A comparative study of insight scales and their relationship to psychopathological and clinical variables

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ABSTRACT

Background. Research on the subject of insight has been hampered by difficulties in definition and reliable measurement.

Methods. We compared several rating scales to measure insight on a group of 33 psychotic patients as well as assessing patients' psychopathology, clinical characteristics and cognitive functioning.

Results. Most currently used scales showed a high degree of inter-correlation. Measures of insight related strongly to the presence of delusions; grandiosity (inversely), and depression (positively). Higher insight scores correlated with indices of treatment compliance and inversely with substance abuse. Measures of pre-morbid IQ and impaired executive functioning, including the Wisconsin Card Sorting Test were not associated with poor insight.

Conclusions. The study highlights aspects of psychopathology and clinical variables particularly related to insight and supports the continued use of standardized scales in further research in this area.

INTRODUCTION

Despite the widespread use of the term 'insight' in clinical psychiatry there is no unitary and approved definition. 'Insight' often refers to patients' ability to recognize themselves as having a mental illness, their capacity for self-observation and self-knowledge about their psychopathological experiences, and awareness of the kind, severity and consequences of their mental disorder. This ability is inferred from their speech and behaviour, as judged by the clinician.

In order to judge its importance, various dimensions of insight into illness have been correlated with clinical, sociodemographic and neuropsychological variables. In this way insight has been related to treatment compliance (Bartkó *et al.* 1988; McEvoy *et al.* 1989*a*; Buchanan, 1992, Kemp & Lambert 1995),

severity of global psychopathology (Bartkó *et al.* 1988; David *et al.* 1992; Markova & Berrios, 1992; Amador *et al.* 1994; Michalakeas *et al.* 1994; Cuesta *et al.* 1995), specific aspects of psychopathology (Heinrichs *et al.* 1985; Takai *et al.* 1992; Amador *et al.* 1994), cognitive impairment (Young *et al.* 1993; Cuesta *et al.* 1995; Kemp *et al.* 1996*a*; McEvoy *et al.* 1996; Lysaker & Bell, 1997) cerebral ventricular enlargement (Takai *et al.* 1992) and the specificity of poor insight for the diagnosis of schizophrenia (Wing *et al.* 1974; Amador *et al.* 1994). Finally, some authors have studied the value of the insight as a predictor of outcome (McGlashan, 1981; McEvoy *et al.* 1989*b*, David *et al.* 1995).

The results of these studies have been contradictory and inconsistent. As Markova & Berrios (1995) suggest, one reason for variability in the results relates to confusion surrounding the term insight, which has been used to mean awareness, belief, attitudes, understanding, consciousness, recognition and knowledge.

In the past, authors have defined insight as a

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single categorical variable (Eskey, 1958; Van Putten *et al.* 1976; Lin *et al.* 1979, Heinrichs *et al.* 1985). Others have used a semi-structured interview to obtain both quantitative and qualitative measures of insight (McGlashan *et al.* 1976; Greenfield *et al.* 1989; Amador *et al.* 1993). In the last 5 years several authors have been inclined to evaluate insight as a dimensional concept, comprising several components (Greenfield *et al.* 1989; McEvoy *et al.* 1989*a*; David, *et al.* 1990; Amador *et al.* 1991; Markova & Berrios, 1992). Birchwood *et al.* (1994) described a 'consensus view' that insight should be viewed as a continuum rather than an all or nothing variable and that insight comprises three factors (see below). From this dimensional point of view, David (1990), Amador *et al.* (1991) and Markova & Berrios (1992) have each attempted to develop structured evaluation schedules of insight.

Insight scales

Insight and Treatment Attitudes Questionnaire (ITAQ) (McEvoy et al. 1989a)

This questionnaire encompasses recognition of mental disorder (first 5 items), plus attitudes to medication, hospitalization and follow-up evaluation (6 items). It consists of a semi-structured interview from which 11 items are scored from 0 (no insight) to 2 (good insight).

Schedule for the Assessment of Insight (SAI) (David, 1990)

This covers three overlapping dimensions: (*a*) awareness of illness; (*b*) the capacity to relabel psychotic experiences as abnormal; and (*c*) treatment compliance. The schedule comprises probe questions to assess these three dimensions plus a 'hypothetical contradiction' item (Brett-Jones *et al.* 1987), added to evaluate the subject's capacity to take into account another person's perspective. Each dimension has two or three questions scored from 0 (no insight) to 2 (good insight) with a maximum total score of 14. The supplementary question is scored from 0 to 4, which is added to the total score.

Schedule for the Assessment of Insight (SAI-E) – Expanded version

The SAI has been expanded to include items on awareness of change, difficulties resulting from mental condition, and key symptoms (Kemp & David, 1997). The maximum score is 24 plus the score for hypothetical contradiction.

Markova and Berrios Insight Scale

Markova & Berrios (1992) broadened the definition of insight and suggested that 'individuals hold views not only about the disorder affecting them but also about how the disorder affects their interaction with the world'. An insight scale was constructed on this basis. It consists of 32 items, answered 'yes', 'no' and 'don't know', which represent aspects of self-knowledge relevant to the patients' illness, hospitalization, mental illness in general, perception of being ill, changes in the self, control over the situation, perception of the environment, and the desire to understand one's situation. The items are scored 2 if the answer is positive and 1 if negative. After a preliminary survey the authors discarded the 'don't know' responses and items found to be ambiguous. They subdivided the remaining items into those that a positive answer would indicate greater insight (Scale A), and those which a positive response would indicate less insight (Scale B). The scale can be administered by an observer or completed by the subject.

Positive and Negative Syndrome Scale for Schizophrenia (PANSS) (Kay et al. 1987)

This scale includes one item to assess lack of judgement and insight. It consists of seven levels from no impairment (1) to extreme lack of insight (7). Insight is defined as 'impaired awareness of one's own psychiatric condition and life situation…, evidenced by failure to recognize past or present psychiatric illness or symptoms, denial of need for psychiatric hospitalization or treatment, decisions characterized by poor anticipation of consequences…'.

Other instruments used in insight research include the Scale to Assess Unawareness of Mental Disorder (SUMD). Amador *et al.* (1993) constructed a structured interview that consists of global items: awareness of illness, benefits of treatment and social consequences of illness as well as two scales to assess awareness and attribution for each prominent symptom, for both past and current illness. The SUMD requires training to administer and the reliability among raters is variable on some items.

In this study we have compared three insight scales. We evaluated their inter-correlation and each scale's relationship to symptomatology, psychopathology (i.e. delusions/other symptoms), and other clinical variables including: number of hospitalizations, compliance, voluntary admission and reported side effects of medication. We also consider the influence of cognitive impairment, including frontal lobe dysfunction, on insight.

METHOD

Sample

The study population consisted of 33 subjects, mostly in-patients, from the Maudsley Hospital in London. Patients were diagnosed in accordance with DSM-IV criteria. All had a diagnosis of non-organic psychotic illness and agreed to be interviewed. Those receiving electroconvulsive therapy or with obvious brain disease were excluded. Basic demographic data, number of admissions, current treatment and whether the current admission was voluntary or not were obtained from their clinical history and medical and nursing staff. Twenty-one subjects lived alone or in sheltered or supported accommodation; only one was employed.

Procedure

The patients were interviewed over two sessions, a mean of 4 weeks post admission. The first part consisted of administering the different insight scales (ITAQ, SAI, SAI-E, Berrios & Markova's scale, and insight item of the PANSS) plus the expanded Brief Psychiatric Rating Scale (BPRS) (Lukoff *et al.* 1986). All the patients were interviewed by a psychiatrist trained in the use of the scales. Insight scales and BPRS were applied to symptoms in the previous month. Every patient completed the Beck Depression Inventory (BDI) at the end of the interview. In the second session, the following neuropsychological tests were administered: Mini-Mental State Exam (Folstein *et al.* 1975); NART (IQ) (Nelson, 1982); Wisconsin Card Sorting Test (Heaton, 1981); Star Cancellation Test (Halligan *et al.* 1991); Trail Making Test (Reitan, 1958).

A compliance scale measuring attitudes towards pharmacological treatment, from overt refusal (1) to active participation (7), was scored

from the patients' medication-taking behaviour, observed by the primary nurse (Kemp *et al.* 1996*b*). Clinical Global Impression (CGI, Guy, 1976) was scored at the time of admission and at the time of discharge by a ward psychiatrist where possible.

Extrapyramidal side effects and akathisia were assessed using the Simpson–Angus (Simpson & Angus, 1970) and Barnes Akathisia Scales (Barnes, 1989) respectively.

RESULTS

The sociodemographic and clinical characteristics of the sample are given in Tables 1 and 2. The variables relevant to the current admission are also shown in Table 3a.

There was significant correlation between scales. The correlation between the SAI and the score on insight positive items of the Berrios & Markova's scale (Scale A), was weaker than the correlation with other scales. However, the expanded Insight Schedule (SAI-E) had a significant correlation with Scale A. There was no significant negative correlation between scores on negative and positive insight item scales. Scale B showed a significant correlation with all the scales except the SAI, although weaker than that among other scales. Scale A showed a significant though modest negative correlation with every scale (Table 3b).

Correlations: insight and psychopathology

The results for general psychopathology and affective symptoms are shown in Tables 4a and

Table 1. *Sociodemographic variables*

	Sociodemographic variables
Gender	24 male
	9 female
Age (years)	M = 32 years, S.D. 8·3
	(range 19–56)
Ethnic group	15 Afro-Caribbean
	4 African
	10 White European
	4 Indian Asian
Marital status	7 Married
	23 Single
	3 Separated or divorced
Years of education	M = 14, S.D. 3·6
	(range 9–20)

Table 2. *Clinical variables*

Clinical variables	
Diagnosis	54·5% Paranoid schizophrenia
	18·2% Schizoaffective disorder
	18·2% Bipolar disorder, manic subtype
	9·1% Psychotic depression
Age at onset of illness	M = 24 years, S.D. = 3·9 (range: 15–17)
Duration of illness	M = 7·5 years, S.D. = 6·76 (range: 0–23)
Previous hospitalizations	M = 3·5, S.D. = 2·43 (range: 0–8)
Status	50% admitted voluntarily
	50% admitted compulsorily
Length of stay	3·6% less than 1 month
	85·7% between 1 and 6 months
	10·7% between 6 months and 1 year
CGI at the time of admission	3% moderately ill
	27·3% seriously ill
	28·8% severely ill
	21·9% very severely ill
BPRS-Total	Mean = 61·21; S.D. = 14·62
Anxiety item	Mean = 2·8; S.D. = 2·02
Hallucinations item	Mean = 3; S.D. = 2·51
Unusual thought content	Mean = 5·4; S.D. = 2
Doses of neuroleptic treatment*	19·4% high dose
	58·1% medium dose
	22·6% low dose
Illicit drug abuse (last year)	9·4% alcohol
	9·4% cannabis 63·2% occasionally
	28·1% both 36·8% daily
	40·6% nil

* High doses equivalent to > 300 mg of chlorpromazine, medium dose between 100 and 300 mg and low dose < 100 mg.
CGI – Clinical Global Impression; BPRS – Brief Psychiatric Rating Scale.

Table 3a. *Insight scales score*

Insight scale	Mean	S.D.
Scale A Markova & Berrios	19·0	3·4
Scale B	8·8	1·6
SAI	7·0	5·1
SAI-E	12·1	8·3
PANSS	4·5	1·9
ITAQ	10·5	7·1

S.D., standard deviation; SAI, Schedule for the Assessment of Insight; SAI-E, Schedule for the Assessment of Insight – Expanded version; PANSS, Positive and Negative Syndrome Scale for Schizophrenia – Insight item; ITAQ, Insight and Treatment Attitudes Questionnaire.

4b, respectively. Markova & Berrios scales A and B had the weakest correlation with BPRS total and subitems and BDI scale. Scale A showed no significant correlations. A significant correlation between Scale B and grandiosity item was observed.

The SAI and SAI-E were most influenced by delusions and total score on the BPRS. To assess the relative contribution of the different items of the BPRS, forward stepwise multiple regression analysis was performed with the SAI total score as the dependent variable and depression, grandiosity and delusions sub-items as independent variables. The delusion coefficient was the most significant ($B = 1 \cdot 126$, S.D. $0 \cdot 3$, $\beta = -0 \cdot 27$, $t = -3 \cdot 17$, $P = 0 \cdot 004$). The same regression model with the SAI-E showed that delusions had the strongest effect in the equation followed by the grandiosity subitem. ($B = -1 \cdot 76$, S.D. $0 \cdot 57$, $\beta = -0 \cdot 43$, $t = 3 \cdot 07$, $P = 0 \cdot 005$; grandiosity: $t = -2 \cdot 17$, $P = 0 \cdot 04$). Measures of depression and suicidality using the BDI generally showed a pattern inverse to that of grandiosity. Other items such as anxiety and hallucinations did not show a strong relationship to insight scores when examined on their own.

The correlation coefficient for ITAQ with BPRS total was weakly negative. The grandiosity item was however more strongly related. Similarly, grandiosity was strongly inversely related to the PANSS insight item, followed by depression on the BPRS.

Insight scales – diagnostic groups

When we compared the difference between groups on the SAI score, the psychotic depression group showed significantly greater insight than the others (ANOVA: $F = 5 \cdot 03$; df $= 3$, $P = 0 \cdot 006$). Similar results were obtained with SAI-E, and with bipolar (manic) and schizoaffective groups showed the lowest insight with the schizophrenic patients in the middle ($F = 4 \cdot 47$; $P = 0 \cdot 01$). The ITAQ and other scales failed to differentiate the groups.

Insight and compliance

Medication compliance was scored from the patients' behaviour during the current admission and contact with services, prior to the current admission. The latter was scored: 1, patient in contact with services regularly; 2, occasionally; 3, no contact in last year. This was correlated with the insight scales using Spearman's coefficient.

All the scales except Markova & Berrios scales showed significant correlation with both

Table 3b. *Correlation coefficients (Pearson's r) among insight scales*

	Scale A	Scale B	SAI	SAI-E	PANSS	ITAQ
Scale A		0·239	0·400*	0·466**	0·544**	0·545**
Scale B	0·229		0·336	0·410*	0·423*	0·411*
SAI	0·400*	0·336		0·977***	0·884***	0·823***
SAI-E	0·466**	0·410*	0·97***		0·895***	0·845***
PANSS	0·544**	0·423*	0·884***	0·895***		0·904***
ITAQ	0·545**	0·411*	0·823***	0·845***	0·904***	

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 4a. *Correlation coefficients between insight scales score and psychopathology*

	BPRS total	Unusual thought content (BPRS item)
Scale A	0·069	−0·077
Scale B	−0·313	−0·211
SAI	−0·527**	−0·541**
SAI-E	−0·528**	−0·541**
ITAQ	−0·328	−0·229
PANSS	−0·434*	−0·383*

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 4b. *Correlation coefficients between insight scale score and affective symptom scores*

	Beck total	Beck suicide	Grandiosity item
Scale B	0·199	0·273	−0·557**
Scale A	0·356	0·126	−0·205
SAI	0·580**	0·458*	−0·525**
SAI-E	0·556**	0·399*	−0·565**
ITAQ	0·445*	0·338	−0·525**
PANSS	0·572**	0·454*	−0·609***

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 5. *Correlation coefficients between insight scale score and treatment compliance*

	Contact with services (Spearman coefficient)	Medication compliance (Pearson coefficient)
SAI	−0·405*	0·730***
SAI-E	−0·365*	0·707***
ITAQ	−0·401*	0·617***
Scale A	−0·404*	−0·254
Scale B	−0·215	0·310
PANSS	−0·384*	0·504**

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

treatment compliance variables. Scale A score was significantly correlated with the mental health centre variable only (Table 5).

Table 5 shows that all the insight scales' scores correlated highly with neuroleptic medication compliance except for those of Markova & Berrios. Multiple regression with compliance as the dependent variable was used to examine the influence of medication side-effects, including Parkinsonism and akathisia on levels of insight using each of the scales. The results showed virtually no influence on this relationship.

As expected, there was a strong correlation between doses of neuroleptic and side effects, but there was no correlation between any insight scale and side-effects, including extrapyramidal side effects and akathisia.

Insight and substance abuse

Substance abuse was defined categorically as follows: 1, any use of illicit substances; 2, used alcohol only; 3, nil. Oneway-ANOVA was performed for all insight scales. SAI, ITAQ, PANSS showed significant differences between groups. After Bonferroni correction the non-using group (category 3) had the highest level of insight, followed by those who drank alcohol only.

Years of education

A significant positive correlation coefficient was found between years of education and NART (Pearson coefficient $r = 0.56$, $P = 0.01$). There was no correlation between education and performance on neuropsychological tests. Years of education showed a modest negative inverse correlation with the score in Markova & Berrios Scale B (i.e. poorer insight). None of the other insight scales showed a significant relationship with years of education.

Hospitalization

A linear correlation between the number of hospitalizations and only the Markova and Berrios Scale A was found by simple regression analysis, with the number of hospitalizations as a dependent variable ($R^2 = 0.213$, $P = 0.01$). Multiple regression with the number of hospitalizations as a dependent variable and Markova & Berrios Scale A score, age and duration of the illness as independent variables showed that the correlation coefficient of Scale A remained significant. The significance was not modified by NART IQ.

Regarding the sort of hospitalization (voluntary or compulsory), only ITAQ showed a difference between both groups, which was nearly significant. The following values were obtained: voluntary hospitalization – mean = 11·8, s.d. = 6·8; compulsory hospitalization – mean = 7·5, s.d. 6·5; oneway ANOVA – $F = 3·12$, $P = 0·08$. All the scales showed a tendency for slightly better insight in voluntary patients.

Insight – neuropsychological tests

All the subjects scored greater than 25 on the Mini-Mental State Exam. There was no correlation found between SAI, SAI-E, ITAQ, PANSS, Markova and Berrios Scale A and NART-estimated IQ. For the Trail Making Test (TMT), there was no relationship between any insight scale and performance (number of errors and time spent and Trail B minus A time difference). For the Star Cancellation Test, the subjects were divided into two groups: those with perfect scores and those with one or more omissions. Insight scores did not differ. Finally with the Wisconsin Card Sorting Test (WCST), the percentage of perseverative errors, number of categories achieved, trials to complete the first category and percentage of conceptual responses were analysed. None of these results separately had a relationship with scores on any insight scale using simple regression analysis.

DISCUSSION

First of all, we have demonstrated the strong correlation between SAI, SAI-E, ITAQ, and the PANSS insight item. The correlation is lower between all these scales and the Berrios & Markova scales. The latter were the only ones administered as self-report scales. The Scale B (negative insight) showed a slightly stronger and more significant correlation with the other scales. The weak non-significant correlation between Markova & Berrios subscales (Scale A, Scale B) suggests that they measure different constructs. Overall the results support high inter-scale reliability for the other measures.

Insight and psychopathology

The correlation between most insight measures with the BRPS total score was moderate. Heinrichs *et al.* (1985) and Bartkó *et al.* (1988) who categorized insight as 'present' or 'absent' and McEvoy *et al.* (1989 *a*, 1993) and Michalakeas *et al.* (1994), assessing insight by ITAQ, generally found weak inverse correlations between total severity assessed by BPRS and insight. Four recent studies have found a modest but statistically significant inverse correlation between insight and global psychopathology using standardized measures (David *et al.* 1992; Markova & Berrios, 1992; Amador *et al.* 1993; Kemp & Lambert, 1995). Considering these findings in the light of previous work (particularly that using the ITAQ), it appears that acute patients' scores on admission, on the 18-item BPRS show lower correlations than after treatment has been initiated. This may be a psychometric artefact of a more restricted range of scores in acute patients or may point to a breakdown in the relationship between insight and psychopathology. Our findings using the expanded BPRS and the ITAQ on in-patients studied after initiation of treatment (Pearson's $r = -0.33$), is very similar to the $r = -0.35$ reported by McEvoy *et al.* 1989 *a* after 14 days treatment, and $r = -0.4$ reported by Michalakeas *et al.* (1994) prior to discharge. The statistical significance of these correlations, is of course dependent on the sample size.

Markova & Berrios observed a significant correlation between level of psychopathology (BPRS) and level of insight on admission, findings which we did not replicate. There was a weak near significant correlation between Markova & Berrios Scale B and BPRS total score. This difference could be explained by the different sample characteristics and because the BPRS was administered later in the course of the patients' treatment in our study. The strongest

relationship between psychopathology and insight was implied by the SAI and SAI-E. Insight as measured by these scales is weighted by the presence of severe delusions, definition of which includes firm conviction (scores of 4 or more, see Ventura *et al.* 1993). This is presumably because the schedules assess insight in relation to a core abnormal belief. As with other studies (Heinrichs *et al.* 1985; Bartkó *et al.* 1988), we observed an inverse relationship between grandiosity and level of insight, and a positive relationship between insight and depression, i.e. greater insight relates to more depression. The definition of grandiosity used here includes 'denies obvious problems' (Ventura *et al.* 1993) – an aspect of insightlessness, and this too contributed to the strong correlation with (poor) insight scores. However, the SAI and SAI-E were no more susceptible to this than the ITAQ or indeed the PANSS item which was most affected.

Looking at this pattern from the perspective of depressed mood, the results offer some support for the notion that poor insight is a kind of psychological defence against depression or that depressed mood brings about a more 'realistic' appraisal of the world (Amador *et al.* 1991). The relationship to suicidal thoughts in particular is moderate at best, implying that such thoughts are not inevitable with the gaining of insight (see also Amador *et al.* 1996). In the current study, the most depressed patients scored highest on insight scales. Amador and colleagues (1994), David *et al.* (1995) and Markova & Berrios (1992) found a negative correlation between insight and depression as measured by Hamilton Rating Scale. Using the BDI, we showed a positive correlation with insight. This may be due to its self-report which calls on some degree of self-awareness or insight.[1]

Schizoaffective patients (manic subtype) and bipolar manic patients showed least insight. However, such distinctions were only evident using the SAI and SAI-E, the other scales perhaps lacking sufficient sensitivity. This requires further exploration since the number of subjects in each diagnostic category was too small to allow firm conclusions to be drawn. Ghaemi & Pope (1994) in a review concluded that poor insight seems to be a prominent characteristic in bipolar disorder as well as

schizophrenia. Markova & Berrios compared the insight in patients with schizophrenia and depressive disorder (Markova & Berrios, 1992) and found schizophrenic patients' insight was the higher using their own scale. Michalakeas *et al.* (1994) noted that the rate and nature of acquisition of insight with recovery, may distinguish patients with affective and schizophrenic disorders. Unfortunately, the current analysis only included a single cross-sectional assessment.

Insight and compliance

Insight, assessed using the SAI, SAI-E, ITAQ and PANSS item showed a significant correlation with treatment compliance and contact with mental health services. This association appeared to be independent of the experience of side effects of medication. Interestingly, the experience of side-effects from medication did not independently relate to compliance. All insight scales include the request for treatment as evidence of insight. ITAQ has 6 items out of 11 on attitudes to medication, hospitalization and follow-up evaluation. Hence the relationship between insight and compliance is somewhat circular. Nevertheless, patients sometimes take medication regularly while denying illness and with little awareness of the nature of their psychopathological experiences. The SAI and SAI-E regard drug compliance and awareness of illness as separate though overlapping constructs. Markova & Berrios Scale B (negative insight) had a nearly significant inverse correlation with compliance, and Scale A with contact with mental health services. Markova & Berrios scales include, awareness and/or perception of subtle change in the patients's self and relationship to the outside world, items on mental illness in general, and perception of being ill. There are items on hospitalization but only one refers to drug treatment ('My condition can be treated with medicines'). Perhaps the broader focus of the scale, away from personal illness as such and more towards self-awareness means that it avoids the circularity inherent in assessing compliance separate from insight. By the same token, it will be less useful in predicting or measuring attitudes to medication. Similarly, David *et al.* (1992) found in a study with 91 psychotic patients that compliance correlated with 'the ability to recognize an illness in oneself'

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[1] We thank an anonymous referee for this suggestion.

($r = 0.50$; $P = 0.001$), but did not correlate with, 'the ability to recognize delusions and hallucinations and re-label them as abnormal'. While most studies reveal a positive association between level of insight and compliance (e.g. Van Putten, 1974; Bartkó *et al*. 1988; David *et al*. 1992), we must acknowledge that compliance depends on a variety of other factors including, prior experience of treatment, relationship with treating professionals, community support and culture (Kemp & David, 1997). Insight as measured by Markova & Berrios Scale A (positive insight) and number of previous hospitalizations showed a significant positive correlation (see also MacPherson *et al*. 1996). Though some authors have found the opposite relationship, there is the possibility, as David and colleagues hinted (David *et al*. 1992), that some patients learn from experience. On the other hand we found lower levels of insight in patients who take illicit drugs and those who were currently hospitalized against their will (McEvoy *et al*. 1989*a*).

Insight and cognition

We failed to find an association between poor insight and any neuropsychological deficit. The most significant finding was the NART influence on Markova & Berrios scale. This may reflect the conceptual demands of that particular questionnaire. Young *et al*. (1993) in a study of 31 patients with chronic schizophrenia, showed impairment in performance on the WCST in those with poor insight measured using the SUMD interview. Lysaker & Bell (1994) replicated this trend on a chronic, rehabilitation sample using the PANSS item to determine insight levels. Like Cuesta *et al*. (1995) and McEvoy *et al*. (1996) we did not observe poor insight to be associated with poor performance on any measure from the WCST, or other 'frontal' (see McEvoy *et al*. 1993) or dominant parietal task. In the current study there was also no association with non-dominant parietal lobe tests (Star Cancellation Test). These results add further weight to the explanation put forward previously (Kemp *et al*. 1996*a*) that deficits in executive function do not relate to insight in patients with illness durations of < 10 years, while general intellectual functioning may influence insight (MacPherson *et al*. 1996) in a non-linear fashion (David *et al*. 1995; Startup, 1996).

CONCLUSIONS

There are several insight scales available to researchers. In this comparative study we have demonstrated a high correlation among scales lending them concurrent validity. The Markova & Berrios scales evaluate aspects of self-awareness less related to the simpler clinical definitions of insight. The conceptual difficulties of the scales make them more influenced by intelligence.

As with other authors, we have found an inverse correlation between insight, the severity of psychopathology and positive affective disturbance.

All insight scales, especially the ITAQ, include the request for treatment and the awareness of illness as components and hence most 'predict' compliance. The SAI and SAI-E regard drug compliance and awareness of illness as separate components of insight and enable them to be scored separately. The ITAQ, which is weighted towards treatment compliance, is most sensitive to differences in insight between voluntary and involuntary patients.

The ability of experimenter administered insight scales to detect diagnostic differences deserves more attention (cf. interviews such as the SUMD (Amador *et al*. 1994)). Such interview measures can be related to executive functioning although it could be argued that they are prone to confounding by higher cognitive functioning. There is little relationship between insight in non-chronic populations and neuropsychological deficits, including frontal lobe dysfunction. In contrast, delusions seem to be closely related to insight suggesting that the insight concept, especially as measured using the SAI and SAI-E, is bound up with the psychopathology of psychosis and not a separate cognitive deficit.

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