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EMOTIONS (UN)EXPRESSED IN WORDS: REFERENTIAL ACTIVITY IN BORDERLINE PERSONALITY DISORDER

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SUMMARY

Background:

Referential activity (RA), defined as the activity of references between verbal and non-verbal representations, gives insight into the representation and symbolization of emotions, which is essential for the dysregulation of emotions, the key problem in Borderline Personality Disorder (BPD). Our goal was to compare RA in a group of persons with BPD and healthy controls, and to analyze the dependencies between RA and features of temperament.

Material/ Methods:

We compared the utterances of 31 healthy controls and 53 persons with BPD in terms of RA referring to drawings depicting interpersonal relations evoking positive or negative emotions. As research instruments we used the Borderline Personality Inventory for diagnosis, along with the Formal Characterization of Behavior temperament questionnaire and the Referential Activity Scale. We also examined possible temperamental correlates of RA and identified those features of temperament and dimensions of RA that constitute specific and independent predictors of BPD.

Results:

In the utterances of the BPD group in negative material there was a higher level of Concreteness, Imagery, and Specificity. We also found a pattern of correlation of all dimensions of RA with perseveration in the responses to negative material. Emotional reactivity (among the features of temperament) and specificity (among the dimensions of RA) constituted specific predictors of BPD.

Conclusions:

RA in BPD shows greater availability of sub-symbolic representations of negative emotional schemas, but without the reflective integration of emotional experience, which makes emotional regulation possible. Our results point to the arousal of subsymbolic representations, which are persevered, rather than absorbed by reflection.

Key words: neuropsychology of emotion, referential processes, symbolization, representation, temperament

INTRODUCTION

From emotional dysregulation to intrapsychic structures in Borderline Personality Disorder (BPD)

Serious difficulties in the regulation of intense emotions, especially those occurring in the context of interpersonal relations, constitute one of the key problems in Borderline Personality Disorder (BPD; DSM-IV TR, 2000, Skodol et al., 2002). Emotional dysregulation causes many difficulties in emotional functioning, including the lack of adaptive strategies of regulation, difficulties in recognizing and identifying emotions, the avoidance of emotional experience, and significant affective instability or polarization (Coifman et al., 2012; Gratz et al., 2006; Bornova et al., 2008; Iverson et al., 2011; Wolff et al., 2007; Trull et al., 2008; Russell et al., 2008). The determinants of emotional dysregulation are thought to be biological factors: emotional susceptibility (Linehan, 1993; Linehan et al., 2007; Kuo & Linehan, 2009), including also temperament (Górska, 2006), as well as early and later experiences in relationships, especially emotional abuse and neglect (cf. Holm & Severinsson, 2008) and emotional suppression (Linehan, 1993; Selby et al., 2008). These factors provide the foundation for intrapsychic structures (representations) that preserve the emotional experiences of relationships, such as the representations of self-object-affect described from the perspective of the organization of a borderline personality (Kernberg, 1970; Clarkin et al., 2006), which are conceptualized in other theories as, for example, internal operational models (Bowlby, 1969/2007) or emotional schemas (Bucci, 1997, 2011). These representations correspond to neurological structures: neuronetworks encoding the emotional experiences of relationships, which are responsible for the regulation of emotions (Cozolino, 2004; Bucci, 2011; Pačalska, 2007a, 2007b; Brown, 2004; Brown & MacQueen, 2011).

The concepts and research regarding these representations and the processes associated with them, including mentalization or symbolization, have proven to be very fruitful in explaining BPD and dysregulation (Bateman & Fonagy, 2004; Fonagy & Bateman, 2008; Choi-Kahn & Gunderson, 2008; Sharp et al., 2011). Their regulatory functions - transforming raw sensation into complex, controllable emotional states - have been the focus of particular interest. There is considerable clinical and empirical data suggesting that persons with BPD have disturbed internal representations (e.g. immature, non-integrated representations with overwhelming, unneutralized affect, Clarkin et al., 2006) while their functions, such as mentalization, are weakened (Sharp et al., 2011).

Referential activity (RA): a means of identifying emotional schemas and symbolization

Intrapsychic structures can only be observed indirectly, when they are activated in fantasies, interpersonal relationships, actions, emotional expression, utterances, and especially in emotional communication (Bucci, 2005). One way to

gain some insight into representations is to test referential activity (RA), defined as the activity of a system of references (associations) between non-verbal and verbal representations (Bucci et al., 2004). The term itself is derived from experimental cognitive psychology, which has demonstrated that images and words are stored in memory in different coding systems, connected to each other by referential relations: nonverbal representations correspond to verbal ones and vice versa, and so the arousal of one type of representation draws with itself the arousal of a representation in another system (Paivio, 1986; cf. Nęcka et al., 2006).

In W. Bucci's theory of multiple coding (1997, 2007), the concept of RA is applied to explain the mechanisms by which emotional experiences are represented and emotions are revealed in language. In the light of this theory, the basic representation is the emotional schema, the content of which is a scenario played out within a relationship. "We do not enter a state called 'hatred'; rather, we may have an intense desire to hurt a particular person who is seen to play a role in a particular scenario" (Bucci, 2005, p. 865). Emotional experiences are coded in two primary systems: the sub-symbolic (the sensory and motor aspects of emotional experiences, constituting the affective core of the representation) and the symbolic, in a form that may be either non-verbal (imagery) or verbal (words; Bucci, 1997, 2002, 2007). These systems have different contents and different principles of organization. Sub-symbolic processing is continuous and analogue in nature; as a general rule, we have no direct access to it, and the processes are thus said to be unconscious. Representations in the symbolic system, both non-verbal and verbal, are discrete units, which refer to other units (hence the term "referential"), and can combine with other units to create new forms ("generativity"; Bucci, 2002).

Within an emotional schema, sensory and motor sensations are (to a certain extent) associated with the corresponding images and words, while the referential function provides the basis for this kind of affective integration. The referential function, then, is responsible for access to sensory experiences, i.e. for the process of "translating" emotional material that has been coded non-verbally, both consciously and unconsciously, into a form that can be expressed in language. Referential processes are bidirectional: words can also be translated into a non-verbal code, as for example when we hear someone tell a story and can imagine or recall an emotional experience, which in turn arouses the affective core. The neurophysiological basis for emotional processing and referential processes involves the activation of non-verbal representations in the right hemisphere, their connection through the corpus callosum with images located in the left hemisphere, and the combination of images and words in the left hemisphere, which is the basic region for symbolic processing (Bucci, 1997).

Referential processes are revealed in utterances, in differentiated linguistic styles, especially in the way the narrator organizes verbal material (e.g. the way the purpose of the utterance is communicated to the listener, the use of details to characterize the time, the place, the persons involved, and other details of the story) and articulates sensory experiences (the description of sensory, somatic,

visceral experiences in a vivid, graphic manner; Bucci et al., 2004). When the speaker is emotionally engaged in the topic of discussion, the affective core of the representation is activated, and this is automatically and unconsciously revealed in the language used, which becomes lively, graphic, full of details, and direct, and conveys information about sensory experiences. On the other hand, when a person conveys information that is stored in memory only in verbal form, not associated with the affective core, the language used becomes general and abstract (Bucci et al., 2004; Christian et al., 2010).

In Bucci's multiple coding theory, referential activity is regarded as an operational indicator of symbolization (Christian et al., 2010). Symbolization has been defined in various ways, not only as the embodiment of emotions in words, but also as a mental process, in which one thing represents another thing that is not present, thus arousing the capacity to fantasize and organize mental space (Moore & Fine, 1996; de Mijolla, 2005). Symbolization, like mentalization, or the metacognitive function (Semerari et al., 2003), as well as other, somewhat more remote constructs, such as emotional processing (Baker et al., 2004; Rachman, 2001), fulfills regulative functions, transforming the stimulus into a mental state that can be modulated. This would imply that referential processes, combining the symbolically and sub-symbolically coded representations of emotions, can be a key factor governing emotional dysregulation in emotional disturbances, including those associated with BPD.

Referential activity as an indicator of the dissociation of the emotional schema: from dissociation to emotional dysregulation

The weakening of referential processes, the lack of connection between representations coded in different systems, points to dissociation within the emotional schema. Among the possible reasons for the pathological lack of integration of the representation of emotions can be the extreme intensity of emotions, e.g. in trauma, or the avoidance of the meaning of an emotional situation, as for example the realization that one's caregiver is a source of violence (Bucci, 2011). In other ways of conceptualizing internal structures, there are likewise assumed to be mechanisms that cause the isolation of certain aspects of a representation, e.g. segregated systems of attachment associated with dissociation in trauma (Howell, 2005), or a pathological level of disjunction rendering it impossible for persons with BPD to integrate emotionally contrary representations of self and object (Clarkin et al., 2006). Dissociation is also present in neurobiological structures and processes, when neural networks are not integrated, thus separating consciousness from emotional processing (Cozolino, 2002; Thomas & Germine, 2010). Dissociation in the emotional schema is associated with a disturbance in the coding of emotional experiences, mostly through the corpus callosum and its connections with the hippocampus and areas involved with sensory representations, as well as the prefrontal cortex and the areas that govern motor control. The encoded event is registered primarily in the memory of the amygdala in a fragmentary, isolated manner (when the functions of the hippocampus are dis-

turbed), and then the memories that appear in the utterance may not be localized in any context of place or time, or associated with the self, or combined into coherent, organized episodes. Such an utterance will be fragmentary, and gives the listener no small problem in following the story being told by the speaker. Even if the memories have been encoded in a more organized form, dissociation causes the significance of the memories to be avoided. What results from this is an inexplicable, somatic, motor and affective arousal, activated in many contexts by stimuli that are unrecognized and cause an overwhelming arousal without any possibility to attribute any meaning to them, or to regulate the emotional reaction (Bucci, 2011). There are data indicating that in BPD, alongside emotional dysregulation and deficits in the integration of emotional representations, there occur some neurobiological dysfunctions, including the lack of integration of the work of the corpus callosum and the hippocampus (Donegan et al., 2003; Cozolino, 2002).

Referential activity is by nature a process unfolding in phases, in any context in which the speaker is attempting to express non-verbal experience in words (Bucci, 2012), especially in psychotherapy (Bucci, 2005). The characteristics of these phases gives insight into the activation of particular representations encoded in other systems. In the phase of arousal, the affective core is activated, and the person struggles to find the words to express their experience, so that communication is primarily non-verbal, and the language may be incoherent. In the phase of symbolization the activated material is gradually accumulated into a prototypical image or plan of action - not yet expressed in words, but already translated into symbolic form, only later to be connected with verbalization. The speaker, in telling about a fantasy or an experience, becomes more and more immersed in the story being told. In the end, in the phase of reorganization, the person tests and reflects on the material that has been activated and verbalized, which serves to increase the integration of the emotional schema. Emotions and memories are analyzed from the perspective of their personal significance for the individual (Bucci, 2012). In narrations in which this process is incomplete or disturbed, e.g. in the utterances of patients during therapeutic sessions, there are indicators of the arousal of the affective core and the non-verbal symbolic representation (fantasies and images may appear), but at the same time the words being spoken are not associated with them. In such a case, when the patient is not capable of joining representations, the referential process is performed first by the therapist (Bucci, 2005).

Associations between temperament, dysregulation, and representations in BPD

In addition to the processes of representing and symbolizing emotional experiences, which seem to be conditioned more socially (by relationships), emotional dysregulation in BPD is also determined by biological factors. Among these latter is emotional susceptibility, which involves the significant intensity of negative emotions, a high emotional reactivity, and a prolonged period of return to emotional equilibrium after the effect of an emotional stimulus (Linehan, 1993;

Linehan et al., 2007; Kuo & Linehan, 2009). These characteristics correspond to the emotion-related characteristics of temperament, especially emotional reactivity (high sensitivity and low emotional immunity, leading to a significant intensity of experienced emotions) and perseveration (the tendency to maintain and continue behavior after the stimulus is no longer operative; Strelau, 2001). Specific configurations and degrees of intensity of these features of temperament may constitute a risk factor for the development of emotional disturbances (Strelau, 2001), and research has demonstrated that borderline patients display a greater intensity of certain characteristics of temperament (Korner et al., 2007). Although the area of relations between intrapsychic structures and temperament has not been directly explored experimentally, theoretical assumptions and clinical reports have provided a basis for the assumption that there are dependencies between them. For example, Kernberg (1992) states that the temperamentally conditioned drive to aggression (which is reinforced in real experiences) in persons with borderline organization makes it impossible to integrate the representations of self and object, since representations that are heavily laden with libido cannot neutralize aggression.

Consistent with the foregoing, the goal of our research project was to explore RA in persons with BPD, which would presumably give some insight into the processes of representation and symbolization of emotions, which are so essential for emotional dysregulation, the key problem in BPD. Accordingly, we compared RA in the utterances of healthy controls and patients with BPD in response to stimuli (drawings) containing both emotional and relational contents. In view of the significance of negative emotional experiences and the intensity of negative emotions in BPD (Reich et al., 2008), we examined two situational contexts associated with different emotional schemas: positive and negative relationships. Moreover, given the biological conditioning of emotional dysregulation in this group, we examined dependencies between RA and the features of temperament related to emotions, searching for potential temperamental correlates of referential activity. In addition, we tried to determine whether any dimensions of RA constitute predictors of the level of BPD when controlling for features of temperament. We also tried to determine which features of temperament and RA constitute independent and specific predictors of BPD.

MATERIAL AND METHODS

We examined a total of 361 persons, 84 of whom were qualified to the experiment proper on the basis of the diagnostic method: 53 to the experimental group (31 women, mean age=20.96 years, SD=1.43) and 31 to the control group (27 women, average age=20.71, SD=1.3). The groups were homogenous in respect to age, gender, and education: the subjects were college students, with the exclusion of psychology majors. The results presented here are part of a broader research project on BPD, other parts of which have already been presented elsewhere (Górska, 2006).

In our research we used the Borderline Personality Inventory (BPI) by Leichsenring (1999), in the Polish version by Cierpiałkowska (2001), which is a self-descriptive method to estimate the level of borderline personality organization (Kernberg, 1984), compatible with DSM-IV diagnostic criteria for BPD. The BPI consists of 53 items with true-false answers and four subscales measuring diffuse feeling of identity, primitive defense mechanisms, impaired reality checking, and fear of intimacy. It has good internal consistency, test-retest reliability and satisfactory rates for sensitivity (0.85 to 0.89) and specificity (0.78 to 0.90; Leichsenring, 1999). This instrument is recommended as a screening method for both the level of borderline personality organization and BPD. A subscale called Cut-20 has been created from the items that have the greatest discriminatory force; a score of 10 or more points indicates a correct diagnosis of BPD. In our research we used double criteria for qualification to the groups: the combined score for the entire scale and the score from the Cut-20. The BPD group included persons who had 20 or more points on the entire scale ($M=27.32$, $SD=4.44$) and 9 or more points on the Cut-20 ($M=12.35$, $SD=2.05$); the control group consisted of persons who had 8 or fewer points in the total score ($M=4.06$, $SD=1.81$) and 4 points or less on the Cut-20 ($M=1.29$, $SD=1.19$). Of all the persons qualified by their total score for the BPD group, only two did not meet the Cut-20 criterion: they scored 9 points, as compared to total scores of 22 and 26 respectively. Since the probability of including a healthy person in the BPD group for a Cut-20 score of 9 points is only 14%, which is not much greater than the probability for a Cut-20 score of 10 (10%; Leichsenring, 1999), we decided to include these persons in the BPD group.

The Formal Characterization of Behavior temperament questionnaire (FCB-TQ; Zawadzki & Strelau, 1997) is an operationalization of Strelau's Regulatory Theory of Temperament (2001). It consists of 120 items that require the subject to give a "yes" or "no" answer. The items make up six scales that measure the corresponding features of temperament: Briskness, Perseveration, Sensory Sensitivity, Emotional Reactivity, Endurance, and Activity. This instrument displays excellent psychometric properties both for the accuracy and reliability of measurement and its theoretical and diagnostic reliability (Zawadzki & Strelau, 1997).

In the Referential Activity Rating Scales (Bucci, Kabasakalian-McKay & Graham, 2004), RA, i.e. the degree to which images and emotions can be expressed in words, is assessed in four scales: Concreteness, Specificity, Clarity, and Imagery. These dimensions reflect different aspects of the same basic capability – that is, access to non-verbal representations and their expression in language – which is why they are strongly correlated with each other. Concreteness refers to perceptual and sensory quality, including the sensual nature in all modalities of somatic and visceral experiences, motor activity, and emotional experiences. Specificity pertains to the number of details contained in the utterance, especially information that describes people, objects, places, and events. Clarity reflects the communicativity and effectiveness of the utterance and the degree to which the speaker takes under consideration the possibility of being understood by the listener. Imagery refers to the expressiveness and liveliness of the message.

The utterances are evaluated in terms of the level of referential activity by competent judges, who award from 0 to 10 points in each of the four dimensions of referential activity. The average of the scores awarded by all the judges constitutes the final score for that person on a particular dimension. In our research, the utterances we obtained were evaluated by six previously trained, independent judges, who did not know the group to which a given subject had been assigned. In order to measure the mutual consistency of the judges, we used Kendall's *W* coefficient, which ranged from 0.59 to 0.44 ($p < 0.001$), depending on the dimension. Since Kendall's *W* for our judges was at a moderate level, we also calculated, as recommended by Bucci et al. (2004) the ICC (intra-class correlation coefficient) for each possible pair of judges, and selected that judge whose scores displayed the greatest consistency with the others (ICC from 0.53 to 0.75). The results of all subsequent statistical analyses performed using the scores of this judge were identical with the results obtained by using the scores of all six judges. Moreover, the results obtained using the scores of the other five judges proved to be analogous to those obtained previously.

The research protocol consisted of three stages. In the first stage, screening, Leichsenring's BPD questionnaire (1999) was used to qualify individuals to either the experimental group (BPD) or the control group. In the second, individual stage, the participants filled out a set of questionnaires (including the FCB-TQ; Zawadzki & Strelau, 1997). Next, during individual sessions, the subjects were shown, in random order, drawings depicting interpersonal relations. For the present purposes, we used the responses to two drawings: one presenting positive emotions in a relationship (a smiling couple, a woman and a man; the woman is holding some flowers, while the man is embracing her warmly) and negative emotions (a quarrel, involving a couple sitting at the kitchen table; the man is striking the table with his fist, while the woman is picking up a spoon). The instructions for the subjects were as follows: "if you were in the place of one of the people in this drawing, what would you feel?" The utterance was recorded and transcribed, after which the RA was assessed by the judges.

RESULTS

The results of a comparison of the level of RA in the BPD and control groups are presented in table 1. It turned out that the RA in all the dimensions except Clarity was higher in the BPD group in the responses to the negative stimulus. In the positive material there were no inter-group differences. Moreover, the effect size (Cohen's *d*) for association of the level of BPD and RA in the negative material was between the moderate and high level, in contrast to the positive material, where it was low.

We then calculated correlation coefficients between the dimensions of RA, the features of temperament and BPD (table 2; the dependencies between BPD and temperament are discussed in Górska, 2006). The results indicated associations between perseveration and RA in the negative material; although the cor-

relations were not strong, there was a repetitive pattern of results for all the dimensions of RA in the responses to the negative stimulus. A similar pattern of results was observed for correlations between activity and RA in the positive material. Moreover, the level of BPD correlated with three dimensions of RA (Concreteness, Specificity, and Imagery) in the negative material, and the strength of this correlation was moderate. No dependencies between these variables were observed in the positive material.

In order to determine whether or not RA, with prior control for the features of temperament, explains the level of BPD, and to ascertain which of the factors of temperament and the components of RA constitute specific and independent predictors of BPD, we conducted initially a series of single regression analyses, in which the dependent variable was the level of BPD. Among the temperament factors the significant predictors proved to be:

Table 1. Comparison of referential activity (RA) in the group of persons with borderline personality disorder (BPD) and the healthy controls

		BPD (N=53)		Controls (N=31)		t	df	p	Cohen's d
		M	SD	M	SD				
RA positive material	concreteness	2.78	1.30	2.42	0.77	-1.49	82	n.s.	-
	specificity	3.50	1.35	3.16	1.05	-1.28	75.63	n.s.	-
	clarity	4.38	1.23	4.41	0.79	0.14	82	n.s.	-
	imagery	3.21	1.35	2.85	1.03	-1.30	82	n.s.	-
RA negative material	concreteness	3.47	1.26	2.71	0.85	-2.95	82	0.004	0.65
	specificity	4.11	1.27	3.31	0.76	-3.62	81.94	0.001	0.80
	clarity	4.82	1.17	4.52	0.61	-1.57	81.10	n.s.	-
	imagery	3.81	1.25	3.10	0.85	-3.10	80.08	0.003	0.69

Table 2. Associations between referential activity (RA), temperament, and the level of borderline personality disorder (BPD)

		RA positive material				RA - negative material			
		Conc	Spec	Clar	Imag	Conc	Spec	Clar	Imag
Tempera- ment	briskness	.20*	0.11	0.14	0.12	-0.01	-0.06	0.07	-0.03
	perseveration	0.11	0.11	0.14	0.14	.24*	.27**	.21*	.28**
	sensory sensitivity	-0.04	-0.15	-0.03	-0.13	0.01	-0.04	0.05	-0.01
	emotional reactivity	-0.05	-0.08	-0.14	-0.06	0.08	.19*	0.09	0.15
	endurance	0.09	0.07	0.08	0.10	-0.03	-0.15	-0.05	-0.08
	activity	.24*	.26**	.25*	.25*	0.11	0.10	0.11	0.07
borderline		0.12	0.13	-0.03	0.13	.35**	.39**	0.17	.33**

* p<0.05, ** p<0.01. Conc = concreteness; Spec = specificity; Clar = clarity; Imag = imagery

Table 3. Specific predictors of the level of borderline personality disorder (BPD): results from a hierarchical regression analysis

	R2 (corrected R2)	change in R2	F	β in the second step
Step 1	.13 (.12)	.13***	12.12***	
briskness				-0.20
perseveration				0.11
emotional reactivity				.30*
Step 2	.24 (.22)	.11***	12.41***	
concreteness				0.15
specificity				.33**
imagery				0.07

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

- Briskness ($\beta = -0.3$, $F(1,82) = 7.88$, $p < 0.01$);
- Perseveration ($\beta = 0.31$, $F(1,82) = 8.91$, $p < 0.01$);
- Emotional Reactivity ($\beta = 0.36$, $F(1,82) = 12.12$, $p < 0.01$).

Among the dimensions of referential activity, there were three significant predictors, only in the negative material:

- Concreteness ($\beta = 0.35$, $F(1,82) = 11.15$, $p < 0.01$);
- Specificity ($\beta = 0.39$, $F(1,82) = 14.52$, $p < 0.001$);
- Imagery ($\beta = 0.33$, $F(1,82) = 9.84$, $p < 0.01$).

We then conducted a step-wise hierarchical regression analysis for the dependent variable (the level of BPD), taking into account only those predictors which proved to be significant in the single analyses (table 3). In the first step we included in the regression equation the variables associated with temperament; in the next step, the variables related to RA. In the first step the temperamental variables explained 13% of the variance in the level of BPD; in the second step, the temperamental variables along with RA explained together 24% of the variance in this variable, while RA alone explained 11%. Of the features of temperament, only Emotional Reactivity proved to be a specific and independent predictor of BPD; among the dimensions of RA, only Specificity in the negative material was significant, after prior control of the variables associated with temperament.

DISCUSSION

In our research we attempted to explore the referential function in Borderline Personality Disorder (BPD), using utterances made in response to negative and positive emotional material. The results we obtained give some insight into the process of activating sub-symbolically coded contents and translating them into a form that can be expressed in words.

It turned out that in dealing with stimuli associated with negative emotions in a relationship, our BPD group achieved higher scores in three of the four dimensions of RA. In the light of Bucci's theory, and assuming that RA is a direct and single indicator of symbolization, this result is surprising, since it would seem to suggest a greater ability to verbalize and symbolize emotions in a group that manifests serious difficulties with the regulation of emotion (cf. Gratz et al., 2006), or disturbances in the process of mentalization (cf. Sharp et al., 2011). Accordingly, our analysis of the significance of these research results will be expanded to encompass other theoretical frameworks, including three areas in particular:

- linguistic indicators of symbolization;
- the processual and modular nature of symbolization;
- the maturity and integration of intrapsychic structures.

To begin with, the results presented above refer to the dimensions associated with the articulation of sensory experiences - Concreteness and Imagery - accompanied by Specificity, which reflects the inclusion of details in the utterance. Results similar to those presented here were obtained by Jepsen and Bucci (1999), who assessed RA in utterances about mothers by persons who had been physically abused; the utterances of this group were more concrete and image-based than in a control group that had not been abused. Research in a narrative paradigm, based more on linguistic indicators (counting word frequency) than on an evaluation of the expressiveness of the utterance (its pragmatic aspect) has found that expressions describing sensory experiences occur more often in psychopathology than in the normal, healthy population. For example, patients with social anxiety (Anderson et al., 2008) use more words that reflect sensory and perceptual processing, especially in regards to physical sensations, which may be the result of the reinforced coding of physiological processes in autobiographical situations and the increased accessibility of bodily representations while generating a narrative in the course of recalling social situations (Mansell et al., 2003).

One group of patients with BPD, on the other hand, in comparison to a group of persons with neurotic personality organization, achieved higher scores in concreteness, measured (otherwise than in RA) by the number of words referring to perceptual and physiological sensations in proportion to all the words used in spontaneously generated narratives about important relationships (Soroko, 2013). In narrative research, a distinction is made between emotional words that *describe* emotional states ("fear," "worry") and words that *express* an emotion ("Well, finally!" "Yuck!"), which provide information about emotional sensations (Kleres, 2010). This latter group of expressions – i.e. those which contain paralinguistic messages and refer to sensations originating from the body – are characteristic for utterances which manifest arousal of the affective core, and thus for sub-symbolic representation (Bucci, 2005). All this suggests that the higher level of Concreteness, Imagery, and concomitant Specificity in our BPD group is caused by the activation (and thus greater availability) of sub-symbolic representations in BPD – but only in the case of representations of negative emotions (anger, aggression, rage, etc.) in response to the negative context of

the situation presented on the drawing.

Secondly, both symbolization and other, related constructs, such as mentalization (Fonagy, 1991, 2008), the metacognitive function (Semerari et al., 2003), or even somewhat more remote concepts like theory of mind (Baron-Cohen et al., 2008) or emotional processing (Baker et al., 2004), are processual in nature (they have a duration and development over time), and are capabilities composed of many competencies (e.g. taking into account the perspective of one's own mind and that of others) that in some approaches are treated as autonomous modules (Semerari et al., 2003). Taking into account the phases of referential processes - arousal, symbolization, reflection (Bucci, 2012), one possible conclusion is that in the utterances of our BPD group in response to negative material we are observing the phase of the arousal of the affective core and the preliminary phase of symbolization, i.e. the joining of sensations with images, and finally with words, without the further phase of adding the meaning that emerges from reflection. The processual and modular nature of this function is emphasized in metacognition (Semerari et al., 2003; Carcione et al., 2011), which focuses on the ability to identify inner states, to combine and differentiate the elements of those states, and to integrate them. This entails describing and discussing one's own or someone else's inner scenario, and takes on the form of a narrative, which provides a feeling of the continuity of inner experience. In this conception, identification depends on recognizing one's own representations, e.g. images and thoughts. The descriptions that occur in the utterances of persons with BPD, containing sensory expressions and the names of emotions, seem to reflect the stage of identification, while in all likelihood the further stages were not fully realized. This is indicated by the fact that the basic function of symbolization, mentalization, or metacognition (that is, the regulation of emotion to limit the direct discharge of the drive, transforming drives and impulses into more organized experiences, which enables the understanding of emotion to modulate mental states) is seriously compromised in BPD.

Direct support for this hypothesis can be found in the results of research on dysregulation in the same group involved in the present study (Górska, 2006), along with much other research done in other populations with BPD. Moreover, symbolization and other capabilities require understanding the minds of others, both interpreting someone's behavior by referring to their presumed intentions, feelings, or thoughts (the theory of mind), and the capacity for decentration, i.e. understanding the hypothetical nature of reading someone's mind (Semerari et al., 2003). This component corresponds to one of the dimensions of RA: Clarity, which reflects the speaker's ability to take into account the perspective of the listener and the awareness that it is necessary to communicate clearly in order to "bring the listener where she is" (Bucci et al., 2004, p. 28). The lack of intergroup differences in respect to Clarity, as opposed to higher scores in Concreteness, Specificity, and Imagery, would seem to indicate a deficit in this element of reflectivity, not in general, but in the arousal of the affective core. Another piece of evidence against decentration is the BPD group's higher level of hypermental-

ization, understood as the over-interpretation of other people's state of mind (Sharp et al., 2011).

It also seems important to look at the results from the perspective of the characteristics of the representations - for instance, the representation of self, object, and the associated affect - in persons without personality disorders and those with BPD. Apart from other properties, such as the integration of the emotional schema (which is also important in Bucci's concept), mature representations differ from immature representations in being depersonified, generalized, and abstract (Kernberg, 1975); their idiosyncratic aspects, corresponding to individual experiences, are generalized in such a way that they do not refer to a concrete autobiographical event, but represent a general scenario of emotional relationships. They are also more elastic than stiff, in this sense, that inner scenarios are not obsessively repeated, but fitted to the context (Caligor et al., 2007). In a borderline personality, this process of maturation of representations is disturbed, so that the representations are more concrete than abstract, not so much associated with generalized representation of the object as with a particular experience and the persons in that particular scenario, which is accompanied by strong, often overwhelming affect. Moreover, effective emotional processing entails the absorption of the arousal, manifested by the ability to recall a personally significant event, to speak or hear about it, without experiencing distress, and to reduce the emotional reaction over time (Rachman, 1980, 2001; Baker et al., 2004; Górska & Jasielska, 2010). This suggests that the language in a mature representation should be more generalized, and in immature representations – full of idiosyncratic details.

The lower RA scores of the healthy controls in the negative material (but also the lack of intergroup differences in utterances responding to the positive material) reflect a language that is not very pictorial, a general description, though with appropriate names for the emotions appearing in a given drawing; but these are words that *describe* emotions rather than *expressing* them (Kleres, 2010). In this context, the lower scores give a broad range of possible interpretations, with at least three possibilities:

Such an utterance may be defensive in nature (the affective core has been aroused, but then stifled), as occurs in the reactive type of mental activity, where a defensive rationality is used to cancel overwhelming feelings (Dube & Normandin, 1999).

This may be an adaptation option: arousal occurs, but has been processed, as in the situation when effective emotional processing causes the absorption of arousal, which is not revealed in the utterance, and the person may respond without arousal upon coming into contact with the stimulus (Baker et al., 2007; Rachman, 2001).

There is no arousal, and the utterance portrays only knowledge recorded in verbal representations, without reference to any personal scenario (Christian et al., 2010). This is what occurs in rational objective mental activity (Dube & Normandin, 1999), in which the person is more observer than participant in the given situation.

Given the methodology we used (without control of somatic indicators of emotional arousal) it is difficult to reach a solid conclusion as to which of these interpretations is correct for our research; however, the general and abstract language points more to relying more on knowledge about emotions (only verbal representations) than on one's own experience.

This kind of RA in persons with BPD takes on new meaning when we consider the lack of inter-group differences in the positive material. The utterances of persons with BPD in response to the positive drawing did not differ in respect to the level of RA in comparison to the healthy controls, while in the negative material their utterances were more sensory and detailed. This would be consistent with the assumption that positive and negative emotional events are coded and processed differently (cf. script theory, Tomkins, 1987, 2008; Oleś, 2009) and research results involving clinical groups (Pačhalska & Ziółkowska, 2011). For example, research on autobiographical memory has shown that in cases of emotional disturbance, especially associated with trauma, the memory of negative events is more available, is recalled more quickly, which implies that negative emotional schemas are more easily activated (Pačhalska, 2007a). This means that the impact of negative and positive emotions is different: negative events cause greater physiological arousal and affective reactions, which can lead to persistent stress, if they are not reduced (cf. Bernstein et al., 2011).

Some questions remain to be answered about how persons with DPD activate emotional schemas organized around negative emotions (or maintain those that have already been activated). From the perspective of the biological conditions for dysregulation (high reactivity, slow return to the status before arousal; Linehan, 1993), the connections we found in our research between RA in the negative material and Perseveration would explain, at least in part, the tendency to persistent but ineffective processing of emotionally negative relationship scenarios in different contexts, including participation in research. The higher RA scores pointing to arousal of the affective core can be understood in terms of attempts to self-treat, in which it is not only the plastic utterance as a way of entering into a relation with others (Jepsen & Bucci, 1999), but also the building of successive narrative revelations of the inner scenario, that increases integration within the scenario, thanks to reflection on experience (Semerari et al., 2003; Soroko, 2013). In some cases, however, especially in psychopathology, this process cannot be completed autonomously, or the arousal absorbed, at which point the joining of non-verbal and verbal representations and reflection must take place first in the therapist's representations of emotional experiences (Bucci, 2005). It would appear that this healing closure of the process of symbolization does not take place in persons with BPD; instead, negative inner scenarios are easily activated and available, but perseverated, and so the arousal remains unabsorbed.

In addition to the previously discussed inter-group differences in respect to RA, which have been the main topic of analysis here, we also obtained results pointing to the importance of Emotional Reactivity, among the features of temperament, and Specificity, among the dimensions of RA, as single, independent

predictors of the intensity of borderline symptoms. The relationship between Emotional Reactivity and BPD we observed in this group has been discussed elsewhere (Górska, 2006), though the role of this variable has proven to be more ambiguous than previously supposed (Kuo & Linehan, 2009). Specificity, in turn, in the sense of attention to detail, the number of details included in the utterance, would seem to be playing a similar role to that of Concreteness, in reference not to sensory, but informational material.

The present study had some limitations. The study groups were composed of students, which limits the possibility of generalizing the results to other populations. Although the experimental group met the diagnostic criteria for BPD, they were not a clinical group, so it would be safe to assume that the intensity of borderline symptoms was moderate; it would be advisable, then, to test clinical groups. Moreover, in order to determine the level of arousal in positive and negative material, it would be necessary to control physiological indicators of arousal, which was not possible in our methodology. Finally, the interpretations of RA given here are not so much unambiguous conclusions as cautious inferences or suggestions. It would be useful, then, to research many aspects of this function at once, including studies in the processual concept.

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