Italian validation of MOAS and NOSIE: a useful package for psychiatric assessment and monitoring of aggressive behaviours

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Abstract

A validation of two rating scales is presented. We first translated the Modified Overt Aggression Scale (MOAS) and the Nurses' Observation Scale for In-patient Evaluation (NOSIE), which cover different aspects of psychopathology, into Italian. We then tested their validity and reliability in terms of inter-rater and internal consistency. For validity, both cases and controls were included: for the MOAS we compared patients who were aggressive (cases) to those who were presumably non-aggressive (controls). For the NOSIE, cases were acute inpatients and controls were subjects with expected stable behaviour. The Brief Psychiatric Rating Scale (BPRS) was also administered to cases in order to test convergent validity. Either the NOSIE and/or MOAS scales were administered to 358 psychiatric inpatients. A subset of these patients (131 for the MOAS and 226 for the NOSIE) was also used to test the inter-rater reliability. Both scales showed good psychometric properties. The correlation coefficients between raters were much higher than 0.75 (for the NOSIE) or 0.90 (for the MOAS), while the discriminant power between cases and controls was confirmed for both scales and good concordance with BPRS was observed. The NOSIE showed good internal consistency for all domains except neatness. In general the MOAS showed better results than the NOSIE for all psychometric properties, although both scales are suitable for monitoring the behaviour and aggression of acute ward inpatients.

Key words: validation, aggressiveness, acute ward inpatients, behavioural scales

Introduction

Aggressiveness occurs with cognitive and emotive styles that involve both individual and relationship fields. It should be regarded as a dimensional phenomenon related to social context, treatment conditions, and psychopathology. The latter comprises the role of general aspects such as hostility, excitement, anxiety and depression and, as far as psychotic patients are concerned, specific features such as thought disorders, delusions, and hallucinations.

Such a dimensional phenomenon should be studied using multidimensional approaches. On one hand, aggression-specific and general behaviour instruments should be used while, on the other, psychopathological analysis is also necessary. This generates a synergy between the psychiatrists and the staff of the mental health services. Easy-to-complete scales that use observations by family or staff are needed to complete the overall psychopathological pattern.

The EPICA study is an observational multicentric study involving 15 Italian emergency ward units. It aims to evaluate the prevalence and incidence of aggressive behaviour in Italian acute ward inpatients and to relate these to sociodemographic aspects and patient management. Two specific instruments were used in this study: the MOAS scale, which was specifically developed for overt aggression, and the NOSIE scale, which is useful for monitoring the behaviour of inpatients. Staff rated both.

The Modified Overt Aggression Scale (MOAS) developed by Kay and colleagues (1988) is based on the overt aggression scale (OAS; Yudofsky et al. 1986), which was modified with regards to

- severity of items, because the original version did not take into account certain aggressive behaviours, such as suicide attempt and intimidation, which are highly relevant in a psychiatric population;
- the MOAS allows for evaluation of not only the severity of the aggressive rate, but also its presence or absence, which makes it suitable for repeated measures;
- the weighted total aggression score, not included in the OAS, which is immediately reflective of the seriousness of different manifestations.

The MOAS rates the most severe act in four categories: verbal aggression, aggression against objects, aggression against self, and aggression against other people. A score from 0 to 4 is assigned to each act: 0 correlates with no aggressive behaviour and higher scores indicate increasing severity. The score in each category is multiplied by a factor assigned to that category: 1 for verbal aggression, 2 for aggression against objects, 3 for aggression against self, and 4 for aggression against other people. Thus, the total score ranges from 0 (no aggression) to 40 (maximum grade of aggression).

The scale is usually filled in by nursing staff to monitor aggressive episodes that may occur during a specified observation period (24 hours). Ratings can be based on the information combined from personal observations, daily rounds, ward journals, and communications, as well as other transactions with the ward staff. It has been used in psychopharmacological (Kavoussi and Coccaro, 1998; Armenteros and Lewis

2002; Mischoulon et al., 2002), genetic (Cai et al., 2001) and observational (Steinert et al., 1999) studies in the US where it was developed, but also in China and widely in Germany. Steinert and colleagues (1999) made a validation of its psychometric properties in Germany by assessing its inter-rater reliability and the predictive power.

The Nurses' Observation Scale for In-patient Evaluation (NOSIE-30) is a psychiatric ward behaviour rating scale that was formulated in the US by Honigfeld and colleagues. It consists of 30 items, rated on a five-point scale based on the frequency of occurrence. These items are grouped in six (Honigfeld et al., 1966) or seven (Honigfeld, 1976) factor-analytically derived subscales: social competence, social interest, neatness, irritability, psychosis, retardation and depression (this latter subscale was added in 1976). The first three factors reflect positive dimensions while the latter three have negative dimensions (McMordie and Swint, 1979). In addition, a global total patient asset (TPA) score can be calculated as a function of both positive and negative dimensions.

The scale is administered by nursing personnel and after repeated ratings it allows the evaluation of changes in the behaviour of inpatients (Philip, 1973; Dingemans, 1990). Since its introduction NOSIE has been widely used in psychopharmacological (Honigfeld, 1974; Citrome et al., 2001; Lane et al., 2003) and in non-drug studies (Swett, 1995; Barbini et al., 1996; Swett and Mills, 1997). The scale has been used by native English-speakers, for example in the UK (Philip, 1973) and in Canada (Gray, 1972). It was validated in the Netherlands (Dingemans et al., 1986; Hafkenscheid, 1991) in long- and short-stay inpatients. The inter-rater reliability, temporal stability, factorial, convergent, discriminant and predictive validity have also been investigated.

An Italian version of NOSIE is available (Conti, 1999) although its psychometric properties have never been tested. When we began the study no translation was available for the MOAS. We therefore translated and validated both scales in Italian by evaluating the convergent and discriminant validity, inter-rater reliability, internal consistency (only for NOSIE) and sensitivity to change in a specific acute-ward inpatient group in Italy, in order to assess and monitor aggressive behaviours in Italian psychiatric acute wards in a clinical setting.

Methods

Subjects

The study was conducted in three Italian emergency units: Melzo (northern Italy), L'Aquila (central Italy), and Bari (southern Italy), where both cases and controls were included. In fact, two groups of patients were necessary to test discriminant validity – the ability of the scales to distinguish between different kinds of patients, which were defined beforehand for each scale. The definition of cases and controls was carried out in order to build two opposing groups in terms of aggressive (MOAS) and general (NOSIE) behaviour. Cases for the MOAS scale were selected in order to define an aggressive group of patients, while the corresponding controls were selected in order to define a non-aggressive group. Cases for NOSIE were expected to show low scores for positive factors and high scores for negative factors; controls were expected to show high scores for positive factors and low scores for negative factors. These groups of patients are hereafter termed MOAS cases, MOAS controls, NOSIE cases, and NOSIE controls.

All male and female acute ward inpatients, aged between 18 and 65 years, were eligible as NOSIE cases.

Some inclusion criteria for MOAS cases were:

- male and female acute ward inpatient status;
- age between 18 and 65 years;
- at least one of the following: forced admission to the psychiatric hospital or seclusion, admission to the hospital by police, or independently documented self- or hetero-directed aggression, about which raters were not informed.

The NOSIE and MOAS cases that had already been included in the study and were readmitted to the hospital during the study period were not included in the study a second time.

All patients who were admitted to the acute psychiatric ward from February to July 2002 and responded to the above described inclusion and exclusion criteria were consecutively included as MOAS and/or NOSIE cases – we extracted a sample without replacement.

Inclusion criteria for MOAS and NOSIE controls were:

- psychiatric outpatient status with stable behaviour under pharmacological treatment;

- same gender as corresponding cases.

Controls were recruited in day hospitals and healthcare rehabilitative residences.

Age was not taken into consideration as an inclusion criterion, because control subjects were likely to be chronic with regards to mental disease; therefore, an older mean age for controls was expected.

Study design

Cases were administered the MOAS scale at admission, after 7 days, and at discharge. Raters, member of the unit's professional staff, had to score aggression according to events occurring during the past 24 hours; thus, the scale compiled at admission took into account patients' behaviour before entering the hospital. As the reference period of NOSIE is the past 3 days, it was administered by nurses after 4 days (and not during admission), 7 days and at discharge. Moreover, pharmacological and non-pharmacological treatment before and during stay in the hospital, together with prescribed therapies at discharge and use of seclusion or other restraining measures were recorded. Diagnosis was determined at discharge by an experienced clinical staff according to the DSM-IV TR criteria (American Psychiatric Association 2000).

Two independent raters compiled the scales for cases during the first and second administration, which allowed for evaluation of inter-rater reliability. Controls were evaluated only once by a single rater.

To study convergent validity, the Italian translation of the Brief Psychiatric Rating Scale 4.0 (BPRS) (Morosini et al., 1994; Roncone et al., 1999) was administered to all cases at admission, after 7 days, and at discharge. Raters, staff psychiatrists, were trained according to the procedures outlined by Roncone et al. (1999).

Translation process

The validation process of a scale into a new language is worthwhile if the translation is made in order to maintain, as far as possible, semantic or linguistic, conceptual and technical equivalence between the versions of the instruments in the source and target languages (Hutchinson et al., 1997). We therefore translated the MOAS and NOSIE scales into Italian by the following process (Knudsen et al 2000):

1. Both instruments were translated from their original language into the target language (Italian) by two independent, native-speaking Italian professional translators, whose second language was English.
2. A first consensus meeting was held among translators and the research group. The Italian versions were compared and a first consensus Italian version of scales was written out.
3. A back-translation was made by a native-speaking English professional translator whose second language was Italian.
4. A second consensus meeting was made among the English mother-tongue and EPICA investigators in order to compare the back-translation to the original scale. Differences were discussed. This led to another revision of the first consensus version.
5. Finally a second consensus version of the scale was obtained.
6. As a non-validated Italian translation of NOSIE already existed (Conti, 1999), we also compared the second consensus version with that.
7. The final version of both scales into Italian was then written.

Statistical analyses

Analyses were performed on total and subscale scores other than on the raw item scores. The total score of the MOAS is a weighted sum of the scores of the subscales. As the scale is composed of only four items, measurements that had a missing rating for any item were excluded from the analysis.

The total score of the NOSIE is also called NOSIE-30 and is the simple sum of all items; the scores of the domains were calculated as the sum of the corresponding items. If less than 50% of the items of the NOSIE domains were missing they were replaced with the average domain score rounded to the closest entire number. In fact, it is reasonable to believe that the compiled items are representative of the domain itself, if they are more than half; otherwise the entire scale was discarded.

The BPRS was analysed according to items and subscale scores. We used the definition of subscales given by Inch et al. (1997) and Hafkensheid (1991), which included the total BPRS-24, anxious-depression, thinking-disorder, withdrawal-retardation, hostile-suspiciousness, activation, mania and psychotic disintegration scales. Convergent validity was evaluated through Pearson correlation for subscale and total score by comparing the BPRS with the first ratings of the MOAS and NOSIE scales.

T-tests were employed to investigate mean differences in scale scores between cases and controls. With regards to MOAS, if the total score was higher than 0, the patient was defined as aggressive, which allowed for calculation of the prevalence of aggressive behaviour at each rating.

Inter-rater reliabilities at subscale and global-scale levels were calculated by employing Pearson's r, intraclass correlation coefficients (ICC) and weighted Kappa, using the Cicchetti-Allison linear weighting method (Cohen 1968; Cicchetti and Allison 1971). The weights used for Kappa statistics were computed as follows: when the raters agreed the weight was the unity; if there are k categories, then the maximum disagreement is of $k - 1$ categories and this was given weight zero; for the intermediate values the weights were $1 - [i/(k - 1)]$, where i is the number of categories for which raters differ from each other. In practice for MOAS domains, the scores of which can be 0, 1, 2, 3, 4 (five categories), weights for the relative differences were: 1 (no difference between raters), 0.75 (one category difference), 0.5 (two categories difference), 0.25 (three categories difference), 0 (four categories difference). The same method was applied for the NOSIE.

Shift tables were also built, which permit an assessment of the extent of differences in ratings. These results are not shown here, but they are available from the authors upon request.

For the NOSIE scale, we also calculated Cronbach's alpha in order to evaluate the internal consistency of subscales (Cronbach 1951).

General descriptive statistics were also used, which included the raw and percentage distribution of item scores, and the mean, standard deviation, and minimum and maximum scores for subscale and total scores. All analyses were performed using the SAS system v. 8.0.

Results

No significant differences were observed in either the total MOAS and NOSIE scores or the age distribution in the different centres. Accordingly, all patients were analysed together. A total of 358 patients were evaluated. These included 136 cases and 109 controls for the MOAS scale and 240 cases and 116 controls for

the NOSIE scale. Three MOAS cases and 13 NOSIE cases were lost due to missing items whereas all the control subjects were considered in the analyses for both the MOAS and NOSIE scales. The main descriptives of cases and controls are shown in Table 1. The cases were comparable to control group with regards to sex distribution, whereas age was significantly higher in the control group compared with the cases (a four-year difference in each scale).

The diagnoses of MOAS cases, according to the DSM-IV-TR criteria, were schizophrenia (27.1%), I-type bipolar disorder (21.8%), alcohol and other substance dependence syndromes (10.5%), psychotic and personality disorders (7.5% each), affective psychoses (7.5%), depressive disorder (6%), delirium (3.8%), other (three patients with adjustment disorders, two patients with anxiety disorders, two patients with mental retardation, one patient with simulation, one patient with oppositional defiant disorder). Diagnoses of NOSIE cases, according to the DSM-IV-TR criteria were schizophrenia (25.6% of patients), I-type bipolar disorder (20.7%), depressive disorder (10.1%), alcohol and other substance dependence syndromes (7.9%), affective psychoses (7.9%), personality and psychotic disorders (7.5 %), delirium (3.1%), adjustment disorders (2.6%), other diagnoses (four patients with anxiety disorders, four patients with mental retardation, one patient with simulation, one patient with oppositional defiant disorder, one patient with unspecified mood disorder, one patient with unspecified dissociative (conversion) disorder). The diagnosis was unknown for two MOAS and four NOSIE cases.

Validation of the MOAS scale

The total MOAS score averaged 8.4 (5.8 SD) for cases at admission, whereas it was 0.26 (1.7 SD) for controls, demonstrating a large, statistically significant (p < 0.001) difference between the two patient groups. Moreover the prevalence of aggressive patients at admission (patients with total score higher than 0), was 94% for cases and 6.6% for control subjects. When each subscale was considered independently, the frequency of aggressive patients was lower: non-aggressive cases were 21.05% for the verbal subscale, 60.9% for the aggression-against-property subscale, 76.7% for autoaggression, and 47.4% for physical aggression. The distribution of scores at the subscale level tended toward 0; considering only verbal aggression, 86% of patients were uniformly distributed among 0, 1, 2 scores 21%, 29% and 33% respectively. These data support the ability of MOAS to discriminate between groups of presumably aggressive patients, namely cases and controls, despite the fact that aggressiveness in acute ward inpatients is not as high as might be commonly expected.

In order to test convergent validity, even though the BPRS is not a specific scale for aggressive behaviour assessment, we selected four subscales (hostile-suspiciousness, activation, mania, psychotic disintegration) that partly cover aggressive dimension, and compared them with MOAS scores. Significantly higher correlation coefficients (> 0.3) were observed between the verbal aggression score and BPRS (Table 2).

With regard to test-retest reliability, correlation indexes and weighted Kappa between raters for

Table 1. Characteristics of cases and controls using the MOAS and NOSIE scales.

	MOAS scale		NOSIE scale	
	Cases	Controls	Cases	Controls
Included patients	136	109	240	116
Discarded patients [1]	3	0	13	0
Test-retest	131	0	226	0
Age [2]				
Female	40.5 (± 12.4 – 51)	48.2 (± 13.0 – 40)	42.2 (± 12.7 – 96)	48.1 (± 12.8 – 42)
Male	37.2 (± 12.2 – 82)	41.8 (± 11.6 – 69)	38.6 (± 12.3 – 131)	42.1 (± 11.8 – 74)

[1] Patients were discarded according to the presence of missing values, as described in *Statistical Analyses*.
[2] Average age (± Standard Deviation – N).

Table 2. Pearson's r between MOAS and BPRS subscales (p-values are indicated between parentheses)

| | | | MOAS domains | | |
	Verbal aggression	Aggression against property	Auto-aggression	Physical aggression	Total score
BPRS domains					
Hostile-suspiciousness	0.470 (<0.0001)	0.285 (0.0005)	−0.127 (0.209)	0.199 (0.044)	0.227 (0.021)
Activation	0.347 (<0.0001)	0.283 (0.0005)	−0.136 (0.15)	0.116 (0.209)	0.141 (0.191)
Mania	0.346 (<0.0001)	0.182 (0.049)	−0.170 (0.081)	0.117 (0.20)	0.086 (0.463)
Psychotic disintegration	0.304 (<0.0001)	0.203 (0.020)	−0.198 (0.020)	0.149 (0.09)	0.097 (0.28)

MOAS scale were calculated. The ICC and Pearson's r coefficients, shown in Table 3, are all higher than 0.9, suggesting an almost perfect concordance in rating. Weighted Kappas were also very high: 0.93 for verbal, property and physical aggression and 0.99 for autoaggression. Moreover, from the analysis of shift tables, when raters did not give the same score they diverged by only one level in all but three patients: two of these were scored 2 for physical aggression by one rater and 0 by the second, whereas one patient was scored 4 by one rater and 0 by the other.

Figure 1 shows the mean MOAS scores calculated at each rating, from admission to discharge, where the total score among cases was 0.02 (0.19 SD). A decreas-ing and statistically significant trend was clearly observed for all domains, supporting the ability of the scale to distinguish changes in hospital stays.

Validation of the NOSIE scale
Internal consistency was analysed using the NOSIE subscales. Cronbach's alpha was greater than 0.7 for all subscales with the exception of neatness. The latter was negative, suggesting that items 1, 8, 16, and 30 are not consistent each other when considered as an entire subscale.

Inter-rater reliability analysis is shown in Table 3. The correlation indexes were 0.796 for the total score, and the average weighted kappa for NOSIE was 0.76,

Table 3. Pearson's r, intra-class coefficients (ICC) and relative p-value for MOAS and NOSIE scales between raters

|	r	p	ICC	p
MOAS scale				
Verbal aggression	0.967	< 0.0001	0.967	< 0.0001
Aggression against property	0.969	< 0.0001	0.967	< 0.0001
Auto-aggression	0.996	< 0.0001	0.996	< 0.0001
Physical aggression	0.904	< 0.0001	0.903	< 0.0001
Total score	0.949	< 0.0001	0.948	< 0.0001
NOSIE scale				
Social competence	0.864	< 0.0001	0.865	< 0.0001
Social interest	0.903	< 0.0001	0.903	< 0.0001
Neatness	0.720	< 0.0001	0.720	< 0.0001
Irritability	0.896	< 0.0001	0.896	< 0.0001
Psychosis	0.899	< 0.0001	0.898	< 0.0001
Retardation	0.804	< 0.0001	0.802	< 0.0001
Depression	0.878	< 0.0001	0.878	< 0.0001
NOSIE-30	0.796	< 0.0001	0.796	< 0.0001
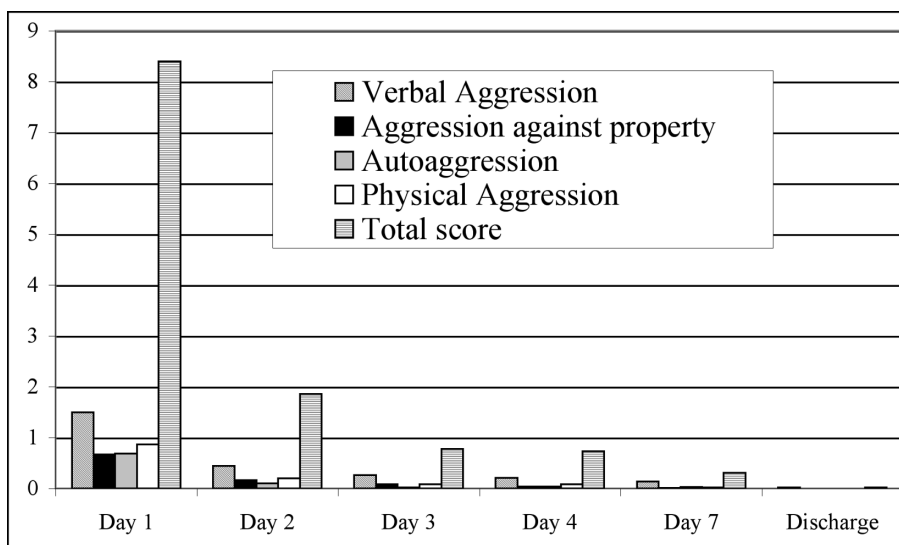
Figure 1. Mean MOAS domain scores from admission to discharge. Pearson's r among measurements for verbal, against-property, auto-, physical aggression and total score were respectively: –0.484, –0.335, –0.263, –0.395, –0.518 (p was < 0.001 for all measurements).

ranging from 0.65 (Item 22) and 0.883 (Item 7). The shift tables generally showed a divergence of one or two levels, although larger differences were observed for some individual items as well. Patients were given the minimum score by one rater and the maximum score by the other for the following items: 8 (one patient), 11 (one patient), 17 (one patient), 18 (two patients), 19 (one patient), 22 (one patient), 25 (one patient), 26 (one patient), 28 (one patient), 30 (one patient).

Mean NOSIE-30 at admission was 71.2 (7.8 SD) and 75.6 (8.3 SD) for cases and controls, respectively. This difference was statistically significant (p < 0.001), even if only social interest and depression showed significant differences between cases and controls when each subscale was analysed separately. On the other hand, the total scores of cases did not change from admission to discharge.

Finally, in order to assess convergent validity we compared the NOSIE and BPRS subscales. Even if the scales were developed for evaluating different aspects of psychopathology, a number of positive correlations can be expected beforehand between the depression domains of both psychiatric scales and for psychotic domains, such as irritability and psychosis from NOSIE with hostile suspiciousness, activation, mania, psychotic disintegration from BPRS. The highest correlation coefficients were found for to depression,

which was 0.42 (p < 0.0001) between NOSIE depression and the BPRS anxious-depression scale and –0.45 (p < 0.0001) between NOSIE depression and BPRS hostile-suspiciousness (Table 4). On the other hand, BPRS hostile-suspiciousness correlated positively with the NOSIE irritability scale (r = 0.44, p < 0.0001), which also positively and significantly correlated with the BPRS mania and psychotic-disintegration scales (respectively r = 0.34 and 0.35, p < 0.0001). Finally Pearson r scores between NOSIE psychosis and BPRS thinking disorder and psychotic-disintegration scales were 0.42 and 0.39, respectively (p < 0.0001). All of these values suggest a strong relationship of psychosis-related subscales between NOSIE and BPRS, confirming what was expected: when patients show psychotic symptoms their behaviour is better explained by negative dimensions. Lower coefficients were observed for social competence, social interest and neatness, which were always less than 0.3.

Discussion

Our validation revealed good performances for both scales: inter-rater reliability was much higher than 0.75 (for NOSIE) or 0.90 (for MOAS) and discriminant power between cases and controls was confirmed for both scales. Moreover, good concordance with BPRS was observed. The NOSIE also showed good

Table 4. Pearson's r between NOSIE and BPRS subscales (p-values are indicated between parentheses)

	NOSIE subscales						
	Social competence	Social interest	Neatness	Irritability	Psychosis	Retardation	Depression
BPRS domains							
Anxious depression	0.150 (0.025)	0.124 (0.065)	0.262 (< 0.0001)	–0.245 (0.000)	–0.066 (0.322)	–0.055 (0.413)	0.416 (< 0.0001)
Thinking disorder	–0.300 (< 0.0001)	–0.150 (0.025)	–0.204 (0.002)	0.189 (0.005)	0.417 (< 0.0001)	–0.007 (0.913)	–0.170 (0.011)
Withdrawal retardation	–0.166 (0.013)	–0.270 (< 0.0001)	–0.208 (0.002)	–0.092 (0.171)	0.152 (0.023)	0.150 (0.025)	0.046 (0.489)
Hostile suspiciousness	–0.135 (0.044)	–0.223 (0.001)	–0.154 (0.021)	0.441 (< 0.0001)	0.225 (0.001)	0.018 (0.787)	–0.450 (< 0.0001)
Activation	–0.164 (0.014)	0.017 (0.800)	–0.080 (0.230)	0.443 (< 0.0001)	0.157 (0.019)	–0.215 (0.001)	–0.236 (< 0.001)
Mania	–0.144 (0.031)	0.076 (0.260)	–0.023 (0.734)	0.345 (< 0.0001)	0.200 (0.003)	–0.267 (< 0.0001)	–0.263 (< 0.0001)
Psychotic disintegration	–0.270 (< 0.0001)	–0.271 (< 0.0001)	–0.255 (0.000)	0.352 (< 0.0001)	0.389 (< 0.0001)	0.015 (0.820)	–0.361 (< 0.0001)

internal consistency for all of domains except neatness. In general MOAS showed better results than NOSIE for all psychometric properties.

We followed the rigorous translation method proposed by Knudsen and colleagues (2000), which consisted in forward and backward translation as well as a consensus meeting between researchers and professional translators. For both scales the translation process did not show any pertinent issues: all forward and back translations were consistent with each other and the original version. However, in Knudsen's proposal the authors conclude that a focus group is an adequate method that can be applied if concepts, constructs and translation issues need to be addressed. Both MOAS and NOSIE are empirical scales and we did not find any cultural adaptations necessary to describe any characteristically Italian behaviour in psychiatric patients.

The MOAS is a very empirical scale that focuses on a specific aspect of the acute psychiatric pathology, namely aggression, and analyses it considering four well-defined items. It is very easy to use and all personnel found it useful to monitor daily activities in the ward. Our results confirm some of the properties already reported and, in particular, Kay (1988) found an inter-rater reliability coefficient of 0.94 for MOAS total score in recently admitted in-patients. Since analyses performed in the present report concern

admission and the first hours spent in the ward, the results are perfectly concordant. Moreover this result is also confirmed in Steinert (2000), supporting the ease in compiling and rating used in the MOAS scale.

Despite these observations, a critical review of the scale translation prompted us to consider that differences among aggressiveness levels within each domain are weak for verbal aggression. Inter-rater reliability is nearly 1, which implies that it is clear that raters were able to formulate different intensities among items, which allowed them to recognize various levels of aggression in a coherent manner.

The NOSIE is slightly more complex than the MOAS, although it takes different aspects of a patient's behaviour into account and has already been used in other emergency psychiatric units with good results (Dingenmans et al., 1984). We also observed good psychometric properties for all domains, except neatness. In this study, neatness was found to be inconsistent with a negative Cronbach's alpha. Similar inconsistencies were perceived from both raters, since the inter-rater reliability was higher than 0.7. Hence it appears that items 1, 8, 16 and 30 are not recognized as belonging to the same dimension. This confirms the results obtained in the Dutch population (Hafkenscheid, 1991)

The other weak aspect of NOSIE is its sensitivity to change as no change was observed from admission to discharge using the NOSIE-30 score. Nonetheless, it

must be considered that the EPICA study was developed in emergency psychiatric wards, where after only a few observations and a limited number of days in recovery patients are moved from acute wards to stabilized wards. This short period is not sufficient to enable observation of relevant behavioural changes. A larger study, conducted on about 700 patients, measured BPRS at admission and discharge and showed how the BPRS score did not change in a considerable manner (the EPICA study group, unpublished). It follows that associated behaviour could not drastically change in such a short period. This was also outlined by Hafkenscheid (1991), who concluded that if long-term inpatients are considered, a variation of at least 11.5 points in the total NOSIE score would be necessary to show the effect of a behavioural change.

We have shown that both scales exhibit good properties, even when analysed independently. In order to evaluate a convergence between the MOAS and NOSIE scales, we performed a correlation analysis, which confirmed what was obtained by comparing independently both scales with BPRS. The NOSIE's depression is negatively correlated with all kinds of aggression directed towards others (r = –0.33 with verbal aggression; r = –0.24 with property aggression; r = –0.24 with aggression against others; p < 0.01 for each coefficient), whereas it is positively correlated with autoaggression: r = 0.3 (p < 0.001). Moreover the NOSIE's irritability showed a positive correlation with verbal aggression (r = 0.27; p < 0.01). These results support the idea of a global approach to aggressiveness, which should take into account behavioural adaptations and aggression towards oneself and others.

One characteristic feature of this study is that the validation was conducted in a setting where emergency and acute pathologies are standard. Even in this case, the evaluation scales were valid and reliable, which has allowed the diffusion of these instruments in acute wards. The results of these enlarged studies will be the subject of a future publication.

Acknowledgments

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