

Should the scale eventually prove to have some degree of validity it would still be necessary to establish that it *added* to current psychiatric prognostic methods before its introduction as a clinical tool could be justified.

However, it seems clear, since three of the four subsequent studies failed to repeat Feldman's findings and the fourth study found increased overlap between recovered and non-recovered groups, that the Ps scale is not yet proven to the point at which it can be accepted as a workable clinical tool.

However, in view of the significant finding of Gouws' study (which seems the most thorough of the four) further work on the scale seems justified. Particularly since an objective method of assessing prognosis would seem, from a clinical psychologist's point of view, a more relevant contribution to the treatment of the patient than current diagnostic testing practices.

#### SUMMARY

1. Thirty-three patients were given the Feldman Ps scale before shock therapy and rank ordered for their degree of improvement approximately six months after treatment. No significant relationship was found between degree of recovery and Ps scale scores.

2. Explanations of the varying validation fortunes of the Ps scale were suggested. The two primary factors thought to vary in relation to degree of discrimination found in the varying studies were diagnostic group/recovery rate proportions and the varying time interval between treatment and assessment of degree of recovery.

3. Comments were made on the possible psychological content of the Ps scale in the light of previous studies and a factor analysis carried out by the authors—the primary factors emerging concerned social hostility and social anxiety but only a small proportion of the variance was accounted for by identifiable factors.

4. Though the scale was not regarded as a proven clinical tool it is thought that further investigation was desirable and a broad experimental approach is outlined.

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