Reliability and Validity of a Local Classification of Schizophrenia

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In this study an attempt was made to evalute the inter-rater reliability and discrimnent valdity of a local classification of schizophrenia proposed by Rakhawy (1991). A covenience sample of 94 male subjects with schizophrenia was assessed and the Positive & Negative Syndrome Scale was used as an external validator. The proposed classification demonstrated adequate inter-rater reliability comparable to operationally defined subtypes as well as adequate discriminent validity i.e. each of the proposed types qualified as a distinct category. The implications of these findings in relation to other nosological approaches based on operational definitions are discussed .

(Egypt.J. Psychiat.,1994, 17:183-192).

Introduction

Ever since the evolution of the concept of schizophrenia, the most consistently observed feature of this disorder has been its heterogenecity. In fact, there is an almost universal agreement among clinicians and researchers that individuals with schizophrenia differ widely and markedly in clinical presentation, response to treatment, course and prognosis, thus attempts to typify schizophrenia have started decades ago and still continue to emerge.

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Rakhawy (1991) hypothesised that schizophrenia could be classified on the basis of three main types : the early active type A, more related to the Schneiderian concept of schizophrenia , the intermediate relatively compromised type B which is more related to Bleuler's concept of splitting and finally the late deficit- deteriorated type C which is more related to the Morel-Kraepelin concept of dementia praecox. From this perspective, schizophrenia is viewed as longitudinal multi - stage process on a continuum; each type corresponds to a particular stage.and is represented at a behavioural level by a characteristic clinical presentation reflecting a specific underlying structural conifiguration of the psyche as follows:

The prototype individual of type A is in the early phase of the schizophrenic process, so that passivity and other abnormal psychic phenomena are perceived and reacted to with painful perplexed hyperawareness. There is minimal delusional elaboration, hallucinations are experienced as inner voices

arising from within and passivity experiences are not projected on some outward force or agency. The total psychic clinical picture is continuously and unceasingly changing and the individual finds it difficult to describe the exact nature of what he is experiencing, however, he is close, warm and affectively resonant. Structurally,there is disruption of the existing conscious organisation and the eruption of another existence simultaneously in the same matrix of consciousness (dislodgement).

The prototype individual of type B is one in whom perplexity and painful hyperawareness have virtually disappeared as the abnormal phenomena and vivid hallucinations become projected on definite external figures or agencies. The total psychic clinical picture which was continuously changing with variable description of signs and symptoms settles down and the same symptoms are described in the same way. Passivity phenomena which were previously perceived and reacted to become intellectualised into delusional beliefs so that unity of the personality is subjectively reclaimed but the individual acts and behaves in contradiction. Structurally, each organisational unit exists more or less independently with its different goal and different psychological functioning. The net result is bizarre chaos since all behaviours are conceived as related to and expressed by 'one' person which is not, phenomenologically true (disorganisation).

The prototype individual of type C is in the late stages of the schizophrenic process, at this stage he is no longer a unified whole or one, his personality is shattered and destroyed, he is but fragmented remnants of a person. The total psychic clinical picture is stagnant and barren with diminished spontaneity and initiative. Symptoms become repetitive and stereotyped, they are fleeting in character and poorly worked out being presented with uncomplaining acceptance. The individual is shut in and withdrawn, relating distance is almost always absent. Stucturally, the disorganised psyche can neither regain its original unity nor achieve a new higher mode of organisation so that definite deficit and deterioration set in. There is no longer a unified personality but rather fragmented remnants of a personality(deterioration).

In this study an attempt was made to evaluate the reliability and validity of the proposed classification. Inter-rater reliablity and disciminent validity were evaluated.The latter is a type of descrptive validity which addresses the distinctiveness of diagnostic classes of a classification across alternative measures. The aim is to test whether the corresponding classes are discriminable (are significantly differentiated) from each other on external measures (data not included in the original classification and unrelated to the diagnostic process) e.g. personality characteristics and concurrent symptoms (which are not part of the diagnostic categories being assessed). Poor discriminant validity would be evidenced by the finding that the dicrmination among the diagnostic categories is largely lost i.e. the boundaries between categories do not hold, when they are compared on some external measure (Skinner,1981; Kendler,1990).

The Positve and Negative Syndrome Scale (PANSS) (Kay et al,1987) was used as an external measure of discrimenent validity; the individual items were subjected to factor analysis and the emerging components were identifed (negative, cognitive volitional, positive, depression, somatic, excitment, conceptual disorganisation, grandiosity) and applied as external dimensions of validation i.e. to test whether the corresponding types were highly discriminable from each other and thus qualified as true distinct types or not.

Subjects and Method

This study was conducted on a convenience sample of 94 male sujects qualifying for a diagnosis of schizophrenia according to the revised third edition of the Diagnsotic & Satistical Manual of Psychaitric Disorders (DSM-III-R) (American Psychaitric Assosciation,1987); 51 (54.255%) of these were outpatients from the outpatient clinic of The Department of Psychiatry at Cairo University and the rest (n=43, 45.744%) were inpatients recruited from three hospitals: Cairo University Hospital (n=31, 32.97%) and two private hospitals : Dar El Mokkatam for Mental Health (n= 9 subjects 9.574%) and Maadi Sanatorium for Mental Health (n= 3, 3.191%). Subjects were selected over a period of 4 months from 30/6/91 to 30/10/91. The aim was mainly to select cases which were unequivocally schizophrenic and represented as much as possible the different nosological types of schizophrenia in DSM-III-R.

Tools &Procedures:

A-Rating of the proposed types

1-Tool:

The types proposed by Rakhawy (1991) are not defined in the form of diagnostic categories by enumerating a list of specific symptoms or criteria, which are to be added together by the clinician to define a particular disorder or syndrome; but each type represents a qualitative description of interconnected psychic phenomena portraying the individual's presentation as a whole. Each of these types to use Jasper's terms is to be "grasped" by the clinician so that he acquires his own "inner representation" of each type as a gestalt like whole, consequently assessment of these types in a particular individual is based on holistic clinical judgement guided by the descriptions provided by each type. Typifying an individual is conceived as allocating him on a point on the continuum of the schizophrenic process.

In his introduction of the proposed types, Rakhawy (1991) acknowledges that they are not mutually exclusive and that it is always possible to meet with mixed forms of the main types A, B and C such as Ba, Bc and Cb. He also added that other rare forms may be met with as the schizophrenic march passes from A to C e.g. Ac and Ca. However, he does not provide a precise description of these mixed or atypical forms but only of the main types A, B and C. Each type depicts the ideal or typical case in which all characteristic features are fully and typically present. Mixed or atypical cases are then recognised by comparison with the main types which could be viewed as reference points for the clinician through which different individual cases are diagnosed and identified.

Each rater was povided with a three page manual, providing descriptions of the proposed types to serve as a genral guideline for assessment. The three types were designated the letters A, B & C to avoid as much as possible any bias or implication posed by a precise verbal definition on the assessment process i.e. to ensure it is not based on conjectures derived from a specific diagnostic or aetiologic label.

The manual was prepared as such to fulfill certain objectives as regard the nature of the assessment procedure and the basis for reaching a diagnosis i.e. the diagnostic process. No attempt was made to operationalise any of the terms used in this manual, no explicit emphasis was made on specific "characteristic" symptoms on the basis of which a rater could differentiate between different types and no reference was made to any particular structured procedure to be followed in the diagnosis of a specific type.

Thus, it could be ensured to a reasonable extent that the raters' assessment of the proposed types according to the rating manual is mainly qualitative and based on clinical judgement of the individual as a "gestalt" whole.

2-Assessment Procedure:

Six raters paticipate in this part of the study. Prior to assessment of patients, all possible issues related to the rating procedure were explained and discussed.The following points were stressed:

i. The descriptions in the rating manual were to be considered as general guidelines for assessment which is mainly based on the clinical judgement and empathic consideration of each rater.

ii. The features of each type were to be assessed besides any symptom elicited and are mainly concerned with the patient's presentation as a whole.

iii. Judgement is restricted to inferences obtained in the interview situation and should not be based on previous information about the patient. It is also not to be based on conjectures derived from the diagnosis or possible psychodynamic interpretation of the case.

The rating of patients was based on observations made in a clinical interview situation. The interview was semi-structured and the interviewer was not fixed but varied from one subject to the other. The other raters were free after the initial interview to probe any areas they found were further necessary for typifying the interviewed subject.

The aim was to allow the raters a considerable flexibility in their interviewing approaches and probing questions, so that they can be adapted to individual cases and situations. However, the interviewer was not permitted to change his rating after an observer questioned the patient and observers were not permitted to change their ratings after other observers questioned the patient.

Each subject received a minimum of two ratings (in most subjects the number of ratings were three), the initial rating made by each rater was recorded without subsequent discussion and entered for reliability assessment. Although in the early phases of the study subjects were rated simultaneously, later on some ratings were made by each rater on his own since occasionally no raters were available at the same time to participate together in the rating procedure.

The final type designated for each subject was based on the agreement between at least two raters. In cases when the initial ratings made by two raters only were different, the differences were discussed and the type eventually agreed upon by the two raters after discussion was recorded as the final type.

B- Rating of Positive and Negative Symptoms:

The Positive & Negative Syndrome Scale was administered by an assisstant lecturer before assessment of the proposed types.

Statistical Procedures:

(a) Kappa Statistic:

The interrater reliability of the proposed types in this work is reported in terms of kappa values. Since both the number of ratings per subject (into more than two categories) and the set of raters were not fixed, the overall value of kappa defined as a weighted average of the individual kappa values "Weighted Kappa" was determined as outlined by Landis & Koch (1977). Values greater than 0.75 or so were taken as representing excellent agreement beyond chance, values below 0.40 or so to represent poor agreement beyond chance, and values between 0.40 and 0.75 to represent fair to good agreement beyond chance (Landis & Koch, 1977).

(b) Discriminant Validity and Discriminant Function Analysis:

The degree of discrimination between two groups can be claculated using discriminant functional analysis and is expressed by a particular statistical value known as Generalised or Mahalanobis distance (Δ) which is the distance between the means of the two groups. If the generalised distance between the two groups is generally less than about 4 standard deviations, then the joint distribution of variables is more or less the same and the two groups are not discriminable (are not significantly differentiated). On the other hand, if the generalised distance between the two groups is about 4 standard deviations or more, then the two groups are highly discriminable and qualify as distinct non-overlapping diagnostic categories (Armitage & Berry,1988).

Results

A. Distribution of DSM-III-R & proposed types:

The distribution of DSM-III-R proposed types is shown in tables (1) & (2) respectively:

Table 1
Distribution of DSM-III-R Types

Type	No.	%
Paranoid	34	36.17
Undifferentiated	32	34.04
Disorganized	19	20.21
Residual	9	9.574

As evident from Table (1), the Paranoid subtype is the most frequent (n= 34, 36.17%) followed by the Undifferentiated (n=32, 34.04%), Disorganised (n=19, 20.21%) and finally the Residual subtype (n=9, 9.57%).

Table 2
Distribution of Proposed Types

Type	No.	%
Ab	1	1.64
Ba	20	21.277
B	19	20.213
Bc	18	19.149
Cb	18	19.149
C	18	19.149

As evident from Table (2), types Ba & B (n=20, 21.277 % & n=19,20.213 %) were the most frequent followed by types Bc,Cb & C which were equally distributed in the sample (in each type n=18, 19.149 %). On the other hand only one subject was diagnosed as type Ab and none of the subjects was diagnosed as type A. In view of the very low base rate of type Ab it was excluded from subsequent statistical investigations in this study.

B. Reliability of the Proposed Types:

Table (3) shows that the inter-rater reliability i.e. degree of agreement between raters as indicated by kappa coefficient , generally exceeded .40 which is the value taken to represent poor agreement beyond chance. The overall weighted average Kappa value (.79) exceeded .75 indicating an excellent agreement beyond chance. However, Kappa values in individual types varied from .84, .77 & .78 in types C, Ba & Bc (excellent agreement) to .65 & .64 in type B & Cb (good agreement) to .56 in type Ab (fair agreement).

Table 3
Interrater Reliability of Individual Types Using Unweighted Kappa (K)

Type	Ab	Ba	Bc	B	Cb	C
K	.56	.77	.78	.65	.64	.84

C. Discriminant Validity of Proposed Types:

The degree of discrimination (differentiation) between the proposed types as indicated by the generalised distance or Δ values is shown in Table(4).

Table 4
Degree of Discrimination Between Proposed Types

Ba vs C	Ba vs Cb	B vs C	B vs Cb	Bc vs C
13.5****	10.95****	8.84****	7.97****	6.04****
Ba vs Bc	**Ba vs B**	**Bc vs Cb**	**Cb vs C**	**B vs Bc**
5.56****	5.05****	4.38****	4.28****	4.04****

Generalised distance *** p< 0.001 **** p< 0.0001

It is evident from Table(4) that the greatest Δ value i.e. the highest degee of discriminatioon was obtained when types Ba &. C were compared: (Ba vs. C:13.5, p < .0001). Other type comparisons yielded the following values: (Ba vs. Cb: 10.95, p <.001) (B vs. C: 8.84, p <.0001), (B vs Cb:7.97 p<.0001), (Bc vs. C : 6.04, p < 0001),(Ba vs. Bc : 5.56, p < .0001), (Ba vs. B : 5.05, p < .0001), (Bc vs. Cb : 4.38, p < 0001) (Cb vs. C : 4.28, p < .001) (B vs. Bc : 4.04, p <.001).

Thus results show that overall, generalised distance values did not fall beyond the acceptable range of effective discrimination (about four standard deviations) and are highly significant when all types are compared together at least at the .001 level indicating that the proposed types are all highly discriminable.

Discussion

The assessment of the proposed types according to the special manual developed in this study has produced acceptable levels of interraters reliability as estimated by the kappa statistic.

In fact, the diagnostic reliability of the proposed classification whether the overall reliability across all types (Kappa value of .79) or the specific reliability of each individual type (Kappa values of .56, .77, .65, .78, .64, .84 for types Ab, Ba, B, Bc, Cb & C) compares to the reliability demonstrated by classifications based on operational diagnostic criteria. In a study of the interrater reliability of types of schizophrenia classified using the criteria of DSM-III (APA, 1980), (Spitzer et al, 1978), (Tsuang & Winokur, 1974) and Gruenberg et al (1985) reported overall Kappa values of .70, .61 & .72 respectively while Kappa values in each classification were .79, .79 & .83 for the Paranoid type .61, .52, & .67 for the Disorganised (Hebephrenic) type and .58, .49 & .66 for the Undifferentiated type.

Demonstrating adequate reliability is an essential requirement of any classification (Skinner, 1981; Kendell, 1988; Akiskal, 1989). It establishes a ceiling for validity, the lower it is the lower validity necessarily becomes (Spitzer & Williams, 1985; Kendell, 1988).

The proposed classification in this study incorporated qualitative descriptions e.g. empty vacant emotional expression, affective colouring, and subjectively experienced phenomena e.g. awareness of the schizophrenic process and sense of self. From the point of view of operationalists like Hempel (1961, 1965) and Kendell (1975, 1988)

(and indeed most researchers and clinicians), these would be regarded as vague, too subjective, and dependent on the inference and clinical intuition of the examiner to be reliable (their meaning cannot be defined precisely and they are formulated in the form of objective diagnostic criteria so that they cannot be understood and applied uniformly by different psychiatrists). Operational definitions by providing exact meanings of scientific terms and by being primarily based on objective diagnostic criteria whose assessment requires minimal inference and is independent of the investigators' clinical judgement guarantee the reliability of diagnostic categories and psychiatric diagnosis, i.e. their intersubjective verification and scientific objectivity (Hempel, 1961;1965, Kendell, 1975, 1988).

However, the raters in this study were able to grasp the descriptions of the proposed types provided in the assessment manual, recognised them and applied them uniformly in classifying patients as shown by the results of reliability assessment This is also strengthened by the fact that the kappa values achieved in rating mixed or atypical cases exhibiting manifestations of more than one type i.e. Ba, Bc & Cb indicate good to excellent agreement between the raters (kappa values of .77,.78 & .64 respectively). The latter finding is quite significant in view of the fact that low reliability is more likely to occur in mixed cases or atypical cases which meet the requirements of different diagnostic categories, because raters in this case are more liable to disagree which category is the most important or which should take precedence (Kendell,1988).

The above findings suggest that the raters were able to form reliable concepts or internal representations of the proposed types (types A, B & C) through which they were able to identify and recognise reliably both the ideally typical cases and the atypical or mixed ones. Thus the results of this study provide evidence that clinical judgement based on empathic understanding can be reliable methods of scientific inquiry.

Furthermore, putting into consideration that achieving adequate interrater reliability using the proposed types as diagnostic concepts (whose differentiation is firmly based on general qualities related to the patient's presentation as a whole besides any symptom elicited, necessitated a clinical and phenomenologically oriented approach on the part of the raters) one can question whether qualitative and subjectively experienced phenomena are unreliable or is it a matter of methodological differences in achieving reliability i.e. the fact that these phenomena are difficult to operationalise into precise, clear and unambiguous criteria does not necessarily indicate that they should immediately be dismissed as unreliable and nonscientific, as they can be grasped and recognised then reliably assessed using a different approach which is clinical and phenomenologically oriented (based on empathic understanding) rather than empirically oriented (based on direct observation and logical or rational understanding).

To summarise the previous discussion, the results of this study indicate that diagnostic categories incorporating qualititative and experiential phenomena can be reliably assessed on the basis of a clinical phenomenologically oriented approach and from this point of view, therefore, there is no compelling reason to immediately dismiss them as unscientific or unreliable basis for diagnosis. Furthermore, incorporating clinical judgment and empathic understanding in the diagnostic process does not necessarily render psychiatric diagnosis too subjective and thus unreliable and unscien-

tific which were the basis on which (Hempel, 1961; 1965) and others (Kendell,1975, 1988) dismissed empathy and clinical judgement as unscientific and unreliable methods of psychiatric diagnosis and scientific inquiry in general. In fact the results of this study provide preliminary evidence of the reliability of diagnostic processes incorporating clinical judgement based on empathic understanding and its potential role as a valid scientific method to be applied in psychiatric diagnosis and investigation.

As regards the validation of the proposed types, all are highly discriminable which provides evidence of the distinctiveness of the proposed types since they represent, at a symptomatic level, non-overlapping clinically distinct categories. This supports the validity of the assessment procedure in this study i.e. assessment based on holistic clinical judgement of subjectively experienced and qualitative phenomena rather than circumscribed operational criteria can lead to the delineation of meaningful clinically distinct groups of schizophrenic subjects which argues against the opinions of some workers who dismiss such an approach and such phenomena as unscientific in favour of more objective methods of assessment based on operationalised definitions of observable behaviours (Hempel,1961, 1965; Kendell,1975).

Another point which supports the previous argument is the variation in the degree of discrimination across types which differed according to the features of the types compared (Table 4). The degree of discrimination is highest in comparisons involving two types with opposite dominant features (Ba vs. C & B vs. C). It decreases in comparisons involving two types with opposite dominant features one of which possesses nondominant features similar to those of the opposite type (Ba vs. Cb, B vs. Cb & Bc vs. C) and decreases further in comparisons involving types with similar dominant features (Ba vs. B, Ba vs. Bc & Cb vs. C) or with reciprocally different dominant nondominant features (Bc vs. Cb).

Finally, it is worthy to mention that the proposed types can be of heuristic value in guiding and orienting the clinician in his clinical practice e.g. confrontation with a subject identified as type C indicates that he is in the late deteriorated stages of the schizophrenic process and furnishes the road for more specific inquiry e.g has the schizophrenic process reached such a late stage shortly after the onset passing rapidly through previous stages? If so what are the specific factors (e.g. family histoy, premobid personality) pertaining to that individual which have contributed to such an atypical onset? What can be done to manage this pattern of deterioration in this particular individual?

The proposed types thus tell the psychiatrist what to look for, what is relevant and what is irrelevant, what is typical and what is atypical, they predelineate the kinds of questions to be asked in a particular case. However, as the psychiatrist's understanding grows more and more detailed and specific it moves progressively beyond the framework of the general types to become "individualised". The main aim of clinical assessment is not merely ascertaining whether the patient meets the diagnostic criteria of this or that type to lump him with other patients under a certain dignostic category but an individualised understanding which grasps solely this particular patient and does not apply to others. In clinical psychiatry such an individualised grasp of the individual is essential for effective treatment

In this study an attempt has been made to demonstrate the reliablity and validity of a local classification of schizophrenia, the importnace of this work

would certainly be further apprecaited if it funrnishes the road for further local contributions and efforts in the classification of differnt psychaitric disorders.

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La Fiabilité et la Validité d'une Classification Locale de la Schizophrène

Dans cette étutde, on a éssayé d'évaluer la fiabilitè et la validité d'une classification locale proposée par Rahkawy (1991). Un échantillant de 94 males schizophréniques a été évalué, et on a utilisé l'échelle de syndrome positif et négatif comme *validateur external*. On a *demonstré une validité* et fiabilité adéquate pour cette classification. Les implications de ces conclusions ont été discutés.

ثبات وصدق تقسيم محلى للفصام

تم فى هذا البحث محاولة لتقييم التقسيم الذى إقترحه الرخاوى (١٩٩١)، من حيث درجة الثبات وصدق التمايز بين الأنواع المقترحة فى هذا التقسيم.

وقد أجرى البحث على عينة مناسبة مكونة من أربعة وتسعين مريض "فصامى"، حيث تم تطبيق مقياس الزملات الإيجابية والسلبية عليهم جميعاً كأداة للتحقق من صدق التمايز بين الأنواع المقترحة، وقد أظهرت النتائج أن التقسيم المقترح قد حقق درجة معقولة من الثبات مماثلة للتقسيمات المبنية على التعريفات الإجرائية، كما أنه حقق درجة كافية من التمايز بمعنى أن كلا من الأنواع المقترحة كان متميزا بذاته عن بقية الأنواع، تم بعد ذلك مناقشة دلالات هذه النتائج فى ضوء مناهج التقسيم الأخرى المبنية على التعريفات الإجرائية.