Introduction

In eating disorder patients, an impairment of emotional processing is clinically supposed. As quoted by Bruch (1985), anorexic patients not only show impaired differentiation between hunger and satiety, but they can hardly differentiate their physical sensations from their intimate emotions, which they often cannot describe. Bulimic patients often respond to stress with a bulimic crisis and vomiting, but they can hardly correlate their crisis with any emotional stimulus (Davis, Marsh, 1986).

Therefore, some authors have assumed that these patients could be alexithymic. This concept was initially developed by observing psychosomatic patients and hypothesizing that alexithymia is a precipitant factor for organic diseases (Sifneos, 1973, 1991). Alexithymia is conceptualized as a cognitive-affective deficit, characterized predominantly by the following cluster of impairments: difficulties in identifying feelings and distinguishing emotions from physical sensations; difficulties in communicating emotional states to others; restricted day dreaming; and a concrete/externally oriented style of thinking (Taylor, Bagby, & Parker, 1991).

Alexithymia has been investigated in numerous epidemiologic studies where evaluation instruments are reliable (Taylor, Bagby, & Parker, 1997). High percentages of individuals with alexithymia have been reported in various categories of patients suffering from somatic diseases as well as psychiatric disorders (Taylor, 2000). Several studies suggest that alexithymia is a predominant factor in eating disorders (Beales & Dolton, 2000; Bourke, Taylor, Parker, & Bagby, 1992; Guilbaud et al., 2000; Schmidt, Jiwany, & Treasure, 1993; Taylor, Parker, Bagby, & Bourke, 1996; Zonnevijlle-Bender, Van Goozen, Cohen-Kettenis, & Van Engeland, 2002). Alexithymia is supposed to limit therapeutic outcome (Taylor, 1997c). Further, it has been claimed to constitute a predisposing factor to the development of this type of disorder, but this question is still debated (Taylor, 1997a). Finally, although Cochrane, Brewerton, Wilson, and Hodges (1993) found no significant difference in alexithymia scores between female bulimics and anorexics, Schmidt et al. (1993) showed among 173 female patients with eating disorders that restricting anorexics had significantly higher scores than bulimics.

Several studies have stressed a correlation between depression and alexithymia, as measured with the Toronto Alexithymia Scale (TAS), in both the general population and clinical populations (De Groot, Rodin, & Olmsted, 1995; Parker, Bagby, & Taylor, 1995; Taylor, Bagby, & Parker, 1997).
& Taylor, 1991). These findings call into question former observations regarding the association between this measure of alexithymia and eating disorders, because of the strong prevalence of anxiety and mood disorders in anorexic and bulimic patients (Cochrane et al., 1993; Guilbaud et al., 2000). This creates two problems. First, it is impossible to be sure whether the findings with the TAS are simply a proxy for negative affect. Second, the original descriptions of alexithymia involved a deficit in the ability to put emotions into words. Thus, a self-report measure may be unable to investigate this lack of awareness. Therefore, there is a need for another measure of emotion-processing deficit that is not confounded by negative affect, and efficiently detects alexithymia, whether or not the subject is aware of it. This is why we used the construct of emotional awareness, which appeared in former studies as being independent of negative affect and does not rely on the accuracy of self-reporting.

Emotional awareness was defined by Lane and Schwartz in the late 1980s as the capacity of an individual to describe his or her own feelings and another person’s emotional experience (Lane & Schwartz, 1987). Lane and Schwartz conceptualized emotional awareness as a cognitive process undergoing various structural transformations along a cognitive-developmental sequence (1987, p. 134). Their model, which accounts for individual differences in emotional awareness, stems from Piaget’s theory of cognitive development, and from the point of view of Werner and Kaplan (1963) that symbolization is a structure-building, schematizing activity (Lane & Schwartz, 1987, p. 135). The structural organization of the cognitive processes, leading to accurate empathy, undergoes five clearly differentiated levels of progressive differentiation and integration, intimately linked to the developing structure of knowledge about the internal and external world, of the ego and the ability to engage in interpersonal relationships (for a detailed description of the five levels of emotional awareness see Lane & Schwartz, 1987, pp. 137–138).

Lane and Schwartz focused on a way to measure the level of emotional awareness an individual has reached. For these authors, the degree of structural organization of emotional awareness is reflected by the verbal material individuals provide to describe their emotional experience. They pinpoint that emotional experience does not require language to be conscious, but that language helps to structure and establish concepts, and therefore increases the ability to discriminate between differentiated emotional states. From this point of view, Lane, Quinlan, Schwartz, Walker, and Zeitlan (1990) elaborated the Levels of Emotional Awareness Scale (LEAS), which is aimed at evaluating an individual’s capacity to describe not only his or her own emotional experience, but also the emotional states of others. The scoring of this instrument is based on the analysis of the verbal contents the individual provides in response to a series of 20 short stories depicting a variety of emotional situations. The discriminant validity of this instrument has confirmed that the level of emotional awareness is independent of depression and anxiety (Bydlowski et al., 2002; Lane et al., 1990).

Alexithymia was considered by Lane and Schwartz as corresponding to the lower end of the emotional awareness continuum, that is, the preconceptual level of emotion organization and regulation within their hierarchical model. Indeed, alexithymia can be viewed as a deficit in the cognitive processes involved in the representation of emotional internal and external experiences, characterized by the persistence of cognitive-affective modalities of the first levels of development, below the concrete operational level (where emotions are experienced somatically).

Previous studies (Lane, Sechrest, Riedel, Shapiro, & Kaszniai, 2000) have shown a low statistical association between LEAS and TAS-20 scores ($r = -.19, \ p < .001$). The same authors showed that the LEAS accounts for more variance in emotion recognition ability than the TAS-20 (Lane, Sechrest, & Riedel, 1998). Subjects who have high negative affect may view themselves negatively and rate themselves highly on the TAS because they have a low opinion of themselves that may not correspond to reality: these subjects may feel they have difficulties in describing their feelings, when in fact they are not really impaired in this way. Thus, a performance measure (LEAS) and a self-report measure (TAS) may access different phenomena. These findings led to the conclusion that the LEAS and the TAS are two complementary and noninterchangeable measures useful to the assessment of emotion processing.

On the grounds of these theoretical considerations, we set up a study of emotional processing in a population of patients suffering from eating disorders compared with controls, and then compared bulimics and anorexics. This study is of twofold interest. First, it proposes to measure both emotional awareness and alexithymia, which enables a better understanding of emotion-processing deficits. Second, it increases the reliability of the measures by limiting the influence of confounding factors, namely, depression and anxiety, that render difficult the identification and
verbalization of emotions. Such an examination of the emotional-processing abilities of eating disorder patients should help to understand better their cognitive-affective style.

Method

Participants

The current study involved two subject groups. Given that the LEAS applied to a French or North American population gives a $SD$ of 8.5–10.7, a sample size of 70 subjects per group was estimated to obtain a power of 80%, with an alpha value of 5%, and to show a mean LEAS score difference $\geq 4$ between the two groups (knowing that LEAS scores range from 0 to 100). This between-group difference was chosen in reference to the only study where the LEAS was used in a clinical population and which showed a mean difference of 8 points between depressed subjects and controls (Berthoz et al., 2000).

A consecutive series of patients admitted to, or consulting a psychiatrist from, the Department of Psychiatry, Institut Mutualiste Montsouris (Paris, France), were invited to participate in the study, from November 2000 to April 2001. Of 95 patients referred by psychiatrists, 8 refused to participate (i.e., a participation rate of 91.6%). The final sample comprised 70 patients diagnosed with current eating disorders. Using criteria outlined in the 4th ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994), 37 patients were diagnosed as having bulimia nervosa-purging type, 18 as having anorexia nervosa-restricting type, and 15 met DSM-IV criteria for anorexia nervosa-binge eating/purging type. All the patients were females (mean age = 19.0 years; $SD = 2.2$), 34.3% were attending high school, and 55.7% were university students. They had been ill for an average duration of 2.0 years ($SD = 1.9$), with a first episode occurring at a mean age of 16.9 years ($SD = 1.8$). One half of the patients were receiving psychotropic medication.

Patients were compared with 70 females of a similar mean age (mean age = 19.3 years; $SD = 1.9$), level of education, and socioeconomic status (SES). Almost 350 questionnaires were distributed to first-year medical students, and 45.1% were completed. All female subjects were contacted and 72 agreed to an interview with a psychiatrist or a psychologist. Of these 72 subjects, 13 did not meet the recruitment criteria, because they had a psychotic or eating disorder. Eleven subjects were recruited outside of the medical faculty and had an interview with a clinician. They were either students in other university departments or young working adults. The recruitment of controls lasted as long as the recruitment of the patients. To check that agreement to participate in the study was not intrinsically linked to the tested parameters, we compared the average scores of the controls who agreed to be interviewed by a clinician with the average scores of the controls who refused. These two groups appeared to be similar for the whole data set: depression with the Beck Depression Inventory (BDI), anxiety with the Hospital Anxiety and Depression scale (HAD), alexithymia with the TAS, and emotional awareness with the LEAS (global score, “self” and “other” subscores).

None of the comparison subjects had a past or current eating disorder. The prevalence of depressive and anxiety disorders among the controls was very close to that of the general population (Kessler et al., 1994; Lepine & Lellouch, 1993; Robins et al., 1984).

The current study was approved by the local ethics committee (Paris-Cochin). All the participants gave informed written consent and the controls received course credit for their participation. For subjects younger than 18, informed written consent was provided by a parent and verbal assent was given by the participant.

Procedure and Instruments

All the participants were first interviewed using the Mini International Neuropsychiatric Interview (MINI; Lecrubier et al., 1997; Sheenan et al., 1997). The MINI is a short diagnostic structured interview developed in France and the United States to explore 17 disorders according to DSM-IV diagnostic criteria. The MINI focuses mainly on current diagnoses and explores lifetime diagnoses where it is clinically relevant to the present. Its algorithms and question formulation are similar to those of the Composite International Diagnostic Interview (CIDI; World Health Organization, 1990).

At the end of the interview, participants were asked to complete the HAD, BID, TAS, and LEAS self-report questionnaires.

The HAD. The HAD (Zigmond & Snaith, 1983; for French validation, see Lepine, Godchau, Brun, & Lemperiere, 1985) has been used in inpatients as well as in somatic and psychiatric outpatients. The questionnaire includes 14 items. One half of the items assess depression and the others assess anxiety. For each subscale, scores range from 0 to 21. (Remark: In our statistical analysis, we only used the anxiety subscale.)

The BDI. The BDI (Beck & Beamesderfer, 1974; for French validation, see Collet & Cottraux, 1986) is the most commonly used self-report depression questionnaire. This questionnaire provides reports of depressed mood at the time of the evaluation. For each of the 13 items, ratings range from 0 to 3, according to the severity. The depression score varies from 0 to 39.
The **TAS**.  The TAS (Taylor, Ryan, & Bagby, 1985; for French translation and validation, see Loas, Fremaux, Marchand, Chaperot, & Dardennes, 1993) is a well-validated and commonly used self-report alexithymia questionnaire. Because the assessment of the paucity of fantasies, one of the core features of the construct, has been eliminated in the revised version of the TAS (i.e., TAS-20), it fails to measure alexithymia as it was originally conceptualized (Sifnios, 1996), whereas the TAS is a 26-item scale, clustered into four factors theoretically congruent with the alexithymia construct (Taylor et al., 1985). The French version of this questionnaire was found to have a stable factorial structure, high internal consistency (e.g., $\alpha = .7$), good fidelity (e.g., split-half coefficient = .6), and satisfying test-retest reliability ($R = .8$ after 1 week; .7 to 5 weeks, and .7 to 8 months; Loas et al., 1993). For the French version of the TAS, cutoff scores for the absence and presence of alexithymia are, respectively, scores $\leq 64$ and scores $\geq 73$.

The **LEAS**.  The LEAS (Lane et al., 1990; for French translation, see Berthoz et al., 2000; for French validation, see Bydlowski et al., 2002) includes 20 evocative interpersonal situations and each scene involves two persons. The scenes are constructed to elicit four types of emotion (anger, fear, happiness, and sadness), at five levels of increasing complexity. Each scene is followed by two questions: “How would you feel?” and “How would the other person feel?” Subjects are asked to write their responses to both questions. The responses are scored using specific structural criteria (see Lane et al., 1990, for a detailed description of the scoring procedure). Each scene receives separate scores for the emotion described for self and for other.

In addition, a total score is given for each scene. A mean LEAS score of 61.9 ($SD = 10.7$) was observed in a general population sample (Lane et al., 1998). LEAS scores were weakly associated with older age, male gender, lower SES, and fewer years of education (Lane et al., 1996). Studies on the LEAS psychometric properties in the general population have shown high interrater reliability (intraclass $r = .8$), satisfactory intratask homogeneity ($r = .8$ and Pearson product-moment $r = 0.9$; Lane, Kivley, Du Bois, Shamsundara, & Schwartz, 1995), and Cronbach’s $\alpha = .8$ (Lane et al., 1998). The French version of the LEAS revealed satisfactory psychometric criteria, with Cronbach’s $\alpha = .7$ (Bydlowski et al., 2002). The LEAS has been shown to correlate positively with the degree of right hemisphere dominance in the judgment of facial emotion (Lane et al., 1995), and with the ability to match verbal or nonverbal emotional stimuli with verbal or nonverbal emotional responses (Lane et al., 1998). Moreover, the LEAS correlated negatively with TAS and TAS-20 scores (Berthoz et al., 2000; Bydlowski et al., 2002; Lane et al., 1998).  

**Statistical Analyses**

Data were analyzed using the Statistical Package for Social Sciences (SPSS) data processing software (SPSS, 1999). Univariate analyses were performed using, for discrete variables, the chi-square test (and the test for linear trend when appropriate). For continuous variables, the Student’s $t$ test was used. Pearson correlation coefficients were computed between different continuous variables measuring emotional processing or status. Covariance analyses were carried out to evaluate whether the levels of emotional awareness and alexithymia differed among the different clinical subgroups, controlling for psychopathologic factors (anxiety, depression) related to the level of emotional awareness and alexithymia. Age, educational level, pharmacologic treatment, and duration of illness were also taken into account in multivariate analyses. All the tests were two tailed with a threshold of significance set to .05.

**Results**

**Group Comparisons**

The affective scores derived from the BDI, HAD, LEAS, and TAS are presented in Table 1 and the percentage of alexithymic or nonalexithymic subjects is shown in Table 2.

As expected, patients showed higher depression and anxiety scores than the controls. The LEAS global score of the patients was significantly lower than that of the controls. Moreover, patients’ self and other subscores of emotional awareness were both significantly lower than those of the controls.

Considering TAS scores as a continuous variable, patients appeared significantly more alexithymic than controls. Considering the TAS as a categorical variable, the prevalence of alexithymic subjects was significantly greater in the patient group than in the control group, and that of nonalexithymic subjects was greater in the control group, with an intermediate result for subjects neither alexithymic nor nonalexithymic (test for linear association).

Anorexic patients had a significantly lower level of emotional awareness than bulimics, but were not more alexithymic. Although restricting anorexics had much worse depression scores than purging anorexics, there was no significant difference between these two groups in terms of emotional variables (emotional awareness and alexithymia).

This set of results was confirmed using multivariate analyses, after controlling for age, level of education, and dose of psychotropic medication.

**Correlation Analyses**

In general, in the whole population, there was a trend for the TAS and LEAS total scores to be nega-
TABLE 1. Depression, anxiety, alexithymia scores, and levels of emotional awareness

<table>
<thead>
<tr>
<th></th>
<th>Controls (N = 70)</th>
<th>Patients (N = 70)</th>
<th>Bulimics (N = 37)</th>
<th>Anorexics (N = 33)</th>
<th>Anorexics Restricting Type (N = 18)</th>
<th>Anorexics Binge Eating/Purging Type (N = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>BDI</td>
<td>5.9 (5.1)</td>
<td>13.2 (7.2)**</td>
<td>12.0 (5.9)</td>
<td>14.6 (8.2)</td>
<td>10.1 (6.1)</td>
<td>19.9 (7.3)**</td>
</tr>
<tr>
<td>HAD: anxiety</td>
<td>8.2 (3.6)</td>
<td>11.0 (3.8)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global score</td>
<td>66.4 (6.0)</td>
<td>61.0 (8.8)**</td>
<td>62.9 (8.6)</td>
<td>58.8 (8.6)*</td>
<td>59.1 (7.7)</td>
<td>58.4 (9.9)</td>
</tr>
<tr>
<td>Self score</td>
<td>59.3 (5.9)</td>
<td>54.6 (9.1)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other score</td>
<td>54.0 (7.6)</td>
<td>48.6 (10.0)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAS</td>
<td>75.9 (11.3)</td>
<td>66.9 (10.9)**</td>
<td>75.5 (8.7)</td>
<td>76.4 (13.8)</td>
<td>73.2 (14.7)</td>
<td>80.3 (12.0)</td>
</tr>
</tbody>
</table>

Note: BDI = Beck Depression Inventory; HAD = Hospital Anxiety and Depression Scale; TAS = Toronto Alexithymia Scale; LEAS = Levels of Emotional Awareness Scale

*Comparison between patients and controls.
**Comparison between anorexics and bulimics.
†Comparison between anorexics restricting type and anorexics binge eating/purging type.

*p < .05. **p < .001.

TABLE 2. Percentage of alexithymic and nonalexithymic subjects

<table>
<thead>
<tr>
<th></th>
<th>Controls (N = 70) (%)</th>
<th>Patients (N = 70) (%)</th>
<th>( \chi^2 )</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS alexithymia class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexithymic</td>
<td>30.0</td>
<td>60.0</td>
<td>16.7</td>
<td>.001</td>
</tr>
<tr>
<td>Intermediate</td>
<td>30.0</td>
<td>27.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonalexithymic</td>
<td>40.0</td>
<td>12.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: TAS = Toronto Alexithymia Scale. *Chi-square test for linear trend.

TABLE 3. Correlations between level of emotional awareness, alexithymia, depression, and anxiety scores among patients and controls (Pearson’s correlation coefficients)

<table>
<thead>
<tr>
<th></th>
<th>Patient</th>
<th>Controls</th>
<th>Patient</th>
<th>Controls</th>
<th>Patient</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAS</td>
<td>-.13</td>
<td>.02</td>
<td>-.17</td>
<td>.04</td>
<td>-.23</td>
<td>.03</td>
</tr>
<tr>
<td>BDI</td>
<td>.11</td>
<td>.04</td>
<td>-.04</td>
<td>.06</td>
<td>-.1</td>
<td>-.1</td>
</tr>
<tr>
<td>Anxiety HAD</td>
<td>.05</td>
<td>.06</td>
<td>.1</td>
<td>.15</td>
<td>.6</td>
<td>.26</td>
</tr>
</tbody>
</table>

Note: TAS = Toronto Alexithymia Scale; BDI = Beck Depression Inventory; HAD = Hospital Anxiety and Depression Scale; LEAS = Levels of Emotional Awareness Scale.

*p < .01. **p < .05. ***p < .001.

were not significantly different from those of the controls, \( F (1,131) = 0.6; p = .44 \). Conversely, after controlling for anxiety, patients remained more alexithymic than controls, \( F (1,131) = 7.75; p < .01 \).

Discussion

In accordance with our hypothesis, patients suffering from eating disorders showed evidence of an emotion-processing deficit independent of affective disorders, suggested by their higher depression and anxiety scores.

In the current study, individuals with an eating disorder were characterized by a global emotion-processing deficit, with impaired ability to identify their own emotions, as well as an impairment in judging others’ emotional experience. In addition, alexithymia and the level of emotional awareness appear here as two distinct and, hence, complementary notions in evaluating emotion processing, because the TAS and LEAS scores were not correlated in the patients or in the controls. This observation

Multivariate Analyses Controlling for Depression and Anxiety

Results of the multivariate analysis showed that after controlling for depression, patients’ TAS scores...
tends to confirm the global nature of the emotion-processing deficit in eating disorders.

In our study, anorexic patients had a significantly lower level of emotional awareness than bulimic patients, but the TAS score cannot differentiate between them. It can be argued that this might simply be a byproduct of starvation-induced cognitive impairment. However, it is unlikely that this fully explains the anorexic patients’ low levels of emotional awareness. There was no correlation between TAS scores and body mass index (BMI) within the anorexic groups in Schmidt et al. (1993), and Bourke et al. (1992) noted that TAS scores were unrelated to the degree of weight loss.

In agreement with other studies, our emotional data (alexithymia, emotional awareness) do not allow us to differentiate between restricting and purging anorexics (Cochrane et al., 1993; Schmidt et al., 1993). Conversely, purging anorexics clearly were more depressed. Mastery and control, characteristics of restricting anorexics, have often been described as protective in the face of the risk of depressive collapse.

To our knowledge, this research is the first to evaluate eating disorder patients’ ability to be aware of and represent emotional experience using the LEAS. Our results are in line with those of Smith, Amner, Johnsson, and Franck (1997), who showed a marked tendency of these patients to develop alternative strategies to avoid empathizing. These strategies are not limited to the restricted use of emotional words. According to the authors, eating disorder patients have good verbal skills, but cannot use them adequately to describe their emotional experience, indicating a pronounced in capacity for emotional understanding.

The current report is also consistent with clinical descriptions of the types of affective difficulties characteristic of anorexics and bulimics. Indeed, some authors consider the deficits in the processing of the subjective experience and the perception of oneself as the most fundamental difficulties of this type of disorder (Corcos, 2000; De Groot & Rodin, 1994; Jeammet, 1997). These subjects seem to have a limited access to their emotional life and/or feel easily dominated and overwhelmed by their emotions (Bruch, 1962). Thus, the ability to take into account one’s own emotions is diminished in individuals with eating disorders, probably because body sensations cannot be related to affects, or because the perception of undifferentiated body impulses prevents understanding of how affects are elaborated. Lacking knowledge of their own emotions, these individuals are not able to represent another person’s emotional experience.

Because the capacity to differentiate one’s own and others’ emotions in a given context is associated with the ability to tolerate and manage a large number of emotional states, emotions that are not integrated remain global and undifferentiated, which leads to an incapacity to use affects to guide the selection of an adapted behavior (Krystal, 1974). These emotion-processing deficits induce intense, often uncontrolled, affective reactions. The food-related behavioral problems of anorexic and bulimic patients have been conceptualized as a consequence of the incapacity to control distressing emotions through psychic processes (Taylor, 1997a). Projection and splitting, which are typical defense mechanisms observed in these patients, may constitute an attempt to contain overwhelming states of negative affect. Abnormal eating behaviors would thus represent a way of discharging negative affects, such as anxiety and depression (Van Vreckem & Vanderheere, 1995). Cook (1991) considers that intense reactions, leading to addictive behaviors, are those distracting the subject from his/her negative affects. Food ingestion or deprivation, as well as psychoactive substance consumption, would constitute responses to experiencing such intense reactions. The frequency of substance use disorders (alcohol, drugs, psychotropic medications) associated with the increase in eating disorders supports the view that addiction is an important parameter to consider in the process of understanding emotional functioning abilities in eating disorders (Corcos et al., 2001). So does the demonstration of increased secretion of cerebral β-endorphin in patients with anorexia nervosa and bulimia nervosa (Bergh & Soderstein, 1996; Fullerton, 1986; Hawkes, 1992). Eating disorders should, therefore, be regarded as addictive behaviors, whose purpose is to control the subject’s affective inner turmoil (Jeammet, 1997).

The finding that neither level of emotional awareness scores nor alexithymia scores were correlated with the duration of illness suggests that emotional internal life impoverishment is not due to the severity of the disorder. One may wonder whether this deficit predates the occurrence of the disease, potentially favoring the development of eating disorders. This hypothesis is in line with the point of view of some authors who consider alexithymia to be a predisposing factor for addictive behaviors (Taylor, 1997a, 1997b). Due to the cross-sectional design of our study, the current results do not provide enough arguments to support this hypothesis.

Nevertheless, TAS scores were correlated with depression and anxiety scores, and the group differences in alexithymia scores disappeared after controlling for depression. Conversely, LEAS scores
were not correlated with depression and anxiety scores, which is consistent with the findings of Lane et al. (1990). Thus, whereas the TAS might also measure depression-related features, it seems that the LEAS captures a personality trait and not a secondary state generated by depression or stressful life events.

In our study, the first limitation concerns the way the participants were recruited, raising the question of the representativeness of our population. The patient group consisted of patients presenting at a department of psychiatry specialized in treating this disease. This constitutes a bias in the selection.

It is important to note the unexpectedly high percentage of alexithymic individuals among the controls. Indeed, 30% of the controls had TAS scores above the cutoff score for alexithymia standards, whereas it is documented that the prevalence of alexithymia in samples of non-ill individuals ranges from 5% to 15% (Taylor, 2000). Conversely, post-hoc analyses of the controls' depression and anxiety self-report scores were within the normal range. Thus, it seems that the control group is quite representative of the general population as it differs mainly from the patient group in the psychiatric diagnosis of an eating disorder, anxiety, or depression. During the screening interview, the investigator (S.By.) was blind to alexithymia scores (for which we had no hypothesis in this sample), and exclusion criteria were based on a past or current eating disorder, schizophrenic disorder or multiplex syndrome, and current manic disorder. Nevertheless, as expected, and despite the high prevalence of alexithymia among the controls, group comparisons revealed that eating disorder patients have marked difficulties in emotion processing. It is reasonable to speculate that this deficit would have appeared even greater relative to nonalexithymic controls.

Regarding the strong correlation between alexithymia and the negative affects, there are probably false-positive results or false-negative results in the TAS, and probably also in the LEAS. TAS false-positive results were due to the association between the alexithymia score and negative affects. TAS false-negative results were due to the anosognosia of certain alexithymic subjects concerning their difficulties in identifying and verbalizing emotions. The LEAS allows these two difficulties to be circumvented, because it is independent of depression and anxiety, and because it measures emotion processing directly by asking the subject to describe what he or she feels in a given situation. Indeed, some patients may claim emotions in the LEAS that in reality they do not feel or they may not have the energy or take time to express the entire complexity of their feelings. Therefore, not only do these two questionnaires complement each other, but if they yield analogous results this lends further support to the hypothesis of an emotion-processing deficit.

The results of the current study suggest that emotional awareness and expressiveness are important factors to consider in eating disorders. The LEAS seems to be a measure complementary to the TAS, the former being unrelated to the subject’s depressive mood but not the latter. Patients presenting with eating disorders appear to have major difficulties in representing their own emotional experience as well as that of others, which further supports clinical reports that the patients are poor at integrating and processing emotional information. Alexithymia and a low level of emotional awareness are factors that may thwart patients from seeking health care, reduce their compliance with treatment recommendations, and facilitate both the chronic nature of the disorder as well as potential for relapse or complications, as shown by certain authors (De Groot et al., 1995; Schmidt et al., 1993). The joint use of instruments evaluating various aspects of emotional functioning seems particularly relevant in helping clinicians to characterize and understand better the impaired emotional processes of these patients. Such an investigation could guide clinicians in choosing the most efficient therapeutic strategy.

Longitudinal studies, including observer-rated questionnaires (e.g., the Observer Alexithymia Questionnaire and the Hamilton Depression Rating Scale), in addition to the self-report questionnaires that we used, are required to understand further the relationships between levels of emotional awareness, alexithymia, and the clinical symptoms of eating disorder patients, and to evaluate the stability over time of the tested psychopathologic parameters (level of emotional awareness, alexithymia).

The authors thank Richard Lane for his much-valued theoretical and conceptual advice.

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