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The Measurement of Relevant Change after Psychotherapy: Use of Repertory Grid Testing*

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Psychotherapists, who by temperament are likely to be tender-minded, have up to now largely failed to devote "attention to the problems of quantitative assessment" (Sutherland *et al.*, 1967), and have perhaps been too prone to regard the complaints of tough-minded critics as manifestations of unconscious resistance. If, as most therapists do, one retains the conviction that patients are altered by the experience of psychotherapy, it should be possible to demonstrate and measure such alteration. The fact that attempts to measure change are often unconvincing is probably a function of the crudity or irrelevance of many of the measuring instruments used.

The present paper presents an account of a method of measurement using repertory grid testing (Kelly, 1955; Bannister, 1965; Slater, 1965) which can provide objective measurements of some of the variables considered by therapists to be of importance. These variables are those concerned with the patient's relationships and self concept. The repertory grid testing can be used to define the patient's construct system (i.e. his mode of construing other people) and to examine the dispersion within this system of the significant people in his life.

The paper consists of an account of the method of testing used, and of its application to a single patient treated with brief analytically oriented psychotherapy. This is the first of a series of cases which form part of a project investigating how far, and in what ways, results of repertory grid testing can be related to psychopathology and used to measure change following therapy.

Experimental design

After preliminary diagnostic interviewing the patient was offered treatment and was given her first repertory grid test. Before the results of this test were to hand, a clinical hypothesis based on the early interviews was recorded. This was then related to the results of the repertory grid testing. On the basis of this, the aims of treatment were defined and predictions were made as to what repertory grid changes would occur if these aims were achieved. Re-testing was carried out once during treatment and once after termination. The Middlesex Hospital Questionnaire (M.H.Q.) (Crown and Crisp, 1966), which provides a symptom profile, and the Eysenck Personality Inventory (E.P.I.) (Eysenck and Eysenck, 1964), were also administered to this patient before and after treatment. The test was constructed by collecting from the patient a list of names of significant other people and eliciting the descriptions or reactions which she used to discriminate between pairs or triads of names from this list. The descriptions (constructs) were written on separate slips on each of which there was a seven-point scale. The numbers of the listed people (the elements) were distributed by the patient along this scale, according to the degree to which the description was seen to be applicable to the individual. The resulting matrix of ratings of all the people on all the descriptions was subjected to computer analysis on the programme run by Dr. Patrick Slater. This programme extracts the principal components, the loadings of each construct and of each element on these components, the correlations between constructs and the distances between elements.

Test interpretation and prediction of change

Interpretation of the results of grid testing and predictions of change on re-testing can take account of the following analyses:

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1. *Correlations between constructs*

The association between two constructs is expressed as a correlation (from -1 to $+1$): the higher the value, the more likely it is that a person described by one will also be described by the other.

The relationship between constructs reveals assumptions of which the subject may not be explicitly aware. Such construct relationships are likely to represent generalizations from early key relationships, and in the neurotic may indicate the distortions and stereotyping of person perception which underly his interpersonal difficulties. The aims of treatment in a patient can be translated into predictions of change in construct relationships. Which construct relationships are chosen as significant will be based on knowledge of the individual patient.

2. *Distance between elements*

The distance between two people (elements) in the construct space is an indication of their similarity or dissimilarity over the whole range of constructs used. This value is expressed in the grid analysis in terms of "the unit of expected distance" calculated in such a way that elements rated at random would be separated by one such unit. Values above 1 therefore indicate that the two elements are relatively far apart in the construct space and are construed as dissimilar, whereas a value below 1 indicates that they are relatively close in the construct space and are construed as similar.

Various interpretations of element distances may be made; for example, perception of the self or ideal self as similar to another may provide evidence of identification; perception of similarity between the spouse and a parent may suggest the influence of oedipal factors in mate selection, and perception of two significant people as being extremely dissimilar may represent the operation of splitting projective mechanisms. Where clinical evidence points to one of these influences, resolution of the neurosis should be accompanied by appropriate changes in the distances between elements.

3. *The principal component analysis*

The principal component analysis of the grid extracts the mathematical factors underlying all the relationships expressed within it. One usually finds that the first component extracted accounts for 30–40 per cent. of all the variance, the second for some 15 per cent. and subsequent ones for a diminishing percentage of total variance. These mathematical components can be identified in terms of the positive and negative loadings upon them of both constructs and elements.

One can map out the dispersion of elements in terms of any two components. The constructs which have high loadings (positive and negative) on these components serve to indicate the meaning of the discriminations being made. The display of the element dispersion in terms of these components therefore provides a shorthand map of an individual's key relationships. Such a display is of considerable descriptive value, but predictions of change are complex, as principal components alter in terms of both construct loadings and element loadings. For this reason, predictions are best confined to changes in construct correlations and in distances between elements.

Clinical history and course of treatment

The patient was a 24-year-old female postgraduate Arts student. She requested treatment for a marital problem which she thought was connected with a bad relationship with her father. She was subsequently seen for nine treatment and five follow-up sessions. After the first interview, which was longer, these sessions each lasted 45 minutes, and the first nine were spaced at intervals of approximately one week. The time between first presentation and the last interview and last testing was six months. Material presented in each of these sessions, and the interpretations offered, are summarized below.

In appearance the patient was neatly and colourfully dressed in contemporary fashions. She wore fashionable eye make-up, and in the earlier sessions used powerful scent. She looked young for her years and spoke in a precise but open way, indicating her assent to interpretations with a definite "that's right" and dissent with a carefully thought-out phrase or argument. Direct expression of feeling was rare.

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Session 1

She opened with an account of her husband. He was an abstract painter 15 years older than herself, who had had a grossly deprived institutional childhood and an adolescence marked by sexual deviance and delinquency. She described him as both dependent and violent—on one occasion he had given her a severe black eye. He was at present taking tranquillizers. She went on to speak of her early attachment to her father, which changed at about the age of 14 to anger and rejection. At that time her parents were on very bad terms, and she was involved as a go-between and became allied particularly with her mother. Her mother had had a daughter before marriage who was brought up by the maternal grandmother. The patient was very fond of this elder half-sister, but until the age of 13 did not know officially of their relationship, and her very existence was kept a secret from the father's family.

The patient, at this time, was living apart from her husband for social reasons, a fact which both had welcomed. She felt frightened and oppressed by his violence, yet described her own co-operation in a sexual relationship structured around her playing the part of a child whom he seduced, in which there was often violent foreplay.

She went on to present a great deal of material concerning her parents' illnesses. When the patient was eight her mother had been seriously ill and had a severe haemorrhage which the patient had witnessed. Even before this time the patient had had a dread of blood which she associated with her mother's witnessing of serious war casualties. Her father had been on tranquillizers for years, and was, she said, now impotent. She ended this first session by recounting two dreams; in one her husband was being killed and in the other her childhood house had been given a new façade, "but all was rotten behind". No interpretations were offered at this interview.

The patient completed her first repertory grid test after this interview.

Session 2

She opened by elaborating upon the history of eccentricity and mental illness in the extended family, and went on to talk about her adolescent depressions. During that time her parents had been quarrelling and her mother had become deeply depressed and withdrawn. After the parental relationship was re-established she began to see her father as a failure; she now felt he was possibly a latent homosexual. She herself was depressed at this time and had eating problems. At the ages of 17, 18 and 20 she had made tentative suicidal bids by self-strangulation. Preliminary interpretations were given at this session relating her tie to her father to her marital relationship. Her ambivalent identification with her mother was also discussed. The image of the façade dream in the last session was related to the mess within the family and the mess which she herself concealed behind her neat and tidy appearance.

Session 3

She recounted in this session her obsession with two words. The first of these, "whip", she associated with early punishments from her mother, and the second, "slave", with childhood fantasies, and with having said to her husband early on in her relationship "now I am your slave". She went on to talk about a sleepy, satisfying, dreamlike non-sexual state which she remembered experiencing while held by her father in childhood and with her husband early on in their relationship, and she contrasted this with her acceptance of physical violence in their present sex play. Later in the session she complained that she felt she had lost contact with her own creativity; as a child she had been intensely aware, but now she felt "blocked".

During the session she was asked whether she felt that now the bad things had been said they could be forgotten or handed over to me, to which she replied no, she didn't feel that, but it was a relief to know that someone saw through the façade.

Session 4

At this session she reported a sense of considerable liberation and openness which she associated particularly to an incipient affair with a fellow student whom she said "greatly resembles my husband". She talked about her previous experience in acting, and how when at school she had played Regan in *Lear* her friends had been much surprised, for they saw her as being a much more natural Cordelia, but she knew that she had been correctly cast. She also described how, at that time, her ambitions had been divided between those of being a gipsy and those of being a nun.

She then talked about how she had had a dental gas on the day upon which her father had returned to work after an illness during her early adolescence. She had woken from this gas believing him to be dead, but later had experienced the belief that it was she herself who was dead, and since that time she had recurrently experienced the feeling that in some ways she was not real. In this session her ambivalence towards her mother (admiration and destructiveness) and the repression of her forbidden feelings towards her father in puberty were discussed and related to the Regan–Cordelia and gipsy–nun split in her personality.

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The clinical hypothesis (see below) was recorded at this stage.

Session 5

She was still very cheerful and had had sexual intercourse with the fellow student. She felt he treated her more as an adult than her husband but she still felt that she could not do without her husband's games. It was suggested that the adult part for which she sought recognition in the affair represented aspects of herself which she denied in her relationship with her husband, with whom she enacted the forbidden child–father relationship.

Session 6

She had told her husband about the infidelity and he had responded with concern and forgiveness. She had been much moved by this and went on to speak of how much he had changed latterly, both in relation to her and to others, being less dominating and more accepting. It seemed that the infidelity crystallized for her the possibility of moving out of the daughter role with him. She said that in a more general way she was feeling different; she was no longer troubled with unreality feelings such as those described after the dental gas, and she said that whereas before "experience used to hit the surface, now I can take it in and it builds up in layers."

Sessions 7, 8 and 9

She reported a continuing sense of liberation, and she and her husband began once more to live together with greater peacefulness. She related her difficulty in creating things to her mother, whom she saw both as an uncreative victim and as the destroyer of her father. This, in turn, she related to the feeling she had had that, if she was successfully creative, her husband would not be able to accept it. She said that now, for the first time, she felt she could contemplate at some stage having a child herself.

The second repertory grid test was completed after the ninth interview.

Sessions 10 and 11

The sense of liberation and of coping continued and there seemed little motivation for continuing treatment. The only major symptom she still reported was a morbid fear of blood. She had lost a life-long need to make lists of tasks and objectives and was behaving assertively (in a mildly devilish way) with other people (for example, at teaching seminars). Her husband had started therapy and both felt that the marriage was more secure and productive. She still took part in child games sexually because, she said, "I think he still needs them".

Sessions 12, 13 and 14

She returned for follow-up at intervals of three to four weeks and described herself as far more contented than before. After a recrudesence of marital stress she became angry and frightened by her husband's dependent and threatening behaviour. At this time she felt that she had no further wish to collude in their previous neurotic pattern and doubted whether she had enough patience to wait and see if he was capable of change, and she talked of contacting her lawyer with a view to seeking a divorce. However, this crisis was resolved when she expressed this intention to her husband. His behaviour became once more reasonable and concerned, and she felt constructive change was still possible.

The third repertory grid test was carried out between the 12th and 13th sessions.

Clinical evaluation and predictions

The clinical hypothesis formed on the basis of the first four sessions was as follows: The presenting marital problem is set in the context of a long-standing depression and relationship problems with clear roots in a disturbed family situation. There is a strong ambivalent oedipal tie with the father and an ambivalent largely hostile identification with the mother. The husband is perceived as irrational and dependent like the father, but creative; he is collusive with the patient's neurosis. The father is seen as having been rendered impotent by the mother, and the mother as having been restricted and damaged by the father. She presents herself through her demeanour, her dream of her family home and her description of the family as being destructive behind her clean tidy façade and she feels her own sources of creativity have been blocked. The sexual relationship has marked sado-masochistic characteristics in which the patient plays the role of seduced and injured child. The defence mechanisms used are notably projection and splitting.

Relations of clinical hypothesis to repertory grid testing

Relating this hypothesis to the distribution of elements in terms of the first two components (Fig. 1) one sees that the first principal component distinguishes admired, warm, artistic, from authoritarian and irritable, and separates notably the paternal grandmother and the ideal self from both the parents and the paternal grandfather. The second component distinguishes inadequate, materialistic and maternal from anti-social, eccentric and independent

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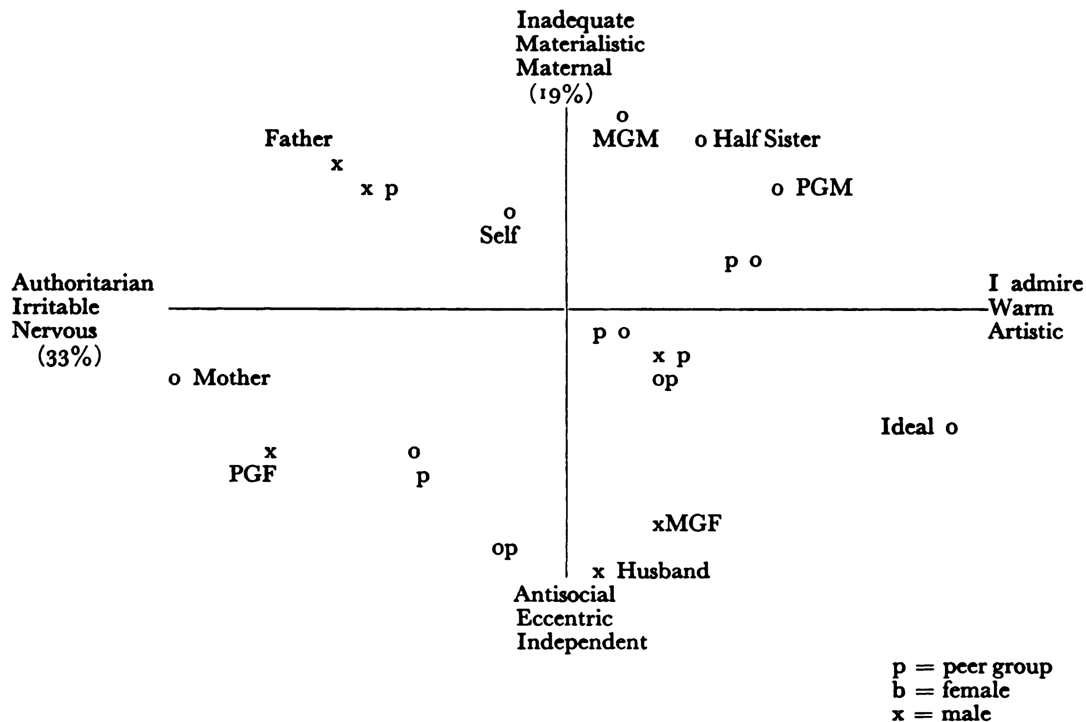

FIG. 1.—Element distribution on the first two components.

and separates notably the maternal grandmother, half-sister and the father from the maternal grandfather and the husband. The marked polarization on the first component of the mother and ideal self, and the similar separation on the second component of the father and husband, suggest splitting mechanisms. It seems that the patient is unable to accept her adult femininity, and the split within herself is based upon, and reflected in, the way in which she perceives the key figures in her life.

It was predicted that improvement would be accompanied by a diminution in the distance between these elements (mother–ideal self and father–husband) and also in the distance between self and mother and self and ideal self.

Construct relationships, it was predicted, should show an increase in the correlations between the "feminine" constructs maternal, creative and warm and the "adult" constructs stable, self confident and strong personality.

Clinical evaluation of treatment

Treatment in this case coincided with a critical phase in the patient's life when she was faced with the need to end or alter her marriage. Her marital problems were clearly linked with her own severe and unresolved oedipal difficulties. Her childish role in the marriage represented the acting out of her oedipal fantasies and the exclusion of her internalized "bad mother". Splitting and projective mechanisms were marked. Therapy provided a secure relationship at a time of crisis in which she was able to dismantle defences and, to some degree, resolve her inner split. There were clearly many unexplored areas of conflict and the possibility of a need for further therapy later was discussed with the patient. None the less, this brief intervention appeared to have assisted in producing significant change. The reflection of this change in repertory grid testing is presented below.

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Results

Repertory grid tests

The predictions made above referred to distances between key elements and to construct correlations. The values of these for the three testings occasions are given in Tables I and II. In the case of element distances (Table I) the changes are as predicted. In the case of construct correlations (Table II) 7 out of 9 changes are as predicted. In some cases the change from T1 to T2 has been reversed partly or completely between T2 and T3.

TABLE I

Distances between elements at times T1, T2 and T3.

Elements	T1	T2	T3
Ideal–Self	1·17	1·24	0·90
Mother–Self	1·07	0·72	0·52
Mother–Ideal	1·57	1·45	0·85
Father–Husband	1·26	1·54	1·21

TABLE II

Construct correlations on three testing occasions

	T1	T2	T3
Stable:			
Maternal	−·229	+·400	−·248*
Creative	−·093	+·295	+·201
Warm	+·459	+·607	+·845
Self confident:			
Maternal	+·170	+·468	+·294
Creative	−·040	+·295	+·201
Warm	+·484	+·463	+·391*
Strong personality:			
Maternal	−·437	+·330	+·132
Creative	+·004	·000	+·368
Warm	−·270	+·252	+·333

* Direction of change opposed to prediction.

Many constructs and construct correlations showed considerable shifts in addition to those which were the subject of predictions. It is possible to derive a measure of construct mobility between T1 and T3 (from the sums of squares of angular change). The top line of Table III lists the five constructs which showed the most shift. Changes in correlations between these and other constructs were calculated for a representative 25 per cent. sample ($n = 225$) of changes in construct correlations. Correlation change is expressed in degrees (the angular shift equals $\Theta T1 - \Theta T3$, where $\text{Cos}\ \Theta = r$, the correlation at a given time between any two constructs) and these values are distributed normally. Those recorded in Table III represent all those showing a shift of more than 44° (a level significant at $p = 0{\cdot}1$, on a two-tailed t test). Negative values indicate that the construct correlations have increased between T1 and T3.

It will be observed that these changes are all consistent with the overall clinical hypothesis.

M.H.Q. and E.P.I.

The patient's scores on the M.H.Q. on T1 and T3 are given in Table IV along with the values for normals and psychiatric patients in Crown and Crisp's sample (1966) and in Sussex University students. Scores on the E.P.I. are given in Table V, with norms for female Arts students at Sussex.

Both these instruments confirm that considerable change has occurred.

Discussion

One swallow does not make a summer, but Shapiro (1966) has argued in favour of the single case study in clinical-psychological research with authority, and no further defence need be offered here. It is hoped that this demonstration that relatively subtle changes can be measured will serve as an encouragement to those attempting to compare the effects of different methods of attempting to relieve psychological dysfunction.

Mair and Crisp (1968) have published an account of changes in construct relationships in a patient receiving psychiatric treatment, using a different form of testing and analysis, but for some reason nobody has previously exploited the full potential of the method by recording both construct and element changes during therapy.

Our own further investigations will study the degree and nature of these changes in normal controls, in patients refusing or not

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TABLE III

Matrix of significant changes in correlations between constructs (expressed as angular change)

Constructs showing greatest overall change from T1 to T3	Independent	Needs others	Strong	Maternal	Good
S. of S. of angular change	19,445	11,047	10,749	10,727	10,564
Constructs with which significant correlation changes have occurred:					
Independent		+65			−68
Needs others	+65		+55		
Strong		+55			−50
Good	+68		−50		
Lively	−55				
Stable	−40	+44			
Creative	−45				
I admire	−44	+44			
Authoritarian	+48				
Antisocial		+54			

TABLE IV

Initial and final scores for the patient on The Middlesex Hospital Questionnaire with norms for patients and non-patients

		Anx.	Phob.	Obs.	Som.	Dep.	Hys.
Crown and Crisp norms							
Psychiatric patients	X̄	8·4	5·2	8·5	7·3	6·3	5·1
(n = 62)	S.D.	4·4	3·6	3·0	3·3	3·5	3·7
Normals	X̄	5·1	2·9	5·8	3·2	3·3	7·5
(n = 109)	S.D.	3·1	2·2	3·1	2·4	2·3	3·1
Sussex norms							
Psychiatric patients	X̄	9·5	4·1	5·9	4·4	5·9	8·2
(n = 49)	S.D.	3·3	2·9	3·1	2·7	3·1	3·8
Normals	X̄	5·4	2·8	5·3	3·7	3·5	8·2
(n = 70)	S.D.	3·6	3·3	2·5	2·6	2·2	3·3
Patient							
Initial testing		12	4	5	2	7	13
Final testing		7	3	1	2	2	12

TABLE V

Initial and final scores for the patient on the Eysenck Personality Inventory with norms for patients and non-patients

Sussex norms for female arts students		N.	E.
Psychiatric patients			
(n = 41)	X̄	13·5	11·9
	S.D.	3·9	4·5
Normals			
(n = 172)	X̄	11·2	11·4
	S.D.	4·7	3·9
Patient			
Initial testing		14	14
Final testing		4	18

taken on for treatment and in patients treated by different methods. A more general consideration of the relationships between construct and element movement and changes in personality structure is better deferred until these investigations have been completed.

SUMMARY

The psychotherapeutic treatment of a psychoneurotic patient is described. The clinical evaluation of this patient was matched with the results of repertory grid testing. The aims of treatment were defined in terms of changes in

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the construct system and in the dispersion of the self and of significant other people in this system. Re-testing established that such changes had occurred. This method provides a subtle, effective and objective means of evaluating psychiatric treatment.

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