Predicting symptoms in major depression after inpatient treatment: the role of alexithymia

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ABSTRACT
Alexithymia has been considered to have a negative influence on the course of symptoms in various psychiatric disorders. Only a few studies of depressed patients have examined whether alexithymia predicts the outcome of therapeutic interventions or the course of symptoms in naturalistic settings. This prospective study investigated whether alexithymia is associated with depressive symptoms after a multimodal inpatient treatment. Forty-five inpatients suffering from acute major depression were examined in the initial phase of treatment and then again after seven weeks. Patients took part in a multimodal treatment programme comprising psychodynamic-interactional oriented individual and group therapy. The majority of patients were taking antidepressants during study participation. To assess alexithymia and depressive symptoms, the 20-item Toronto Alexithymia Scale (TAS-20), the Beck Depression Inventory II (BDI-II) and the Hamilton Depression Scale (HAMD) were administered at baseline and follow-up. When controlling for baseline depressive symptoms along with trait anxiety, high scores in the externally oriented thinking (EOT) facet of alexithymia at baseline predicted high severity of depressive symptoms at follow-up (for self-reported as well as interviewer-based scores). Inpatients suffering from major depression with a more pronounced external cognitive style might benefit less from a routine multimodal treatment approach (including psychodynamic interactional therapy, antidepressant medication, and complementary therapies). Intervention programmes might modify or account for alexithymic characteristics to improve the course of depressive symptoms in these patients.

Alexithymia is characterized by difficulties in verbalizing and recognizing feelings, and in differentiating emotional states from bodily sensations (1). Alexithymia also encompasses a cognitive style that is preferentially oriented towards external events, rather than internal experiences. The currently predominant measure of alexithymia is the well-validated 20-item Toronto Alexithymia Scale (TAS-20) (2). The TAS-20 contains subscales assessing three facets of alexithymia: difficulties in identifying feelings (DIF), difficulties in describing feelings (DDF), and externally oriented thinking (EOT). More pronounced DIF and DDF indicate an impaired capacity to differentiate emotional experiences and to communicate them to others. Individuals scoring high in EOT tend to avoid psychological introspection, are less motivated to concern themselves with emotional experiences, and prefer concrete and superficial ways of thinking.

Alexithymia has been found to be associated with several psychological conditions, such as depression (3,4), anxiety (5), and somatization (6). Cross-sectional studies as well as longitudinal studies of psychiatric patients have yielded evidence that the facets of alexithymia and depression overlap to some extent, but appear also distinct from each other (7), and that alexithymia facets remain relatively stable whereas depressive symptoms change over time (8). Hence, it has been suggested that alexithymia might be a possible vulnerability factor that predisposes to persistent negative emotional states and plays a role in the development of depression (9–11). Due to the evidence of relative stability of the construct, alexithymia can be examined as a potential predictor for the course of psychiatric symptoms in naturalistic and therapeutic settings (12). Based on personal observations, Sifneos (13) claimed that alexithymia negatively influences the outcome of psychotherapy. Psychotherapies require patients to explore and communicate emotional experiences and conflicts and understand their psychological causes. Therefore, alexithymic individuals with reduced interest in and insight into feelings and impaired communication about emotions are less likely to benefit from insight-oriented therapy approaches (14). The quality of therapeutic alliance is an important factor for success of psychotherapy (15,16). Recent findings indicate a possible adverse influence of patients’ alexithymic features on perception and acceptance on behalf of therapists (17).
of therapists mediated partially the predictive effect of alexithymia for poor group psychotherapy outcome in complicated grief. It has been argued that therapists’ negative feelings might be triggered by the patient’s repetitive talking about external observations and reduced capability to follow demands for affect expression and verbalization. Furthermore, patients’ increasing insight into maladaptive patterns concerning conflicts in relationships, and thus, enhanced self-understanding, has been shown to be an important mechanism through which psychotherapies induce changes in symptoms (18). A low willingness to elaborate on reasons for emotional problems was found to be associated with the EOT facet of alexithymia (19), which is characterized by a reduced interest in introspective thinking. Hence, different alexithymic characteristics might interfere with demands of psychotherapy to explore emotional experiences, conflicts and resulting dysfunctional social behaviours and thus lead to less benefit from treatment.

Only a few prospective studies have investigated depressed patients with respect to the influence of alexithymia on the course of depressive symptoms. In a naturalistic longitudinal setting without specific intervention, poor recovery has been reported among high alexithymic outpatients suffering from major depression compared to non-alexithymic ones (20). However, these results were not controlled for initially higher symptom severity within the alexithymic group. In a sample of depressed outpatients who successfully responded to supportive or interpretive psychotherapy with concomitant medication, high initial DIF predicted the presence of residual symptoms (21). Here, the TAS-20 subscale DIF was associated with subclinical symptoms at follow-up, measured by the Beck Depression Inventory (BDI-II). There is also evidence that alexithymic compared to non-alexithymic depressed outpatients have lower response rates when treated with antidepressant medication (22). Thus, alexithymia seems to be associated with a worse course of symptoms in depressed patients. Spek et al. (23) reported no influence of alexithymic features on the outcome of cognitive behavioural therapy in elderly individuals with subthreshold depression. However, it is noteworthy that Spek et al. (23) used the TAS-20 total score as a predictor, not subscales of the TAS-20. Alexithymia is a multidimensional construct and factor analyses confirmed that the TAS-20 assesses three relatively independent, though related, dimensions of alexithymia (24,25). Different correlation patterns of TAS-20 subscales with negative affect and objective measures of emotional abilities (26) and with implicit measures of social functioning (27) further emphasize the distinctness of alexithymia subscales. Consequently, it seems necessary to consider TAS-20 subscales separately as possible treatment predictors in prospective studies, not only the total score.

Aims

In the present prospective study severity of depressive symptoms was investigated using self-report and interviewer-based measures in a sample of inpatients suffering from major depression. Patients participated in a naturalistic multimodal treatment programme including psychodynamic interactional psychotherapy, complementary therapies, such as relaxation training, and antidepressant medication. The aim was to examine the predictive value of alexithymia and its three subscales for depressive symptoms after the inpatient treatment. Therefore, patients were examined in the initial phase of treatment and again after 7 weeks. In line with previous studies, it was hypothesized that alexithymia would be associated with more severe depressive symptoms at the end of treatment, even after controlling for initial symptom severity.

Materials and methods

Participants

Forty-five patients (30 female, 15 male) were consecutively recruited from a routine inpatient treatment programme to participate in this non-randomized naturalistic study (see Table 1 for sample characteristics). All patients underwent psychodynamic interactional psychotherapy. Diagnosis of acute major depressive disorder was determined by the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I, (28)). Twenty-nine of the depressed patients (64%) met criteria for comorbid disorders. Exclusion criteria for our study were any history of bipolar or psychotic disorders, and substance abuse or addiction within the previous 6 months. Serious suicidal intentions or suicide attempts were general contraindications for study participation.

Inpatient treatment programme

The therapeutic setting included two individual and three group therapy sessions per week. Self-observations, insights to one’s emotional conflicts and the communication of emotions to therapists and members of the therapy group were important aspects of the programme. Additionally, patients received body, art, and music therapy and relaxation training, such as progressive muscle relaxation, autogenic training, and yoga. When indicated, patients received concomitant pharmacological treatment. Thirty-two patients (71%) were taking antidepressant medication at the first test session, two were additionally treated with benzodiazepines. At the second test session, 33 patients were treated with antidepressants, whereas no patient received benzodiazepines. All patients included remained in the inpatient treatment programme for the duration of the testing period.

Table 1. Demographic, questionnaire and clinical sample characteristics.

| Variable                        | Baseline mean (SD) | Follow-up mean (SD) | p     |
|---------------------------------|--------------------|---------------------|-------|
| Age                             | 34.04 (9.48)       | 34.05 (9.62)        |       |
| Education years                 | 14.31 (1.82)       | 14.28 (1.87)        |       |
| Illness duration of current episode in months since symptom onset | 8.00 (13.13)       | 7.75 (12.82)        |       |
| Number of episodes              | 2.95 (2.20)        | 2.75 (2.10)         |       |
| Lifetime hospitalization in weeks | 5.62 (8.52)       | 5.85 (8.20)         |       |
| STAI-T                          | 61.87 (8.93)       | 62.00 (8.91)        |       |
| BDI-II                          | 30.62 (9.52)       | 30.50 (9.41)        |       |
| HAMD                            | 14.44 (3.92)       | 14.29 (3.82)        |       |
| TAS-20 Total                    | 53.76 (11.33)      | 53.48 (11.31)       |       |
| TAS-20 DIF                      | 20.67 (5.03)       | 20.62 (5.02)        |       |
| TAS-20 DDF                      | 15.09 (4.36)       | 15.05 (4.32)        |       |
| Number of episodes              | 18.00 (4.63)       | 18.00 (4.63)        |       |

*STAI-T: State-Trait Anxiety Inventory –Trait version; BDI: Beck Depression Inventory; HAMD: Hamilton Depression Scale; TAS-20: 20-item Toronto Alexithymia Scale; DIF: difficulties identifying feelings; DDF: difficulties describing feelings; EOT: externally oriented thinking; NS: not significant.*
Procedure and psychometric measures

The first test session of the study (baseline) was conducted approximately 2 weeks after admission (mean = 2.30 weeks, SD = 0.81 weeks). The second test session (follow-up) took place on average after 7 weeks of therapy (mean = 6.75 weeks, SD = 0.68 weeks).

In both test sessions, self-reported severity of depressive symptoms was assessed with the German version (29) of the Beck Depression Inventory II (BDI-II). As a second measure of symptom severity, the German version (30) of the interview-based Hamilton Depression Scale (HAMD) was administered. The degree of alexithymia was determined by the German version (31) of the 20-item Toronto Alexithymia Scale (TAS-20), a well-validated self-report questionnaire consisting of three subscales: DIF, DDF, and externally oriented thinking (EOT). At baseline, 33.3% of the patients (n = 15) were classified as high alexithymic (TAS-20 total > 61) (32). In the general population, a prevalence rate of approximately 10% has been reported for high alexithymia (3,33). However, the average degree of alexithymia in the present sample was comparable to that of other studies investigating patients with major depression (4,34). To measure patients’ anxiety level, the German trait version (35) of the State-Trait Anxiety Inventory (STAI) was administered in the first test session. Study participants received a financial compensation after completion of all tasks.

Statistical analyses

First, we computed Pearson product-moment correlations to examine associations between baseline alexithymia (TAS-20 total score and subscale scores) and depressive symptom severity at baseline and follow-up as assessed by BDI-II and HAMD. Second, separate two-stage hierarchical regression analyses were calculated. Follow-up BDI-II and HAMD scores were defined as outcome criteria and thus were used as dependent variables, each separately. This method was chosen to control for potential modulatory effects of baseline depressive symptom severity, anxiety levels, age, gender, and medication status on the relationship between alexithymia and follow-up depressive symptoms. Therefore, scores of baseline BDI-II, HAMD, and STAI, as well as age, gender and medication status (0 = not medicated; 1 = medicated) were entered as predictors in the first step of the regression models to control for their possible influence on follow-up depressive symptoms. In a second step of the hierarchical regression analyses, baseline TAS-20 subscales or total scale were entered as predictors of interest. Hierarchical regression models were calculated separately for TAS-20 total scale and each subscale.

Finally, absolute changes in depressive symptoms and alexithymia over time were tested using the paired t-test. Effect sizes of significant changes were estimated using Cohen’s d. Relative stability (test–retest reliability) of alexithymia was calculated using Pearson product-moment correlations between baseline and follow-up. However, for three patients TAS-20 data were missing at follow-up; thus, only 42 patients were included in the latter analyses.

Ethical approval

This study was approved by the local ethics committee of the medical school of the university. After a detailed explanation of the study, written informed consent was obtained from all patients.

Results

Relationships between baseline alexithymia and depression at baseline

Table 2 presents correlations between baseline alexithymia and depressive symptoms at baseline. Baseline BDI-II was significantly correlated with TAS-20-DIF (p < 0.05) and TAS-20-DDF (p < 0.05) and tended to correlate with TAS-20-total score (p = 0.05). At baseline, there were no significant correlations between HAMD depression scores and TAS-20 scales, with exception of marginally significant associations with the EOT subscale (p = 0.06) and total score (p = 0.07). The results suggest a moderate relationship between alexithymia and severity of depressive symptoms at baseline, especially for self-reported depression. Intercorelations among all alexithymia and depression scales at baseline and follow-up are available in the supplementary data.

Change of depressive symptoms and alexithymia over time

Table 1 shows mean scores and standard deviations for the alexithymia and depression scales at baseline and follow-up. BDI-II and HAMD scores were significantly reduced at follow-up (t(44) = 7.18; p < 0.01; Cohen’s d = 1.07 and t(44) = 6.60; p < 0.01; Cohen’s d = 0.98, respectively), whereas TAS-20 total score and subscales did not change significantly over time (all ps > 0.14). Thus, while depressive symptomatology improved, alexithymia scores remained stable. A moderate relative stability of alexithymia total score and subs facets was confirmed by significant correlations between baseline and follow-up (for the total score: r = 0.68; p < 0.01; DIF: r = 0.65; p < 0.01; DDF: r = 0.70; p < 0.01; EOT: r = 0.61, p < 0.01).

Predictive value of alexithymia for depressive symptoms at follow-up

Significant correlations were observed between TAS-20-EOT and follow-up depressive symptoms measured with BDI-II and HAMD (Table 2). High alexithymia EOT scores at baseline

| Baseline | Follow-up |
|----------|-----------|
| BDI-II   | HAMD      | BDI-II  | HAMD      |
| TAS-20 total | 0.29  | 0.27  | 0.32* | 0.28  |
| TAS-20 DIF  | 0.30*  | 0.17  | 0.22  | 0.14  |
| TAS-20 DDF  | 0.35*  | 0.21  | 0.19  | 0.15  |
| TAS-20 EOT  | 0.06  | 0.28  | 0.37* | 0.40**|

*p < 0.05 two-tailed; **p < 0.01 two-tailed.

TAS-20: 20-item Toronto Alexithymia Scale; DIF: difficulties identifying feelings; DDF: difficulties describing feelings; EOT: externally oriented thinking; BDI: Beck Depression Inventory; HAMD: Hamilton Depression Scale.
were related to high self-reported and interviewer-assessed severity of depressive symptoms at follow-up. Furthermore, results indicate an association between TAS-20 total score and self-reported depressive symptoms (BDI-II) at follow-up. The correlation between baseline TAS-20 total score and follow-up HAMD just failed to reach statistical significance \((p = 0.06)\). TAS-20-DIF and TAS-20-DDF subscales were not found to be related to self-rated or interviewer-rated depression severity at follow-up.

Hierarchical regression analyses with follow-up BDI-II as a dependent variable yielded the following results. In the first step, variance in follow-up BDI-II was significantly explained by baseline BDI-II \((p < 0.05)\), \(R^2 = 0.23\); \(F(6,44) = 1.92, p > 0.05\); see Table 3. Thus, severity of self-rated depressive symptoms at the initial phase of the therapy predicted self-rated symptom severity at follow-up. No other predictor of the first step reached significance. Entering the TAS-20-EOT subscale in the second step did significantly increase the predictive value of the model \((\Delta R^2 = 0.10, p < 0.05; F(7,44) = 2.63, p < 0.05)\). Hence, baseline TAS-20-EOT remained a significant predictor of follow-up BDI-II, even after accounting for the effect of initial symptomatology, age, gender, and medication status.

Entering TAS-20-DIF, TAS-20-DDF, or total score in the second step of the model did not improve the predictive power \((\Delta R^2 = 0.00, p = 0.67; F(7,44) = 1.64, p > 0.05\) for DIF; \(\Delta R^2 = 0.00, p = 0.91; F(7,44) = 1.60, p > 0.05\) for DDF; \(\Delta R^2 = 0.03, p = 0.27; F(7,44) = 1.84, p > 0.05\) for total score).

Hierarchical regression analyses with follow-up HAMD as dependent variable yielded a similar pattern of results. In the first step only baseline HAMD contributed significantly to the regression model \((p = 0.01)\), \(R^2 = 0.17; F(6,44) = 1.32, p > 0.05\), see Table 3. Thus, baseline depressive symptoms rated by an interviewer explained variance in follow-up symptom severity. Including TAS-20-EOT in the second step, the amount of explained variance in HAMD was significantly increased \((\Delta R^2 = 0.11, p < 0.05; F(7,44) = 2.06, p > 0.05)\). Again, including TAS-20-DIF, TAS-20-DDF, or total score in the second step did not enhance the explained variance in follow-up HAMD.

**Table 3. Hierarchical regression analyses with follow-up BDI-II and HAMD as dependent variables.**

|                      | Follow-up BDI-II | Follow-up HAMD |
|----------------------|------------------|----------------|
| \(\beta\)            | \(R^2\)          | \(\Delta R^2\) | \(\beta\)            | \(R^2\)          | \(\Delta R^2\) |
| Step 1               | \(0.23^*\)       | \(0.23^*\)     | \(0.17\)            | \(0.17\)         |
| Baseline BDI-II      | 0.37*            | 0.01           | Baseline HAMD        | 0.21             | 0.40*           |
| Baseline HAMD        | 0.05             | 0.09           | STAI-T               | -0.07            | 0.04            |
| Age                  | -0.07            | 0.04           | Gender               | 0.04             | 0.06            |
| Medication status    | -0.04            | -0.09          | Step 2               | \(0.33\)        | \(0.10^*\)      |
| Step 2               | \(0.18\)         | \(0.21\)       | Step 2               | \(0.39^*\)       | \(0.11^*\)      |
| Step 2               | \(0.02\)         | \(0.03\)       | Step 2               | 0.18             | 0.00            |
| Step 2               | 0.02             | 0.03           | Step 2               | 0.18             | 0.01            |
| Step 2               | 0.18             | 0.21           | Step 2               | 0.21             | 0.03            |

*For \(p < 0.05\).

BDI: Beck Depression Inventory; HAMD: Hamilton Depression Scale; STAI-T: State-Trait Anxiety Inventory trait version; TAS-20: 20-Item Toronto Alexithymia Scale; EOT: externally oriented thinking; DIF: difficulties identifying feelings; DDF: difficulties describing feelings.

In sum, when controlling for levels of baseline depressive and anxiety symptoms, as well as age, gender, and medication status, the alexithymia facet of EOT at baseline predicted significantly self-reported and interviewer-rated depressive symptoms after 7 weeks of an inpatient treatment programme.

**Discussion**

The primary aim of the present study was to investigate the predictive value of alexithymia and its facets for depressive symptoms after inpatient treatment in individuals suffering from major depression. Therefore, a sample of inpatients was examined while undergoing a routine multimodal inpatient treatment programme. After seven weeks of psychodynamic interactional psychotherapy combined with pharmacological treatment and complementary therapies, depressive symptoms decreased substantially, whereas alexithymia scores remained stable.

According to our results, EOT might have a negative influence on the course of depression. High externally oriented thinking in the initial phase of treatment was predictive of more severe depressive symptoms after 7 weeks of multimodal inpatient treatment. A more pronounced practically oriented thinking and lack of interest in intrapsychic problems appear to hinder gaining benefits from our inpatient treatment programme. In contrast, a reduced ability to identify, differentiate and describe feelings (DIF and DDF) does not predict depressive symptoms after the therapy programme. Even after controlling for possible confounding effects of baseline depressive and anxiety symptoms, age, gender and medication status, the proportion of additionally explained variance in follow-up depressive symptoms due to baseline EOT remains significant. Thus, our hypothesis regarding a potential negative impact of alexithymia on the outcome of a multimodal inpatient treatment was confirmed for EOT, but not DIF and DDF. It has been argued that more objective measures, such as interviews, might be more sensitive to assess alexithymia (36). In psychosomatic patients it has been observed that TAS-EOT is more closely related to objective measures of alexithymia than DIF and DDF (26). By using multimodal methods to assess alexithymia and related constructs, Lumley et al. (36) emphasized that TAS-EOT constitutes a core feature of alexithymia and emotional abilities. Items of the DIF and DDF scales are mainly negative in their affective value and describe deficits and problems (e.g. “I don’t know what is going on inside me” or “It is difficult for me to find the right words for my feelings”). The DDF and DIF subscales have been criticized for being sensitive to self-critical response biases, to perfectionism, and to mood-congruent memory biases when judging one’s emotional abilities (10,37). Thus, depressed patients might obtain higher DIF and DDF scores, not only due to stronger alexithymic characteristics, but because of a possible disposition to retrieve rather negative self-related knowledge from...
memory and to agree to the deficit-oriented formulations of the DIF and DDF items. On the other hand, items of the EOT scale describe mainly preferences and habits (e.g. “I prefer talking to people about their daily activities rather than their feelings”) and should be less prone to negative response biases (10).

Results of our correlation analyses at baseline are in line with previous observations in general and clinical populations that DIF and DDF, but not EOT, are moderately related to depression (38–40). The lack of an association between EOT and baseline depression is a possible explanation why inserting baseline depression as predictors in our regression model did not change the predictive value of EOT. Our findings may raise the question why EOT showed significant associations with depressive symptoms at follow-up (prospectively), but not at baseline (cross-sectionally). However, these results are not entirely surprising against the background of previous studies revealing significant predictors of treatment outcome (e.g. follow-up depression), which were not related to initial symptom severity (41–43). Luminet (44) explicated that a higher degree of shared variance between baseline depression and DIF and DDF reduces the capability of these alexithymia facets to predict future depressive symptoms. Several researchers claimed that TAS-EOT might be a more accurate and interesting indicator of the alexithymia construct than TAS-DIF and TAS-DDF in clinical populations (26,39,45). Our prospective study confirmed the importance of EOT as an alexithymic feature and highlighted its potential role in predicting the course of psychiatric symptoms.

Interpersonal interactions within the naturalistic setting of an inpatient treatment provide the opportunity to learn from others about feelings, their regulation and influence on interpersonal behaviour. One might speculate that empathy and the ability to understand facial affect from others are relevant skills in this learning process. However, for individuals reporting external thinking style and lower motivation to explore one’s own feelings (EOT), impairments in recognizing emotions from others (46) and a low ability to take over perspectives of others (47) have been documented. In a previous study, members of a group therapy judged patients high in EOT and DDF to display reduced facial expressions of positive affect (48). Interestingly, this diminished positive affect expression was shown to elicit negative reactions in therapists. Expressing facial emotions and recognizing mental states of others are thought to play a crucial role for successful social interactions and interpersonal relationships (49,50). Hence, impairments in interpersonal skills might lead to difficulties in interacting with the social environment and hinder patients scoring high in EOT to gain benefits from the supportive environment of an inpatient treatment programme. When coping with depressive symptoms, high EOT and DDF were related to a reduced probability for communicating problems to significant others (19). It has also been shown that individuals scoring high in EOT and DIF tend to distance themselves from others and to withdraw from sharing emotional experiences (51). The authors proposed that individuals with alexithymic characteristics might fail to take advantage of social interactions as a strategy to regulate emotions. The described lack of disclosure and reduced emotional exchange within relationships in high EOT might also hinder the establishment of therapeutic alliances or interpersonal relationships and lead to a reduced responsiveness to our inpatient treatment programme. However, this explanation is tentative and requires further empirical investigation.

In healthy samples as well as in clinical populations, EOT was found to be negatively correlated with “Openness to experience”, a basic dimension of the five factor personality model (52–54). It has been shown that an individual’s openness to new experiences, which subsumes aesthetic sensitivity, intellectual curiosity, and fantasy activity (55), has an impact on the treatment response to psychotherapy (56). Hence, openness might play a mediating role in the prediction of psychiatric symptoms after treatment through EOT, and future studies should take its influence into account.

There is evidence that alexithymia facets may not affect the outcome of cognitive and behavioural therapeutic interventions (combined with pharmacological treatment) (57,58). Compared to psychodynamic psychotherapy, that requires patients to reflect on their emotions, behavioural approaches do not primarily focus on insight, are more concrete and structured, use clear therapeutic instructions and therefore may encounter the deficits of alexithymics in communicating emotions, their external focus and reduced interest in feelings (59). Given that we did not include a depressed control group that received no or an alternative treatment (such as cognitive behaviour therapy), we could not conclude whether alexithymia differentially predicts, and thus moderates, the outcome of diverse therapies or changes in symptom course during non-treatment. Future studies are needed to investigate whether EOT predicts changes in depression irrespective of type of treatment, or whether cognitive behavioural therapies are more successful with alexithymic patients by directly comparing different psychotherapeutic approaches.

The routine multimodal treatment programme in our department enclosed several therapy components. Based on our data, it remains unclear which treatment component (group or individual psychotherapy, antidepressant medication, or complementary therapies) might become less effective by an externally oriented thinking style. Patients’ experiences with inpatient treatment could be quite heterogeneous. To increase the understanding of how EOT affects ongoing processes in an inpatient treatment setting, a record of further relevant variables such as patients’ satisfaction or experiences with single therapy components, or their ability to accustom themselves to the unfamiliar treatment environment might be promising. Furthermore, future studies should consider more specific or pure treatment settings to investigate the impact of alexithymia on symptom course. The majority of our patients were taking antidepressant medication. Dosage and treatment duration were documented, but medication levels in terms of antidepressant potency according to Sackeim (60) could not be coded. The rating assignments do not specify several recently released antidepressants. Some further limitations of the present study must be addressed. Our results cannot be generalized to all psychiatric conditions, as we focused exclusively on patients...
suffering from major depression. However, several of our depressed patients had also comorbid anxiety, somatoform, and/or eating disorders. Diagnoses of comorbid anxiety are common in clinical practice, given that anxiety disorders are frequently coexisting with depression (61). In addition, follow-up examinations were administered after approximately seven weeks of inpatient treatment. A longer period of follow-up investigation could examine potential long-term effects of alexithymic characteristics on the course of symptoms. Finally, we did not use interviews (e.g. the Toronto Structured Interview for Alexithymia (62)) to assess alexithymia. It has been criticized that individuals with high degrees of alexithymia, who lack awareness of their own emotional states, might be unable to make valid judgments about their own deficits in self-reports (63). However, there is also evidence that TAS-20 shows satisfactory correlations with objective measures of alexithymia, particularly in psychiatric patients (62). It is conceivable that high alexithymic individuals frequently get negative feedback from the social environment about their deficits in perceiving, feeling, and communicating emotions, and their superficial ways of thinking and talking. Thus, these individuals might be well aware of their own inabilities due to the integration of environmental feedback into their self-concept. Hence, it has to be clarified whether the administration of objective measures could increase the predictive effect of alexithymia on the clinical course of psychiatric disorders. When defining outcome variables of inpatient treatment, future research might also administer other objective measures of depression severity (e.g. heart rate during sleep (64)), or measures of depression-related traits (e.g. negative automatic thoughts and dysfunctional attitudes (65)).

Conclusions

Our results suggest that depressed inpatients with a more pronounced external cognitive style seem to benefit less from a treatment programme combining psychodynamic inter- actional therapy, antidepressant medication, and complementary therapies. The intended modification of alexithymic characteristics through psychological interventions might be promising to improve treatment response in these inpatients. Further studies are needed to examine the mechanisms through which an externally oriented thinking style negatively influences the course of depressive symptoms during a naturalistic multimodal treatment programme, whether alexithymia facets are moderators of treatment success of different therapeutic approaches, and whether modified therapies might be better-suited to depressed patients with pronounced alexithymic characteristics.

Disclosure statement

The authors declare that they have no competing interests. The authors alone are responsible for the content and writing of the paper.

Funding information

This publication was supported by LIFE, Leipzig Research Centre for Civilization Diseases, Leipzig University. The project was funded by means of the European Social Fund and the Free State of Saxony.

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