Interpersonal problems and cognitive characteristics of interpersonal representations in alexithymia: a study using a self-report and interview-based measure of alexithymia.

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Abstract

In this study associations between alexithymia, interpersonal problems and cognitive-structural aspects of internal interpersonal representations were examined. Alexithymia was measured using the Structured Interview for Alexithymia (TSIA) and the Toronto Alexithymia Scale (TAS-20). To measure interpersonal problems, dominance and affiliation dimensions scores of the Inventory of Interpersonal Problems (IIP-64) were used and cognitive-structural characteristics of interpersonal representations were measured using the Social Cognition and Object Relations Scale (SCORS). As hypothesized, alexithymia was related to cold and withdrawn, but not to dominant or submissive, interpersonal functioning. In terms of the SCORS, alexithymia was negatively related to complexity of interpersonal representations, both in TAT and in interview narratives, indicating a link between alexithymia and mentalization. However, alexithymia was only related to the dimension of social causality when this dimension was scored on TAT narratives. Overall the TSIA provides the most consistent and stable results after controlling for negative affectivity.

Alexithymia; TSIA; interpersonal problems; interpersonal representations; mentalization

Introduction

The concept of alexithymia was launched by Peter Sifneos to describe difficulties in psychically experiencing and verbalizing affects, problems he mainly encountered in psychosomatic patients (1973). Nemiah and Sifneos distinguished two main features of these patients' psychic life. The first is "a striking incapacity of the verbal description and expression of feelings" and the second is that these patients' associations and thoughts refer to "external events and actions rather than to internal fantasies" (Nemiah and Sifneos, 1970, p. 159). This last feature tallies with the concept *pensée opératoire,* developed by Marty and de M'Uzan (1963), which refers to a conscious mode of thinking that lacks noticeable fantasmatic activity and is limited to the actual and the factual. Next to these early clinical observations, several authors have noted other characteristics of alexithymic patients' mental life, including detached and withdrawn interpersonal functioning. Alexithymic patients have been described as dull, cold, lifeless, and colorless and the therapeutic relation has been described as sterile and non-productive (Apfel and Sifneos, 1979; Nemiah and Sifneos, 1970). Marty and colleagues (1963) used the term 'blank relationship' to characterize the lack of psychical investment in the therapeutic relationship as well as in their interpersonal life in general.

Based on Nemiah and Sifneos' conceptualization of alexithymia, more recently Taylor and colleagues formulated a definition of alexithymia that consists of four interrelated facets: (1) difficulty identifying feelings and distinguishing between feelings and the bodily sensations of emotional arousal; (2) difficulty describing feelings to other people; (3) restricted imaginal processes, as evidenced by a paucity of fantasies; and (4) a stimulus-bound, externally orientated cognitive style (Taylor et al., 1997, p. 29). For Taylor and colleagues (2007) alexithymia is indicative of deficits both in the cognitive-experiential

domain of emotion response systems and in the interpersonal regulation of emotions. In the last decades, several empirical studies have confirmed that a detached interpersonal functioning is characteristic for patients suffering from alexithymia and that their interpersonal relationships are marked by discomfort and avoidance (Vanheule et al., 2010a). Alexithymia has been consistently related to cold interpersonal functioning (Spitzer et al., 2005; Vanheule et al., 2007; Vanheule, 2010b; Weinryb et al., 1996). Some studies have also observed an association with non-assertive interpersonal functioning (Spitzer et al., 2005; Vanheule et al., 2007; Vanheule et al., 2010b). Moreover, when controlling for general psychopathology, Spitzer and colleagues (2005) found associations with a socially avoidant, vindicative and exploitable interpersonal style. Apart from the link between alexithymia and cold interpersonal functioning, it is unclear as to whether associations with other interpersonal characteristics are robust. Furthermore, recent studies show that alexithymia is related to dissatisfaction in intimate relations and to social, family and romantic loneliness, partly mediated by interpersonal distrust (Humphreys et al., 2009; Qualter et al., 2009).

Despite the growing interest in the link between alexithymia and aspects of interpersonal functioning, few studies have investigated this relation with non-self report measures. Any existing studies indicate that alexithymia is related to less mobile phone use, mediated by having few relationships and lacking close friends (Mattila et al., 2010) and to a lower degree of complexity of communication words, but not to the frequency of communication words used (Meganck et al., 2009).

While several studies have investigated the relationship between alexithymia and interpersonal problems, few studies have investigated the link with cognitive characteristics of internal interpersonal representations. Although different theoretical schools discuss these internal interpersonal representations in different terms, they all emphasize their importance for interpersonal functioning. Attachment theorists usually refer to them in terms of internal

models and attachment styles (Bowlby, 1990), while social cognition researchers discuss these in terms of belief systems or schemas concerning the self and interactions with others (Westen, 1991). Object relation theorists, in their turn, consider these mental representations in terms of object relations, and propose that their content, structure, and affective quality mediate interpersonal functioning (Huprich and Greenberg, 2003). Not withstanding the paucity of empirical research, several authors have underscored the importance of studying internal interpersonal representations, indicating that these make up a basis for affect regulation (Fonagy et al., 2002; Mitrani, 1995; Verhaeghe et al., 2007). Several authors discuss the interplay between internal representations of self and others, affect regulation and interpersonal functioning (Vanheule et al., 2010a; Verhaeghe et al., 2007), suggesting that only by interacting with others, especially in close attachment relationships, representations are acquired which enable an individual to master somatic arousal. In that process a set of beliefs and expectations with regard to others is created.

Several studies also indicate that alexithymia is related to lower levels of empathy, the cognitive capacity of perspective taking, and the affective capacity of empathic concern (Grynberg et al., 2010; Guttman and Laporte, 2002; Moriguchi et al., 2006; Moriguchi et al., 2007). Furthermore, the study of Moriguchi and colleagues (2006) indicates that alexithymic patients perform worse on a theory of mind task, and Meins and colleagues (2008) found that persons scoring high for alexithymia are less mindful and use fewer descriptions of other people's behavior in terms of internal states.

However, detailed research on internal interpersonal representations that are characteristically linked to alexithymia is limited (Niec and Russ, 2002). In this paper we address this issue by using the theoretical framework developed around the Social Cognition and Object Relations Scale (SCORS; Westen, 1990). The SCORS combines insights from object relations theory and social cognition research, and provides a scoring system to assess

four interrelated but distinct dimensions of internal representations of self and other: two structural dimensions, named C*omplexity of representations* and S*ocial causality*, and two affective dimensions, named *Emotional investment and morals,* and *Affect tone* (Westen, 1990). The structural dimensions measure the degree of differentiation, articulation and complexity of self/other representations. The more affective dimensions refer to feelings, wishes or fears as they relate to interpersonal relationships (Porcerelli et al., 2006). In this study however, we focus only on the cognitive-structural dimensions as a previous study has found very low Cronbach alpha's and Mean Interitem Correlations for the affective subscales, indicating a low internal consistency (Inslegers et al., under review). Two versions of the SCORS have been developed: the first is scored on Thematic Apperception Test (TAT) narratives (Westen, 1990) and the second on other narrative materials, like interviews and psychotherapy transcripts (Westen et al., 1990). Both versions can be scored reliably, however, research indicates that the convergence between the two versions is limited and varies over the dimensions (Barends et al., 1990; Inslegers et al., under review; Leigh et al., 1992). To our knowledge, no other study has examined the relation between alexithymia and internal interpersonal representations, as measured by SCORS.

In this paper we study interpersonal problems and cognitive-structural characteristics of interpersonal representations in alexithymia, using the following strategy:

First, alexithymia is assessed in a multi-method way, as recommended by Taylor and colleagues (1997), using both an interview (Toronto Structured Interview for Alexithymia, TSIA; Bagby et al., 2006) and a self-report questionnaire (20-item Toronto Alexithymia Scale, TAS-20; TAS-20; Bagby et al., 1994). Given the fact that there are doubts about whether persons with alexithymia are capable of judging their own emotional competences

(Waller and Scheidt, 2004), it is advisable to use not only self-report measures, but also expert-rated measures.

Second, to measure interpersonal problems we use two dimensional scores (dominance and affiliation) of the Inventory of Interpersonal Problems (IIP-64; Horowitz et al., 2000). We hypothesize that alexithymia is related to cold and withdrawn interpersonal functioning, but not with dominance.

Third, to assess characteristics of internal interpersonal representations we use the SCORS coding system in performance based test material (Thematic Apperception Test, TAT; Murray, 1943) as well as in transcripts of a clinical interview (Clinical Diagnostic Interview, CDI; Westen, 2006). As discussed by Inslegers and colleagues (under review), we thereby assume that TAT and interview-based versions of the SCORS might measure different aspects of social cognition and might be sensitive to other personality characteristics. As also indicated by Meyer (2001), the TAT has standardized instructions and asks for free responses in relation to vague clues. With such a format one might activate implicit schematic representations about others and tap into a general proclivity for social cognition. Clinical interview data, on the other hand, which starts from open questions about actual events and experiences with significant others might bring out information about the patients' understanding of themselves and their interactions with specific others (Inslegers et al., under review).

Theory of mind research on the link between alexithymia and aspects of empathy has found that alexithymia is related to lower levels of perspective taking and mind-mindedness (e.g. Grynberg et al., 2010; Meins et al., 2008). Following on from this, we hypothesize that alexithymia will be related to interpersonal representations which are less complex and are marked by a lack of social insight. This will probably be more apparent in the TAT narratives since standardized instructions are given that probe spontaneous narrative elaboration of

social cues. The CDI more strongly focuses on autobiographic memories and representations and may be less indicative of the proclivity for cognitive elaboration, but might provide more information about cognitive elaboration as related to specific interpersonal contexts.

More specifically, we will examine the relation between alexithymia and self-reported interpersonal problems in our first hypothesis and in the second hypothesis we will investigate the relation between alexithymia and problems with mentalization.

- We expect to observe significant correlations between scores on the TAS-20 and the TSIA and the IIP-64 affiliation score; on the contrary we expect no significant correlations between scores on the TAS-20 and the TSIA and the IIP-64 dominance score.
- We expect a significant, negative correlation between scores on the TAS-20 and the TSIA and scores on the SCORS Complexity and Social Causality dimensions, indicating a link between alexithymia and problems with aspects of mentalization. However, as indicated above, we expect that the observed correlation will be larger for the SCORS Complexity and Social Causality dimensions when these are scored on TAT narratives compared to when they are scored on CDI narratives.

As previous studies have documented the link between self-reported alexithymia and negative affectivity (e.g. Lumley, 2000), we controlled for negative affectivity in all analyses to ensure that correlations between alexithymia and problems in the interpersonal domain cannot be explained by negative affectivity.

METHOD

2.1. Participants

The sample consists of 74 patients (64% female; Mean age of 39.41, SD = 12.48) from psychiatric hospitals in the Dutch speaking part of Belgium. In terms of education level, 8% attended elementary school only, 15% completed a first cycle (3 years) and 62% a second cycle (6 years) in high school, 11% obtained a non-academic degree and 4% an academic degree in higher education. All participants met DSM-IV Axis I criteria for the following diagnoses: mood disorders (70.3%), anxiety disorders (18.9%), schizo-affective disorders (2.7%), adjustment disorders (2.7%), somatoform disorders (1.4%), psychotic disorder not otherwise specified (1.4%), alcohol dependence (1.4%) and eating disorders (1.4%). On Axis-II 31% of the patients had received one or two (10.8%) diagnoses. Diagnosis was deferred for 24.3% of the patients and 44.6% did not receive any diagnosis. Diagnosed personality disorders were avoidant PD (11.3%), obsessive compulsive PD (7.5%), borderline PD (6.3%), depressive PD (5%), passive-aggressive PD (3.7%), PD not otherwise specified (3.7%), paranoid PD (1.2%) and schizotypic PD (1.2%).

2.2. Instruments

The Toronto Structured Interview for Alexithymia (TSIA; Bagby et al., 2006) consists of 24 questions addressing the four core dimensions of alexithymia. Each question is scored on a three-point Likert scale ranging from 0 to 2. Higher scores indicate a higher degree of alexithymia and total scores range from 0 to 48. For each question there is a set of probes to elicit information in order to score the item accurately, which are also keyed to the thematic content of the item. The Dutch translation of the TSIA was obtained by means of a translation and back-translation procedure in consultation with R.M. Bagby, one of the original authors

of the instrument (F. De Fruyt, personal communication). The reliability and factorial validity of the instrument are good (Bagby et al., 2006; Inslegers et al., under review).

The 20-item Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) consists of three subscales: difficulty identifying feelings (DIF), difficulty describing feelings (DDF) and externally oriented thinking (EOT). Each item is rated on a five-point Likert scale. Total scores range from 20 to 100, with higher scores indicating greater alexithymia. The Dutch translation of the TAS-20 was obtained by means of a translation and back-translation procedure and the final version was established in consultation with R.M. Bagby, one of the original authors of the instrument (Kooiman et al., 2002). Psychometric properties of the Dutch version of the TAS-20 were previously studied in a clinical and non-clinical sample and can be considered adequate (Meganck et al., 2008).

The Thematic Apperception Test (TAT; Murray, 1943) is a projective test. In our study six pictures are used (Cards 1, 3BM, 4, 6BM, and 13MF). Standard clinical instructions were given to participants to tell a story about what is happening, what led to the event, how the story will end and what characters in the picture think and feel.

The Clinical Diagnostic Interview (CDI; Westen, 2006) was developed to provide a comprehensive assessment of personality, pathology and more particularly affective experiences and interpersonal dynamics and can be used for research as well as for clinical purposes. In this approximately two-hour long interview a range of questions tap into the patient's complaints, symptoms and life-history. In our study the CDI was administered and audio-recorded and afterwards transcribed verbatim.

The Social Cognition and Object Relations Scale (SCORS; Westen, 1990, Westen et al., 1990) is a multidimensional measure for the clinical assessment of object relations. For scoring the TAT narratives, we used the 7-point rating scale with lower scores (e.g., 1 or 2) indicating greater pathology and higher scores (e.g., 6 or 7) indicating greater psychological

health. For coding the interpersonal episodes of the CDI, we followed the manual for coding interview data (Westen et al., 1990) by using a 5-point rating scale for *Social Causality* and a a 7-point rating scale for *Complexity*. In this study, we assess the following two dimensions of the SCORS: a) *Complexity of representations of people (Complexity)*, which refers to the richness and differentiation of an individual's representations of self and others, i.e., the extent to which self and others are seen as psychological beings with stable multidimensional dispositions; b) *Understanding of social causality* (S*ocial Causality)*, which refers to the extent to which attributions of the causes of people's actions, thoughts, and feelings are logical, complex, and psychologically minded.

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) was developed to briefly measure positive and negative affect. The scale consists of 10 descriptive terms for positive affect (PA) and 10 for negative affect (NA). Subjects are asked to rate each item on a 5-point Likert scale. Total scores range from 10 to 50 for PA and NA. Only NA was used in this study.

The Inventory of Interpersonal Problems (IIP; Horowitz et al., 2000; Vanheule et al., 2006). The 64-item version of the IIP was created by Alden and colleagues (1990) specifically to provide a circumplex measure. Their instrument contains 8 subscales that are correlated in the pattern of a circumplex. Each subscale consists of eight items that are scored on a 5-point Likert scale and measure the following aspects of interpersonal problems: (1) 'domineering/controlling; (2) 'vindictive/self-centered'; (3) 'cold/distant'; (4) 'socially inhibited'; (5) 'non-assertive'; (6) 'overly accommodating', which indicates an excess of friendly submissiveness; (7) 'self-sacrificing'; and (8) 'intrusive/needy'. Whereas previous studies have made use of the subscales of different IIP versions, we preferred to calculate a score for two underlying dimensions of the IIP-64: dominance (ranging from dominating and controlling behavior to yielding or relinquishing control) and affiliation (ranging from

friendly or warm behavior to hostile or cold behavior). These dimensions are the first two factors that were detected when the Inventory of Interpersonal Problems was initially developed; furthermore it is argued in interpersonal theory that the full range of interpersonal behaviors can be operationalized by these two dimensions (Horowitz et al., 1997). Whereas the different subscales or segments of interpersonal circumplex models may vary in number as well as in specific labels they use, all these models display a two-dimensional array organized around the axes of dominance and affiliation (Acton and Revell, 2002; Horowitz et al., 1988). Given these aspects we choose to use scores for these two dimensions in stead of using the subscale scores. In addition, this choice permitted us to limit the number of analyses. A large number of analyses in combination with our small sample should have reduced the power in detecting real correlations. The dimensional *affiliation* and *dominance* scores were calculated by a formula in which the sum of the product of the IIP-subscale and it's weight based on the place on the circumplex was made. For the dimensional *affiliation* scores this formula was: 1* self-sacrificing + ½* intrusive + (-½)* vindicative + (-1)* cold + (-½)* socially inhibited + ½* overly accommodating. The dimensional *dominance* score was calculated as follows: 1* domineering + ½* vindictive + (-½)* socially inhibited + (-1)* non-assertive + (-½)* overly accommodating + ½* intrusive. Psychometric research on the instrument in English-speaking communities (e.g., Horowitz et al., 2000) as well as in Dutch-speaking populations (Vanheule et al., 2006) demonstrated the validity (stability of the circumplex structure and of correlations with convergent measures) and the reliability (good internal consistency and test-retest reliability) of the IIP-64.

2.3. Procedure

Participants were recruited at intake wards of psychiatric hospitals. Manifestly psychotic patients and patients primarily hospitalized for substance abuse were excluded from this study. Each participant received oral and written information about the study and gave informed consent. Participants were examined three times by a clinically experienced and trained researcher. The first session included the CDI; TAT and TSIA were administered during the second session; and the Structural Diagnostic Interview for DSM-IV axis I and II disorders was administered in the third session. Patients also filled out a demographic list.

The CDI and the TAT interviews were audio taped and transcribed verbatim. For the CDI, the first five episodes discussing relationships with different significant others (i.e., partner, ex-partner, mother, father, children and/or siblings) were selected in the transcribed manuscript for SCORS scoring. The end of an episode was set when the patient began to talk about another topic or if the limit of 5 minutes of speech was reached in order to minimize bias because of verbal productivity. For the TAT the six narratives were coded. Both the TAT and the CDI narratives were independently scored by three researchers forming two pairs (coders 1 and 2 and coders 1 and 3) who were trained according to the procedures described in Westen's (1990) manual for coding TAT data and Hilsenroth and colleagues' (2007) training manual. The researchers met after each scored protocol to discuss discrepancies. Discrepancies of more than 1 point were resolved by consensus. Consensus scores were used in the analyses. Scores for each subscale (e.g. SCORS-TAT Complexity, SCORS-CDI Complexity,…) were averaged scores across the six TAT narratives for each of the four SCORS-TAT subscales and across the five CDI narratives for each of the four SCORS-CDI. In that way, we obtained a single score for each patient on the four subscales. We thus obtained 8 scores (4 SCORS-TAT subscales and 4 SCORS-CDI subscales) for each patient. Of the 74 TAT narratives, 50 were randomly selected and independently scored by coder 1 and coder 2 and all 74 CDI interviews were scored by coder 1 and coder 3. Standardized

scores were used in the statistical analyses because of the different Likert scales used (5-point and 7-point).

The coding of the TSIA interview was done during the course of the interview. The interviewers were trained by reading a book chapter on affect dysregulation and alexithymia (Taylor et al., 1997) and a manual which provides guidelines for the administration and scoring of the TSIA (Bagby et al., unpublished manual, 2009), and through discussion, based on scored interviews, of the scoring rules with the original authors. All of the TSIA interviews were audio taped. To examine inter-rater reliability, 40 audio taped TSIAs were randomly selected.

RESULTS

3.1. Preliminary Analyses

Descriptive statistics for the TAS-20, TSIA, IIP dominance and IIP affiliation, the SCORS subscales, verbal productivity and NA are presented in Table 1. The inter-rater reliability of the SCORS scorings of CDI narratives (N=74) and TAT narratives (N=50) and the TSIA (N=74) was measured by using two-way random effects model intraclass correlations (ICCs) and the internal consistency of the SCORS-TAT and SCORS-CDI and the TAS-20 and TSIA was evaluated using Cronbach's alpha. As can be observed, both ICCs and internal consistency was good, except for a somewhat lower internal inconsistency for SCORS-CDI *Complexity*. No correlations were found between age and the TAS-20, TSIA, the SCORS variables and IIP dominance, but a significant correlation was observed for IIP affiliation (r = .31, p <.01). Univariate analyses of variance with education level (five levels) as the independent variable showed an effect of education on IIP dominance (F[4,45] = 2.69, p < .01) and IIP affiliation (F[4,45] = 2.08, p < .10). Independent sample t-tests revealed significantly higher scores for women on *Complexity* (t = 2,04, df = 72, p <.05) and *Social*

Causality (t = 2,16, df = 72, p <.05) of the SCORS-CDI. No gender differences were observed for TAS-20, TSIA, the IIP-dimensions and SCORS-TAT.

Regarding verbal productivity, both subscales of the SCORS-TAT correlated with total words (i.e. the total number of words a patient used in the TAT narrative). A significant correlation was also observed between the subscales of the SCORS-CDI measure and total words used in the interpersonal episode of the CDI. NA correlated positively with the TAS-20 (r = .42, p <.01) and TSIA (r = .24, p <.05).

3.2. Alexithymia and interpersonal problems

Correlations between the TAS-20, TSIA, IIP-dominance and IIP-affiliation scores and the SCORS dimensions can be found in Table 2. As hypothesized, IIP-affiliation was negatively correlated to both TSIA and TAS-20. No relation was observed between both alexithymia measures and IIP-dominance. Correlations between alexithymia and the IIP dimensions, controlled for negative affect, are presented in parentheses, but the results did not differ substantially.

3.3. *Alexithymia and internal interpersonal representations*

As Table 2 indicates, significant negative correlations were only observed between the TSIA and both cognitive dimensions of the SCORS-TAT. However, a negative trend (small effect size) was also observed for the *Complexity* subscale of the SCORS-CDI. As stated by Cohen (1992) correlations with values of .10, .30 and .50 correspond to small, medium and large effects respectively. No significant correlations are found for the TAS-20, but correlations with the SCORS-TAT dimension are in the expected direction (small effect sizes). However, as correlations in parentheses indicate, a control for negative affect did not substantially affect

the results for TSIA, but the observed correlations between the TAS-20 and the SCORS-TAT dimensions diminished.

DISCUSSION

This study investigated interpersonal problems and internal interpersonal representations in alexithymia. Two measures for alexithymia were used: the Toronto Structured Interview for Alexithymia (TSIA; Bagby et al., 2006) and the 20-item Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994). Interpersonal problems were measured using scores for dominance and affiliation of the Inventory of Interpersonal Problems (IIP-64; Horowitz et al., 2000). Cognitive characteristics of internal interpersonal representations were measured using the Social Cognition and Object Relations (SCORS; Westen, 1990; Westen et al., 1990) coding system. Correlations were controlled for negative affectivity (NA). As Leising and colleagues found one 'general psychological distress' factor when a joint factor analysis was performed on the TAS-20 subscales, SCL-90 subscales and IIP- subscales (Leising et al., 2009), we though it was important to investigate whether correlations between alexithymia and interpersonal aspects were caused by negative affectivity underlying scores on both instruments.

The results clearly confirm that alexithymia is related to a cold interpersonal functioning, irrespective of the alexithymia measure used, which is in line with our first hypothesis. This relation remained stable after controlling for negative affectivity. As hypothesized no relations were observed between alexithymia and a dominant or submissive interpersonal functioning. We believe that our test of the relationship between alexithymia and interpersonal problems is particularly strong, both because of the multi-method assessment of alexithymia and because we controlled for negative affectivity.

Regarding our second hypothesis the picture is more complex and our hypotheses were only partly confirmed. We found a correlation between alexithymia and cognitive-structural characteristics of interpersonal representations in TAT narratives. Therefore we conclude that the higher the level of alexithymia, the less patients are inclined to describe the characters in the stories in multi-facetted terms as characters with complex thoughts and feelings and the less they are inclined to demonstrate insight into the motives concerning why people feel, think and behave the way they do. This link particularly came to the fore when alexithymia was measured with the TSIA. With respect to interpersonal representations of significant others in autobiographic episodes, the results were mixed. For *Complexity* the results were similar, but no correlation could be observed for *Social Causality*. When controlling for negative affect, correlations with the TSIA remained stable. However, the results showed that negative affect accounts for a part of the relation between self-reported alexithymia as measured with the TAS-20 and characteristics of interpersonal representations measured with the SCORS method.

Apart from the results for *Social Causality* of autobiographic interpersonal episodes, our results are in line with previous research indicating that high levels of alexithymia are related to an individual's proclivity to use internal state terms when describing and explaining the behavior of others and the perspective taking aspect of empathy (Grynberg et al., 2010; Meins et al., 2008). What is novel is that we could demonstrate a clear negative relationship between alexithymia and the complexity of their internal representation of others. This indicates that alexithymia might be related to broader problems at the level of meta-cognition and mentalization (Dimaggio et al., 2009; Fonagy et al., 2011). This study thus confirms that mentalization is a complex capacity with multiple components and that it is possible that patients suffering from alexithymia may show impairments in some aspects, but not necessarily in others. However, with respect to the results for *Social Causality*, future research

should clarify whether these results are robust or are rather caused by the specific way *Social Causality* was measured. Possibly the scores for *Social Causality* were influenced by aspects such as the length of the clinical interview interpersonal episodes. Since the episodes differed widely in length, scores might be biased by the length and elaboration of the episodes and might measure aspects other than the ability to use social logic in interpersonal episodes.

Comparing the results obtained with both alexithymia measures, it seems that the TSIA provides the most consistent results. Whereas alexithymia, as measured with the TAS-20 and after controlling for negative affectivity, is only related to the self-report affiliation dimension of the IIP-64, alexithymia measured with the TSIA proves to be related to structural aspects of internal representations. We therefore agree with Meganck and colleagues (in press) that, bearing in mind the difficulties addressed with self-report scales like the TAS-20 for the measurement of alexithymia, the TAS-20 should not be relied upon alone and should be combined with other alexithymia measures (e.g. Leising et al., 2009; Meganck et al., 2008).

Although we must be careful in generalizing our results, they might indicate that the process of affect regulation is indeed intertwined with characteristics of internal interpersonal representations and interpersonal problems (Fonagy et al., 2002; Mitrani, 1995; Verhaeghe et al., 2007). This is in line with findings of a study on child attachment, in which was observed that an insecure and disorganized attachment style is associated with a developmental delay in the acquisition of mentalizing language for emotional processes (Lemche et al., 2004). Furthermore, attachment studies found that alexithymia is related to insecure attachment styles (e.g. Meins et al., 2008). These studies suggest that the manner in which one discerns, handles and verbalizes affective states in relation to one's sense of self and others is influenced by, and in turn influences, significant interpersonal relationships (Kealy et al., 2011).

Some limitations should be taken into account when interpreting our results. Although we found a number of results that are consistent with clinical and empirical literature, the high number of analyses together with the limited sample size may have reduced the power of detecting real correlations. While we believe the ecological validity is enhanced by using a heterogeneous inpatient psychiatric sample, future research should also include non-clinical populations to investigate whether the same relations can be observed there. In addition, our results might be influenced by the specificity of our sample of inpatients who were interviewed in the first two weeks of their hospitalization in order to avoid bias due to therapeutic effects. It might be that motivational or emotional states related to the specific critical stage these patients were in, influenced answers on the alexithymia measures, self-reported interpersonal problems and discussions of interpersonal episodes. Consequently, our results should also be replicated in samples of patients in more stable phases of illness. An other alternative interpretation of our findings, might be that the observed correlations are caused by an underlying 'general psychopathology' factor. Future studies should control for this factor.

Furthermore, since we decided not to include affective subscales of the SCORS due to their low internal consistency, no measurement of affective characteristics of internal interpersonal representations was included in our study. Future studies should examine how affective characteristics of interpersonal representations can be measured adequately and how acceptable levels of internal inconsistency can be obtained. One possibility might be to include computerized language analyses with the Linguistic Inquiry (Pennebaker et al., 2001) and Word Count-dictionary on the interpersonal episodes. The frequency and differentiation of positive and negative emotion words might be an indicator of affective characteristics of interpersonal representations. However, it should also be investigated if it is possible to

quantify a general affective quality of interpersonal representations of different others, or whether a qualitative approach is more appropriate to address this issue.

Finally, further systematic clinical studies of the dynamics between problems in affect awareness, affect regulation, mentalization and interpersonal functioning in individual cases combining different measure methods should also be carried out to enhance understanding of the complex interplay between these factors.

CONCLUSION

We conclude that our hypotheses regarding the associations between alexithymia, interpersonal problems and internal interpersonal representations are partly confirmed using both the Toronto Structured Interview for Alexithymia (TSIA) and the Toronto Alexithymia Scale (TAS-20) for the assessment of alexithymia. The results clearly confirm that alexithymia is related to a cold and withdrawn interpersonal functioning, as indicated by significant correlations with the affiliation score of the Inventory of Interpersonal Problems (IIP-64). In terms of the Social Cognition and Object Relations Scale (SCORS) our hypotheses are partly confirmed. Alexithymia, especially when measured with the TSIA, is negatively related to the complexity of interpersonal representations, but results with social causality were less clear and require more research. Overall the TSIA provides the most consistent and stable results after controlling for negative affectivity.

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Table 1. Descriptive statistics for IIP affiliation, IIP dominance, SCORS subscales, TSIA and TAS-20, Negative Affectivity and total words use of TAT and CDI.

	Mean	SD	Minimum	Maximum	ICC	α
IIP affiliation	5.48	14.29	-28.5	45	/	/
IIP dominance	-7.71	12.45	-35	31.5	/	/
SCORS-TAT Com[a]	3.62	.83	1.50	5.50	.72	.83
SCORS-TAT Soc[a]	3.84	.75	1.80	5.90	.73	.83
SCORS-CDI Com[b]	2.20	.29	1.60	3.60	.74	.62
SCORS-CDI Soc[b]	2.20	.44	1.30	3.30	.76	.76
TSIA total	20.85	9.72	3	46	.88	.91
TAS-20 total	59.81	10.98	34	84	/	.70
NA	31.84	9.08	13	50	/	.89
Total words CDI	304.24	225.63	18	1166	/	/
Total words TAT	116.27	74.96	20	523	/	/

Note. IIP = Inventory of Interpersonal Problems; SCORS = Social Cognition and Object Relations Scale; Com = Complexity; Soc = Social Causality; TSIA = Toronto Structured Interview for Alexithymia; TAS-20 = 20-item Toronto Alexithymia Scale; NA = Negative Affect; CDI = Clinical Diagnostic Interview; TAT = Thematic Apperception Test; α: Cronbach alpha. Original scores of the SCORS are used for Mean, SD, Minimum and Maximum (7-point scale, except for CDI Soc: 5-point scale).

a: N=50 for calculation of ICC; b: N=74 for calculation of ICC.

Table 2. Correlations between TAS-20, TSIA and IIP dominance, IIP affiliation and SCORS dimensions, correlations between brackets are controlled for negative affect (NA).

	TSIA		TAS-20	
IIP Dominance	.09	(.10)	-.003	(.02)
IIP Affiliation	-.38**	(-.36)**	-.36**	(-.33)**
SCORS-TAT Complexity	-.42**	(-.39)**	-.21	(-.15)
SCORS-TAT Social Causality	-.31**	(-.29)*	-.15	(-.10)
SCORS-CDI Complexity	-.18	(-.20)	.03	(.00)
SCORS-CDI Social Causality	-.03	(-.05)	.07	(.04)

Note. IIP = Inventory of Interpersonal Problems; SCORS = Social Cognition and Object Relations Scale; TSIA = Toronto Structured Interview for Alexithymia; TAS-20 = 20-item Toronto Alexithymia Scale; CDI = Clinical Diagnostic Interview; TAT = Thematic Apperception Test