Construct Validity of Rorschach Variables for Alexithymia

PIERO PORCELLI, PH.D.
GREGORY J. MEYER, PH.D.

The construct validity of Rorschach Comprehensive System (CS) variables theoretically linked to alexithymia was evaluated in 92 outpatients with inflammatory bowel disease, 32 of whom were categorized as alexithymic, 15 as indeterminate-alexithymic, and 45 as nonalexithymic, on the basis of Toronto Alexithymia Scale scores. Six sets of Rorschach CS marker variables were selected for analysis: fantasy, affect, adaptive resources, cognition, social adaptation, and projection. Most variables significantly differentiated the three groups. Compared with the other groups, alexithymic subjects were more likely to show an impoverished fantasy life, poorly adapted emotional expression, poor coping resources, concrete and stereotypical thinking, and social conformity with compromised relationships. (Psychosomatics 2002; 43:360–369)

Alexithymia encompasses a cluster of cognitive and affective characteristics, including difficulty identifying and communicating feelings, trouble distinguishing between feelings and somatic sensations of emotional arousal, an impoverished and restrictive imaginative life, and a concrete and reality-oriented thinking style.[1] Lack of introspection, poor dream recall, and social conformity are also considered to be associated with alexithymia.[1] Several measures for assessing alexithymia have been developed in the last 25 years,[2] including the 20-item Toronto Alexithymia Scale (TAS-20), which has demonstrated strong reliability and validity.[3–5] (See chapter 3 of the book by Taylor et al.[1] for a review of measures of alexithymia.)

Inflammatory bowel disease (IBD), a chronic intestinal disease of unknown etiology with intermittent phases of acute relapses and symptom-free periods, encompasses mainly ulcerative colitis (UC) and Crohn's disease (CD). IBD traditionally has been regarded as a psychosomatic disease,[6] although recently this view has been criticized.[7,8] Nonetheless, clinical observation and empirical studies have suggested that alexithymic characteristics could play important roles in IBD patients. Studies have found that IBD patients are more likely to be alexithymic than comparison subjects.[9,10] Despite this association, only about one-third of IBD patients would be classified as alexithymic.[11] Furthermore, alexithymia seems to be stable over time and unrelated to IBD activity, unlike psychological distress, which was directly related to level of disease activity in one study with a 6-month follow-up period.[12] Although significant associations between alexithymia and IBD have been found, nothing can be said about a causal relationship between the two phenomena. Furthermore, the empirical findings have suggested that IBD patients are not a homogeneous group. Some IBD patients have stable alexithymic characteristics, and others do not. Because of these differences, IBD patients form a suitable population for studying the alexithymia construct. As a group, they have a fairly high prevalence of alexithymia, but many IBD patients do not possess alexithymic characteristics. A more refined psychological description of subgroups of IBD patients may improve clinicians' understanding of the disease course, responses to treatment, and coping styles that affect patients' quality of life and their way of relating to this chronic disease.

Received Sept. 17, 2001; revision received Jan. 30, 2002; accepted Feb. 13, 2002. From the Psychosomatic Unit, Istituto di Ricovero e Cura a Carattere Scientifico, Ospedale De Bellis, Castellana Grotte, Italy; and the Department of Psychology, University of Anchorage, Anchorage, AK. Address reprint requests to Dr. Porcelli, Unità di Psicosomatica, Istituto di Ricovero e Cura a Carattere Scientifico, Ospedale De Bellis, Via Valente, 4, 70013 Castellana Grotte (Bari), Italy; porcellip@mail.media.it (e-mail).

The TAS-20 is a well-established, empirically validated measure of alexithymia. However, it is completed by the patient and thus is dependent on the patient's ability to accurately recognize and honestly endorse face-valid items. Although the reliability and validity of the TAS-20 have been supported by many research studies, questions have been raised about the possible limitations of using a self-report measure to assess the alexithymia construct.[13,14] Therefore, heteromethod measures of alexithymia features have been advocated.[13,14] A distinct and independent method of measuring alexithymic characteristics would also serve to further the test validity of the TAS-20.

The Rorschach test has been used in prior research to evaluate alexithymia.[2] Studies involving patients with various medical disorders have shown some common alexithymia characteristics, such as coarctated thinking, low level of imagination, absence of an inner-oriented cognitive style, poor control of emotional expression, coarctated experience, and a repressive coping style.[15] Studies investigating alexithymia in patients with IBD have produced equivocal findings. Taylor et al.[16] found that alexithymic patients with IBD had less control of emotional expression than psychoneurotic comparison subjects. A heterogeneous group of patients with gastrointestinal disorders, including UC, were found to be not significantly different from patients with organic diseases on the so-called "Rorschach phantasy syndrome"[17] developed by Vogt et al.[18] However, Acklin and Alexander[19] found that Rorschach variables assessing psychological characteristics linked to alexithymia differentiated patients with psychosomatic disorders from healthy subjects.

Earlier Rorschach studies investigating alexithymia had methodological shortcomings that limited their interpretation and may explain some of the equivocal findings. First, they used different systems of Rorschach scoring and interpretation, so the possibility of comparing results across studies was weakened. Second, the studies did not provide data on scoring reliability. Third, clinical and comparison groups were not matched for major sociodemographic variables. Fourth, the samples were poorly defined as "psychosomatic" on the basis of the assumption that certain disorders are psychosomatic while others are organic. For instance, the "psychosomatic" gastrointestinal disorder groups often included patients with heterogeneous illnesses, such as peptic ulcer, UC, and irritable bowel syndrome. Fifth, the studies considered alexithymia to be synonymous with psychosomatic disorder rather than directly evaluating alexithymia with a sound assessment instrument. Finally, the comparison groups were often inadequate. For example, psychoneurotic patients were considered comparison subjects, although no definition or inclusion criteria for psychoneurosis were provided.

The study reported here was designed to address problems in previous research in several ways. We evaluated the construct validity of the Rorschach variables theoretically linked to alexithymia by using the Rorschach Comprehensive System (CS).[20,21] The CS is the most commonly used scoring system, is based on standard administration rules,[22] has shown good interrater[23,24] and test-retest[20] reliability, has generally good construct validity,[23] and provides data for reference samples of nonpatients and patients to facilitate interpretation.[20] Second, we evaluated scoring reliability in this study. Third, the IBD patients in the study were homogeneous in that they suffered from the same organic disease, but they were not a priori considered to have a psychosomatic condition. Rather, these patients were expected to vary in severity and stability of alexithymia.[12] Finally, alexithymia was assessed by a criterion external to the Rorschach, the TAS-20, which is the most frequently used and validated self-report scale for assessing alexithymia.

METHODS

Subjects

The initial sample was composed of 102 outpatients with IBD who were recruited consecutively from the Scientific Institute of Gastroenterology in Castellana Grotte, Italy. All patients had both endoscopic and histologic diagnoses of IBD. The patients were taking 5-aminosalicylate alone or in combination with steroid treatment, according to their IBD activity status. No patient had undergone surgery. The sample was homogeneous for disease, geographical area, and treatment setting. The subjects constituted 91% of a group of 112 patients previously included in an evaluation of the prevalence and stability of alexithymia.[11,12].

Procedure

At baseline, the patients were administered the Italian translation of the TAS-20[25] and the Rorschach according to CS administration rules.[20] The Italian version of the TAS-20 has been cross-validated in a large sample of normal and clinical subjects recruited for a multicenter study

in Italy. The scale showed good internal consistency (Cronbach's α of 0.75 and 0.82 for normal subjects and clinical subjects, respectively) and high test-retest reliability over 2 weeks (r = 0.86). A confirmatory factor analysis revealed the same three-factor structure found for the English version of the scale. Because of the very nature of Rorschach cards, which are inkblot stimuli, the test can be administered in any language without translation. As for the scoring system used in this study, there is evidence that CS validity is no different across cultures.[23] Before testing, written informed consent was obtained from all patients, and none refused to participate. Patients were administered the TAS-20 and the Rorschach before their visit for gastrointestinal treatment at baseline. Ten patients gave an invalid Rorschach protocol of less than 14 responses. (In the CS, a Rorschach record is considered invalid if there is insufficient sampling of responses, i.e., less than 14 responses, corresponding to two standard deviations below the mean number of responses (22.7 ± 4.2) in the reference sample.[20]) However, it was not possible to administer the test a second time. Consequently, the 10 patients were excluded from the study, leaving 92 patients with data for analysis.

After receiving 6 months of routine follow-up, patients were readministered the TAS-20. By using established TAS-20 cutoff scores[26] obtained at baseline and follow-up, patients were divided into three groups: 32 subjects (34.8%; 19 men and 13 women; 23 with UC and 9 with CD; mean age 36.8 ± 9.7 years; mean education level 10.6 ± 2.8 years) with stable alexithymic characteristics (TAS-20 score >60 at both administrations); 45 subjects (48.9%; 26 men and 19 women; 34 with UC and 11 with CD; mean age 35.8 ± 8.1 years; mean education level 11.0 ± 3.0 years) without alexithymic characteristics (TAS-20 score = 50 at both administrations); and 15 subjects (16.3%; 8 men and 7 women; 13 with UC and 2 with CD; mean age 38.4 ± 9.8 years; mean education level 13.0 ± 2.9 years) with indeterminate alexithymic characteristics (TAS-20 score between 51 and 60 at both administrations or in the range for a different alexithymia category across the two administrations). Although the first author both administered the Rorschach to all patients and assigned patients to one of the three alexithymia status groups, the Rorschach test was administered and scored before the TAS-20 records were scored and before the patients were assigned to groups on the basis of the TAS-20 scores. Therefore, the investigator was blind to the alexithymia status of each patient at the time he administered and scored the Rorschach.

Rorschach Marker Variables

Six sets of CS marker variables theoretically linked to alexithymia were selected: fantasy, affect, adaptive resources, cognition, social adaptation, and projection (see Table 1). The rationale for the marker variables is provided below. The following descriptions include technical terms and abbreviations that are common in the Rorschach literature. Further details can be found in Exner's[20,21] and Weiner's[27] textbooks.

For fantasy, the total numbers of responses (R) and human movements (M) were used to evaluate the patient's extent of mental representations. Lower scores on these variables, suggesting an impoverished fantasy life, were expected in subjects with alexithymia.

For affect, the weighted sum of color responses (WSumC) was used to assessed the range of affective experience, primary form-color responses (FC) to assess the ability to modulate affect, the affective ratio (Afr) to assess avoidance of emotions, and the depression index (DEPI) to assess an implicit depressive mood. Scores for WSumC, FC, and Afr were expected to be lower in subjects with alexithymia, suggesting difficulty in processing and expressing emotions. Subjects with alexithymia were expected to score higher than or equal to the other two groups on the DEPI because of the hypothesized, although controversial, association between alexithymia and depression.[28,29]

For adaptive resources, the sum of human movement and color responses (experience actual [EA]) was used to assess coping resources, form-dimension responses (FD) to assess the propensity to be introspective, and the ratio of human movements to color responses (Erlebnistypus [EB]) to assess basic coping styles. Scores for the first two variables were expected to be lower in subjects with alexithymia because poor coping skills and the lack of introspection are thought to make these subjects prone to affect disregulation under stress. For the third variable, subjects with alexithymia were expected to show an inconsistent style of coping with problems (EB ambitent). Also, the alexithymic group was expected to have fewer subjects with an introversive EB style, because subjects with alexithymia are not thought to use an inner-oriented style when coping with everyday and stressful problems.

For cognition, responses with more than one determinant (Blends) were used to assess psychological complexity, pure form responses (Pure F%) to assess an avoidant or simplistic thinking style, the frequency of Z scores (Zf) to assess efforts for cognitive integration, the fre-

quency of developmental quality plus responses (DQ+) to assess perceptual integration, the presence of perseveration (PSV>0) to assess stereotypic ideation, anatomical and radiographic contents (An+Xy) to assess physical concerns, single animal contents (Pure A) to assess simplistic thinking, the number of content categories used at least once (Cont) to assess breadth of ideation, and the ratio of active-to-passive movements (a:p) to assess ideational flexibility (balanced a:p) or rigidity (imbalanced a:p). In subjects with alexithymia, Blends, Zf, DQ+, and Cont were expected to be low; Pure F%, PSV>0, An+Xy, and Pure A to be high; and a:p to be imbalanced. We also determined response engagement (R-Engagement), an empirically derived score evaluating the subject's engagement with the cognitive-perceptual demands of the Rorschach task and his or her ability to articulate perceptions and their determinants.[30,31] Lower scores indicate a more concrete and simplistic level of cognitive articulation, whereas higher scores indicate a more integrated and complex level of cognitive articulation. Alexithymic subjects were expected to have lower R-Engagement scores than nonalexithymic subjects. These hypotheses are consistent with poor psychological complexity and an externally oriented, concrete cognitive style, which are part of the alexithymia construct.

For social adaptation, popular responses (Pop) were used to assess social conventionality, whole human contents (Pure H) to assess interpersonal interest and empathy, the Coping Deficit Index (CDI) to assess social competence, the absence of texture determinants (SumT=0) to assess superficial interpersonal relationships, and contents involving human movement with ordinary or unusual form quality (Mo/u) to assess adequate human representations. Consistent with difficulty in close relationships and with social conformity among subjects with alexithymia, Pop, CDI, and SumT=0 were expected to be high in this group, and Pure H and Mo/u expected to be low.

For projection, enlivened or enriched responses that went beyond the stimulus features in the inkblots were assessed with the percentages of human, animal, and inanimate movements (All Mov); special scores (SpSc); and form quality minus responses (X–%). All SpSc were considered embellishments, except for deviant verbalization (DV) and perseveration (PSV). Scores for all three projection variables were expected to be lower in subjects with alexithymia, in keeping with deficits in symbolic function and inner-oriented life.

Statistical Analysis

Except for R, DEPI, EB, and CDI, all variables were measured as percentages to control for the number of responses in each protocol. Differences between the three groups were calculated by using analysis of variance (ANOVA) for continuous variables and the chi-square test for nominal variables. Statistically significant ANOVA results were followed by pairwise comparisons. Because a large number of pairwise t tests were possible, a Bonferroni-adjusted α level was used to assess statistical significance. The significance level was set at less than 0.01. Although this significance level can result in more type II errors than an alpha of 0.05, it was selected to retain a balance between statistical power and the experiment-wise type I error rate.

RESULTS

No differences were found for gender, frequency of UC and CD, and education across the three groups. The mean TAS-20 scores were 66.4 ± 4.5 (first administration) and 66.6 ± 3.2 (second administration) in subjects with alexithymia, 41.0 ± 5.5 (first administration) and 41.2 ± 4.3 (second administration) in subjects without alexithymia, and 53.5 ± 6.1 (first administration) and 53.3 ± 7.0 (second administration) in subjects with indeterminate alexithymic characteristics. The TAS-20 scores were significantly different across the three groups, as was expected because the study groups were formed by using the TAS-20 cutoff scores.

Interrater Agreement

Thirty protocols were randomly selected for an evaluation of interrater agreement. Both the authors and examiners involved in the interrater agreement trial were adequately trained in the CS and had extensive experience with this system. Because the Rorschach protocols were initially obtained and written verbatim in Italian, the 30 protocols were translated into English by the first author. They were rescored twice, in the English translation by the second author and in the original Italian version by an Italian examiner who was trained in the CS by the first author. The scoring was done blindly and independently, without discussion between scorers. The mean intraclass correlation coefficient (ICC) was 0.87 ± 0.11 in the Italian-English interrater trial. The variables used in the study obtained ICC values ranging from 0.72 (for FC) to 1.00 (for R, Afr, Blends, Pure F%, and Zf). Lower ICC values were obtained for FD and X–% (ICC=0.73) and EB (ICC=0.74), and higher values for An+Xy (ICC=0.99), active movements (ICC=0.96), WSumC, Pure A, and Pop (ICC=0.94). The Italian-Italian interrater trial showed higher scoring agree-

TABLE 1. Findings for Alexithymia-Related Rorschach Marker Variables Among Subjects With Inflammatory Bowel Disease, by Alexithymia Category

Marker Variable Set and Name	Description of Variable	Characteristic Measured	Group A: Alexithymic Subjects (n = 32)	Group B: Indeterminate-Alexithymia Subjects (n = 15)	Group C: Nonalexithymic Subjects (n = 45)	χ^2	F (df = 2, 89)	p	Significant Pairwise Comparisons	Effect size (r)
Fantasy										
R	Number of responses	Verbal productivity	16.9 ± 3.2	17.9 ± 3.6	18.3 ± 3.7		1.46	0.24		0.18
M(%)	Human movement	Ability to fantasize	4.9 ± 6.1	12.8 ± 9.4	14.6 ± 9.6		12.38	<0.001	A<C, A<B	0.45
Affect										
WsumC (%)	Weighted sum of color responses	Range of emotional expression	12.9 ± 9.4	16.6 ± 11.1	19.3 ± 12.1		3.06	0.05		0.25
FC (%)	Form-color	Ability to modulate affects	2.8 ± 2.9	13.8 ± 12.9	16.3 ± 10.4		20.96	<0.001	A<C, A<B	0.55
Afr	Affective ratio	Responsiveness to emotional stimuli	45.7 ± 16.7	47.5 ± 15.8	50.9 ± 14.9		1.08	0.34		0.15
DEPI	Depression index	Implicit depressive mood	4.1 ± 1.3	4.1 ± 1.0	4.7 ± 1.3		2.20	0.12		−0.20
Adaptive resources										
EA (%)	Experience actual (sum of M and WsumC)	Coping resources	18.0 ± 11.6	29.3 ± 18.0	33.8 ± 14.9		11.42	<0.001	A<C	0.45
FD (%)	Form-dimension	Ability for introspection	1.0 ± 2.4	6.7 ± 9.9	5.5 ± 6.4		6.89	<0.001	A<C, A<B	0.31
EB (n[%])	Experience base (M:WsumC)					16.37		0.002		0.42
Introversive		Introspection-based coping style	0 (0%)	2 (13.3%)	12 (26.7%)				A<B<C	
Extratensive		Emotion-based coping style	11 (34.4%)	5 (33.3%)	21 (46.7%)					
Ambitent		Inconsistent coping style	21 (65.6%)	8 (53.4%)	12 (26.6%)				A>C	
Cognition										
Blends (%)	Number of responses with more than one determinant	Cognitive complexity	9.4 ± 7.4	20.7 ± 17.6	24.9 ± 14.3		13.52	<0.001	A<C	0.47
Pure F%	Pure form responses	Cognitive simplicity	65.1 ± 11.5	38.7 ± 26.8	30.1 ± 13.3		47.37	<0.001	A>C, A>B	0.70
Zf (%)	Frequency of integration (Z) scores	Cognitive integration	48.7 ± 16.8	48.5 ± 17.0	57.7 ± 14.1		3.48	0.03		0.25
DQ+ (%)	Developmental quality plus	Perceptual integration	11.8 ± 13.1	22.4 ± 16.7	23.6 ± 11.5		8.16	<0.001	A<C	0.37
PSV>0 (n[%])	Perseveration	Stereotypic ideation	20 (62.5%)	5 (33.3%)	8 (17.8%)	16.31		<0.001	A>B>C	0.42
AN + Xy (%)	Anatomy and X-ray contents	Ideational focus on physical concerns	10.3 ± 13.4	8.2 ± 8.8	12.3 ± 10.4		0.77	0.46		−0.08
Imbalanced a:p	Active-passive movement	Ideational flexibility, rigidity	3 (9.4%)	7 (46.7%)	22 (48.9%)	13.99		<0.001	A<B, A<C	−0.36
Pure A (%)	Animal contents	Ideational simplicity	45.4 ± 9.6	37.5 ± 12.9	30.8 ± 13.5		13.47	<0.001	A<C	0.48
Cont (%)	Content variability	Breadth of ideation	39.1 ± 9.1	43.9 ± 12.6	50.2 ± 13.3		8.21	<0.001	A<C	0.39
R-Engagement	Multiscore-derived index	Cognitive articulation	−0.93 ± 0.75	0.20 ± 1.29	0.57 ± 1.16		19.22	<0.001	A<C	0.54

Social adaptation									
Pop (%)	Popular responses	Social conventionality	46.9 ± 13.3	34.1 ± 11.8	25.4 ± 9.5	33.80	<0.001	A>C, A>B	0.66
Pure H (%)	Human contents	Interpersonal interest and empathy	4.6 ± 5.4	5.4 ± 5.4	5.6 ± 5.9	0.31			0.08
CDI	Coping deficit index	Social incompetence	4.2 ± 0.7	3.3 ± 0.8	2.8 ± 1.4	15.61	<0.001	A>C	0.51
SumT = 0 (*n*[%])	Records with no texture determinants	Lack of close interpersonal relationships	29 (90.6%)	7 (46.7%)	9 (20.0%)	37.36	<0.001	A>B>C	0.63
Mo/u (%)	Form adequacy of human movement	Adequacy of human representations	3.6 ± 4.5	8.6 ± 6.4	11.4 ± 7.5	13.63	<0.001	A<C	0.48
Projection									
All Mov (%)	All movements	Propensity to projection	15.8 ± 9.4	29.6 ± 16.2	40.2 ± 16.5	26.74	<0.001	A<C, A<B	0.61
SpSc (%)	Special scores	Embellishment in responses	9.7 ± 9.4	24.0 ± 21.3	28.7 ± 18.5	12.65	<0.001	A<C	0.46
X–%	Poor form quality	Subjectively distorted perceptions	18.3 ± 10.6	19.6 ± 8.4	22.3 ± 9.0	1.70	0.19		0.19

Note. Subjects' alexithymia categories determined by their baseline and 6-month follow-up scores on the 20-item Toronto Alexithymia Scale. Values are mean ± SD unless otherwise noted. Pairwise comparisons conducted by using t tests with a Bonferroni-adjusted level; $p<0.001$ for all significant pairwise comparisons.

ment (mean ICC = 0.96 ± 0.07), ranging from ICC = 0.90 (for EB) to ICC = 1.00 (for R, WSumC, FC, Afr, and Pop). Notable discrepancies between the two interrater trials concerned FC, FD, EB, X–%, M, passive movements, Cont, SumT, and Mo/u. The differences in reliability might be due to slight linguistic modifications in translation from Italian to English, leading to different CS scores. Alternatively, because the first author trained the second Italian rater, the within-site reliability may have been higher than the cross-site reliability. In either case, the results of both ICC analyses showed generally excellent agreement between raters. Because only the first author scored all protocols, his scores were used in all analyses.

Findings for Marker Variables

Table 1 shows the findings for the six sets of marker variables. The last column in the table provides the effect size index, which was computed as the correlation between each patient's Rorschach score and his or her classification group (i.e., alexithymic = 1, indeterminate = 2, nonalexithymic = 3). Positive effect sizes are reported when the observed results were consistent with the hypotheses, and negative effect sizes when the results were in the opposite direction of prediction.

For the fantasy marker variables, consistent with our expectations, M was significantly higher in nonalexithymic and indeterminate alexithymic subjects than in alexithymic subjects (r = 0.45). In contrast to expectations, R was not significantly different across groups (r = 0.18).

For the affect marker variables, FC was significantly higher in nonalexithymic and indeterminate alexithymic subjects than in alexithymic subjects (r = 0.55), as expected. WSumC scores were in the expected direction (nonalexithymic > indeterminate alexithymic > alexithymic), but the differences did not reach statistical significance (r = 0.25). No differences were found for DEPI (r = -0.20) or Afr (r = 0.15).

Two of the adaptive resources variables significantly differentiated the three groups in the expected directions. EA was significantly lower in alexithymic than in nonalexithymic subjects (r = 0.45), and FD was significantly lower in alexithymic than in indeterminate alexithymic and nonalexithymic subjects (r = 0.31). As expected, there were significantly more patients with an introversive style in the nonalexithymic than in the alexithymic group (r = 0.42). In addition, there were significantly more ambitents in the alexithymic group than in the nonalexithymic group. Of in-

terest, no subject with an introversive coping style was found in the alexithymic group.

Among the cognition marker variables, Blends (r = 0.47), DQ+ (r = 0.37), Cont (r = 0.39), and R-Engagement (r = 0.54) had lower scores, and Pure F% (r = 0.70) and Pure A (r = 0.48) had higher scores in the alexithymic group than in the nonalexithymic group. Also, the proportion of patients with PSV>0 was significantly higher in the alexithymic than in the nonalexithymic group (r = 0.42). Zf (r = 0.25) and An + Xy (r = –0.08) did not differ across groups. In contrast to the hypothesis, the rate of imbalanced a:p ratios was significantly lower among the alexithymic than among the nonalexithymic subjects (r = –0.36).

All of the social adaptation marker variables, except for Pure H (r = 0.08), had significantly different rates across the groups in the expected direction. Pop (r = 0.66) and CDI (r = 0.51) were higher, and Mo/u (r = 0.48) was lower in the alexithymic than in the nonalexithymic subjects. Protocols in which SumT = 0 occurred significantly more often in the alexithymic (91%) than in the nonalexithymic group (20%) (r = 0.63).

For the projection marker variables, consistent with expectations, the All Mov (r = 0.61) and SpSc (r = 0.46) scores were significantly higher in the nonalexithymic than in the alexithymic subjects. X–% did not differ across groups (r = 0.19).

DISCUSSION

The main finding of this study was that six sets of Rorschach CS variables, a priori selected as theoretically consistent with the alexithymia construct, were associated with the severity of alexithymia in a group of IBD patients. Although the subjects in the indeterminate-alexithymia group did not always show statistically significant differences compared with the alexithymic and nonalexithymic subjects, this lack of difference was likely due to the lower statistical power in the pairwise comparisons. The expected pattern of results (i.e., alexithymic group scores > indeterminate-alexithymia group scores > nonalexithymic group scores, or vice versa) was generally confirmed, and the magnitude of the expected pattern was documented in the effect sizes, all of which were computed according to the anticipated continuum of alexithymic severity. Almost all variables (24 of 27) produced findings in the expected direction, although the scores for four variables (WSumC, Afr, Zf, and X–%) were in the expected direction but were not significantly different across the three groups.

Four sets of the Rorschach marker variables we considered-fantasy, affect, adaptive resources, and projection-are conceptually related to difficulty in identifying and modulating feelings. Alexithymic individuals are thought to have restricted imaginative abilities that limit the extent to which they can modulate emotional states by dreams, fantasy, and play.[32,33] In this study, responses in which the rates of movements and embellishments were low were related to an impoverished fantasy life, while a low rate of form-color (FC) responses was related to poorly adapted modulation of emotions. FC responses (i.e., responses primarily based on form demands and secondarily including the color features of the blot) have been shown to correlate with the ability to postpone affective discharge and adaptively modulate emotional expressions according to situational and environmental characteristics.[20,34] Consistent with our results, Taylor et al.[16] found that FC was significantly lower in IBD patients than in psychoneurotic patients and Acklin and Alexander[19] found that FC and M significantly differentiated between psychosomatic and comparison subjects.

The findings for the adaptive resources and social adaptation variables were consistent with two other alexithymic characteristics, vulnerability to emotional problems and poor interpersonal skills. In alexithymia, inability to modulate emotions and limited awareness of subjective feelings contribute to impulsive behaviors aimed at reducing an unpleasant state of tension through emotional discharge. This process is thought to exacerbate physiological responses to stressful situations and to enhance somatic sensations that accompany emotional arousal. Indeed, the rate of alexithymia has been found to be higher in patients with somatization disorders,[35,36] substance abuse,[37] and eating disorders.[38]

A low level of internal resources, poor introspective skills, and an inconsistent coping style are consistent with the vulnerability to stress that is part of the alexithymia construct. It has been suggested that alexithymia may lead to inaccurate stress perception, biasing appropriate self-regulatory actions and the mobilization of psychological and physiological resources to cope with internal and external demands.[39,40]

Consistent with previous findings,[18,19] our results support the main role played by cognitive style in persons with alexithymia. Pure F% (proportion of responses based only on the external contours of the blot) was the CS variable with the largest effect size (r = 0.70). Research data reviewed by Exner[20] and Weiner[27] indicated that this variable is closely associated with a defensive lack of engagement,

concrete and simplistic thinking styles, narrowing of the perceptual field, a coping style marked by the avoidance of complexity, restricted and stereotypical ideation, and a limited ability to integrate different aspects of the stimulus field into a meaningful frame.

Social adaptation marker variables provided further data consistent with the theoretical construct of alexithymia. Two facets of social adaptation were revealed in the Rorschach: a conformist adaptation to the social environment and unempathic interpersonal relationships, as evidenced by large effect sizes found for the proportion of Pop ($r = 0.66$) and SumT = 0 protocols ($r = 0.63$). Popular responses (Pop) are those that occur with very high frequency (in 35% to 90% of the 7,500 protocols that were used in the development of CS scoring principles[41]). Data on clinical and nonclinical samples strongly indicate that Pop is a highly stable variable, is not significantly affected by cross-cultural differences, is significantly more prevalent in community and nonclinical samples and less prevalent in psychotic patients, and is related to the subject's capacity to share the common conventional values of his or her social environment.[21] Protocols containing no texture determinants (SumT = 0) have been demonstrated to occur with high frequency in foster-home children with a history of long-term institutionalization, patients with psychosomatic disorders, and subjects in social psychology experiments, suggesting avoidance of involvement in close interpersonal relationships.[20] Conformity is a well-described clinical feature of alexithymia[1] that is also observed in other clinical descriptions of psychosomatic patients.[42,43] It is important to note that the TAS-20 does not include any item related to social conformity. The Rorschach social adaptation marker variables were able to identify this characteristic, even though it was not included in the measure used to identify the three subject groups.

The analyses also showed two surprising results. First, contrary to expectations, significantly fewer alexithymic subjects had protocols with an imbalanced a:p ratio (ratio of active to passive movements). It may be that the rigidity in thinking assessed by this Rorschach variable is somewhat different from the cognitive style of alexithymic subjects. Also, "active-passive" is a qualification of movement responses, which were significantly less frequent in the alexithymic group than in the other subject groups. Therefore, it may be that the different base rate for movement in the three groups affected the a:p comparison across groups. Alternatively, our initial hypothesis of a higher frequency of an imbalanced a:p ratio in alexithymic subjects might have been flawed by an overly broad conceptualization. For instance, the a:p ratio may evaluate how rigid or flexible the individual internal representations are, while the concrete thinking style of alexithymic subjects may involve greater attention to external reality than to inner thoughts and experiences. The other surprising result was the very strong effect size observed for several of the Rorschach variables. Because some of these associations were unexpectedly high, particularly in a study examining the relationship between the Rorschach and a self-report scale, replication studies are needed.

Overall, our results shed some light on the problem of defining the core features of alexithymia. They suggest that cognitive (i.e., lack of cognitive complexity), interpersonal (i.e., social conformity), and coping (i.e., low adaptive resources) features may be more central to the alexithymia construct than emotional features, which seem to be more peripheral. Further studies involving patients with other illnesses could help determine whether the TAS-20 is biased toward measuring the cognitive rather than emotional characteristics of alexithymia or whether the Rorschach is simply less able to detect the emotional characteristics of alexithymia.

Two problems limit the generalization of our findings. First, the study subjects were patients with a severe, partially disabling, and chronic inflammatory disease. Although IBD patients have been shown to have stable alexithymia Scores,[12] suggesting a personality trait, the subjects had a long history of disease, so that the Rorschach findings may be related to other dimensions of psychological adaptation to disease and health-related quality of life. Further investigations involving alexithymic and nonalexithymic patients with other medical and psychiatric illnesses are needed. Second, one of the methodological strengths of this study—the use of an external, well-validated measure of alexithymia for sample selection—may reveal a weakness from a clinical viewpoint. Our study was designed to examine construct validity, and stringent criteria—consistency of TAS-20 scores across two administrations over a 6-month period—were used to define subjects. This procedure led to a high level of internal validity and improved our ability to detect true differences, if they existed, between the alexithymic, indeterminate-alexithymic, and nonalexithymic groups. Nonetheless, the clinical validity of this study is reduced by the fact that clinicians rarely meet patients with such definitive and stable alexithymia traits in everyday clinical practice. Therefore, our subjects may not be representative of clinical experience. Further studies involving individuals with less extreme levels of alexithymia and with other disorders are

needed. Such studies should also control for other factors such as depression.

In conclusion, our study showed that a pool of Rorschach CS variables selected to be theoretically consistent with the alexithymia construct can differentiate subjects with and without established alexithymia characteristics. We do not suggest that the Rorschach test could be a substitute for the TAS-20, which is a simpler self-report scale with sound psychometric properties. Rather, we suggest that the Rorschach can be used as a complementary assessment instrument. The Rorschach appears to be a helpful tool for assessing the psychological characteristics of alexithymia without relying on the patient's self-report in response to face-valid questionnaire items.

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