SHORT COMMUNICATIONS

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METAPHORICAL CONCEPTUALIZATION OF SOME NOTIONS
IN DEPRESSIVE DISORDERS:
IS PLEASURE AN *INSIPID MILKY JELLY*?

The study concerned the process of metaphor creation in a group of depressive and of non-depressive people. It was assumed that due to some deficits in working memory and inhibition processes, depressive people would have difficulties with metaphorical processing and would produce fewer metaphors than do healthy individuals. It was also presumed that subjects with depression as compared to non-depressive individuals would produce more metaphors for negative notions, and generally would create more negative metaphors, independently of the semantics and valence of a notion. The results obtained in this study aren't univocal. However, it seems that there exists a tendency to produce a smaller number of metaphors in depressive people (especially concerning the notion of FUTURE), which could indicate the existence of some difficulties in metaphorical processing connected with depression. Furthermore, depressive subjects produced more negative metaphors for some notions but not for all of them. This points to the need of attention to semantics in studies on the mechanisms of metaphorical processing in a group of depressive people.
Key words: cognitive representation, depression, metaphorical processing, metaphors

Introduction

Metaphorical conceptualization of notions in the light of cognitive linguistics

Probably one of the best known statements in cognitive linguistics is that we live by metaphors, that is, the structure of our thought is metaphorical in shape (Lakoff & Johnson, 1980). In the broader perspective this thesis issues from the assumption that language, being an integral part of the human cognitive system, is

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inseparably connected with cognition (e.g., Langacker, 1988). Let us make a thorough study of this reasoning:

Cognitive linguists state that an understanding of the elements of the surrounding world results from human early bodily experiences (cf. Lakoff, 1987; Johnson, 1987). Seclusion in close, limited space (e.g., in a matrix), attempts to keep vertical position, or overcoming obstacles when learning to walk may serve as examples of such experience. These early bodily experiences of an individual are the basis of primary embodied cognitive structures, known as image schemas (they can be interpreted as a kind of cognitive schema, known in psychology; see e.g., Fiske & Taylor, 1991; Wojciszke, 1986). For instance, prenatal fetal experience of being linked with the mother by the umbilical cord is the base of the LINK schema; the child's attempts to stand straight make for the BALANCE schema, and detection of the existence of repetitive day and night rhythms condition the form of the CYCLE schema (the full list of image schemas is presented in the book by M. Johnson, 1987, *The Body in the Mind*). Image schemas play an important role in human understanding of more complicated experiences or abstract concepts (like emotions, mind processes, social life; see Libura, 2000), and this happens through the mediation of metaphor (Johnson, 1987; Lakoff, 1993; Lakoff & Johnson, 1988).

Therefore metaphor is, in cognitive linguistic theory, treated in first place as a cognitive tool organizing our understanding processes (e.g., Lakoff & Johnson, 1988; Turner, 1993). The clue to the mechanisms of metaphorical conceptualization is understanding some elements of surrounding reality in terms of concepts referring to other more basic experiences (e.g., Lakoff, 1993; see also Libura, 2000). For instance, some problems and difficulties in human life might be formulated in terms of physical obstacles impeding movement (cf., expressions such as *You can't skip it*, *Going through this was very hard for me*), whereas intellectual concentration and interest – in terms of physical attachment to some object (cf., *I attach great importance to that matter*). From the cognitive linguistic perspective, metaphors of language are treated as surface, observable indexes of cognitive processes (e.g., Johnson, 1992).

Seeing that cognitive linguistics strongly emphasizes the universality of primary, body experiences conditioning the human understanding of the word (e.g., the experience of being linked to the mother by the umbilical cord, common to all individuals), here arises the question about individual differences in cognitive representations of certain phenomena. The answer formulated on the ground of this paradigm isn't univocal. Despite a common belief in the literature on the assumption of the prelingual, universal basis of cognition, possible differences in understanding the same notion by different language users is also accepted (e.g., Langacker, 2004). The present contradiction may be explained in the following way: we can assume that although image schemas retain the same deep structure, repeatable in numerous acts of perception, they are not rigid and to some degree might be modified in different situations (Libura, 2000, p. 30).

Unfortunately, only a few psycholinguistic studies on possible changes of cognitive schemas in groups differing on diverse variables have been conducted (cf., Libura, 2000; see also the studies of Trzebiński, 1981, 2004). In the light of cognitive psychology, cross-cultural changes in schemas representing space serve as examples of a topic that has given rise to relatively wide interest (cf., studies by Levinson and coworkers on linguistic frames of reference in different cultures; for a recent review, see Majid, Bowerman, Kita, Haun, & Levinson, 2004). The present study concerning the relation between deterioration of the mood and cognitive representations of some notions is an attempt to bridge this gap.

The process of metaphor production and understanding in the perspective of cognitive psychology studies

Current psycholinguistic studies have shown the groundlessness of the traditional division of literal and metaphorical meanings. For instance, Glucksberg (2003) has shown that the process of metaphorical processing is as quick as understanding literal meanings, thus confirming one of the main assumptions of cognitive linguistics: He showed that metaphorical expressions are understood immediately in the figurative sense. Similar findings were made in one of the latest studies with the use of fMRI technique (Mashal, Faust, Hendler, & Jung-Beeman, 2007). They concentrated on the analysis of neuronal networks responsible for processing couples of words creating 1) literal, 2) absurd, 3) conventional metaphorical, and 4) new metaphorical meanings. Based on the observation of active brain areas, it appeared that it was the conventionalization–originality dimension (not the metaphoricity–literality one) which differentiated the patterns of brain activation (only processing new metaphorical expressions, e.g., *pearl tears*, evoked increased activation in the right posterior superior temporal sulcus, right inferior frontal gyrus, and left middle frontal gyrus).

Recent psychological findings also seem to confirm the main cognitivists' thesis that metaphor is not a linguistic ornament but a basic cognitive mechanism. Contrary to the linguists holding the assumption about embodiment and prelingual experiences, psychologists appeal rather to neuronal mechanisms and cognitive functions. For example, M. Schnitzer and M. Pedreira (2005) have recently proposed an interesting neuropsychological explanation for the metaphor phenomena. Based on the classical connectionist theories (Hebb, 1949; Hayek, 1952), they formulated a neuropsychological theory of metaphors. It stated that *if connectionism was an appropriate model of human cognition, then the existence of metaphor would be predictable from the way that the brain functioned* (Schnitzer & Pedreira, 2005, p. 32). How did they come to such a conclusion? And so, in connectionism each notion or concept is represented as a *set of neurons that are connected to a great many other networks each on different aspects of the concept* (ibidem). Permanent activation of given groups of neurons lead to strengthen the interconnections between them and to lower the threshold of activation of one of

them in response to the activation of the rest of the group. Metaphors are in this perspective defined as expressions with structure similar to the formula *X is (a) Y,* and they are interpreted simply as an instruction to connect one network to another. Therefore, a well known example from Lakoff and Johnson (1980), LOVE IS A JOURNEY, would be explained thereby as a model connecting the network of LOVE with the network of JOURNEY. The impression of metaphoricity of an expression is even weaker with every hearing of it. In other words, the stronger networks are linked, the more a metaphor lacks force, and in extreme cases it isn't perceived as metaphor any more. But why in the light of this theory metaphors appear to be so indispensable a phenomenon? According to Schnitzer and Pedreira, this is the result of regularities in the learning processes. In the perspective on connectionist theories, knowledge is gathered due to the creation, reinforcement, or modification of synaptic links on the basis of repeated activations (the connection may be weakened in an analogic way). The learning process is quickest and most effective when assimilation of information demands a minimal (not great) change in the network of connections (Goldbaum, 2001, as cited in Schnitzer & Pedreira, 2005, p. 42). Thanks to metaphor we can understand some more complicated experiences in terms of simpler and more basic ones, and that is why metaphors should be perceived as a fundamental human cognitive tool.

Another important trend in psycholinguistic research joins the quality of metaphorical processing with working memory capacity and executive function efficiency. To begin with, this theory, assuming the existence of individual differences in the capacity of understanding and creation of metaphors, is completely ignored by linguistic theories. Kintsch's Predication Model (Kintsch, 2000, 2001) can serve as an example of a theoretical model predicting the influence of working memory on metaphor processing. Two components make up the model. The first (the LSA component), based on the Latent Semantic Analysis, produces the representation of the metaphorical vehicle and topic meaning: It creates semantic networks for both lexical elements. These networks are reconstructed on the base of data concerning the coexistence of a given word with other words and expressions in thousands of written texts. The position of a vehicle or topic in a network is illustrated by a vector. The second component (the Construction-Integration component, CI) uses the LSA vectors to produce the interpretations of metaphorical expressions with the ARGUMENT IS PREDICATE structure. This happens due to the spreading of activation in a self-inhibitory network, composed of a predicate P, an argument A, and m nearest neighbors of P. Each concept in the network is connected with others with positive or negative links. All meanings strongly connected with a predicate but not linked with an argument (compare LOVE IS A JOURNEY metaphor and a *journey*'s property of numerous changes of transport) are inhibited by the properties in the predicate's neighborhood which can be attributed to an argument (cf., the *love*'s property of constancy and inviolability). The concepts with the biggest resulting activation are used to create a

vector representing the meaning of a metaphorical expression (Kintsch's model was described after Chiappe & Chiappe, 2007). As said before, Kintsch's model predicts that individual differences in working memory capacity and executive functions' (especially inhibition processes') efficiency influence the processing metaphors. Low working memory span individuals (1) may not have enough resources to activate a suitably developed network and (2) could hardly manage to inhibit the salient but irrelevant predicate properties. That is why they usually give an interpretation of a metaphorical expression more slowly than high working memory span subjects, and their interpretations are less accurate (see also Blasko, 1999; Gernsbacher, Keysar, Robertson, & Werner, 2001).

The predictions resulting from Kintsch's model have been recently empirically confirmed by the study of Chiappe and Chiappe (2007) on the understanding and production of metaphors by adult healthy individuals: It appeared that working memory (measured by the means of the following tasks: 1) Listening Span, 2) Retrieval Fluency, 3) Digit Span Forward, 4) Digit Span Reverse) independently of print exposure and vocabulary knowledge influenced the metaphor's processing. Similar results were obtained in a recent study on the understanding of metaphorical language in a group of people suffering from Parkinson's disease (Monetta & Pell, 2007). The research, using a metaphor comprehension task (Gernbascher et al., 2001), showed that the only group performing worse in metaphor processing, was patients with deficits in working memory (the measure was verbal working memory span).

The cognitive functioning of people suffering from depression

On psychopathological grounds, Beck's theory of depression (Beck, 1963, 1967) is probably the best known and empirically verified cognitive theory of that disorder (cf., Solomon & Haaga, 2005). This theory assumes that a depressive person's way of thinking is systematically disturbed by some cognitive deformations such as excessive generalization (separate failures are treated as a permanent tendency), exaggerating (emphasizing the negative aspects of one's experiences), or dichotomous thinking. Moreover, depressive individuals have specific, dysfunctional cognitive schemas (in particular, they take the shape of convictions about self-helplessness and about not being loved, see Beck, 1995), which are accompanied by negative automatic thoughts. They concentrate especially on three semantic areas: the self, the future and the world (so called cognitive triad).

From the perspective of cognitive psychology, Beck's theory of depression emphasizes most of all troubles of attention functions. Particularly, the cognitive content specificity hypothesis (Beck, 1976) states that depressive people direct their attention to stimuli consistent with their dysfunctional cognitive schemas. This hypothesis has been recently empirically confirmed (Lamberton & Oei, 2008; see also studies by Gotlib, Krasnoperowa, Naubauer Yue, & Joormann, 2004, as cited in Fajkowska, Marszał-Wiśniewska, & Sędek, 2006). Furthermore, recent

findings suggest the existence of more general attention deficits in depression (see e.g., Mahurin, Velligan, Hazleton, Davis, Eckert, & Miller, 2006; Smith, Muir, & Blackwood, 2006). Finally, in the latest literature the decreased speed of information processing is treated as a main factor responsible for disturbances in all areas of depressive subjects' cognitive functioning (Sheline, Barch, Garcia, Gersing, Pieper, et al., 2006).

As said before, the results of recent studies have shown that sufficiently efficient working memory mechanisms are necessary for good understanding and producing of metaphorical expressions (e.g., Chiappe & Chiappe, 2007; Monetta & Pell, 2007). Could the disorders in this mechanism be an effect of depression? Many current findings suggest that yes: There occur working memory deficits (von Hecker & Sędek, 1999; Fossati, Amar, Raoux, Ergis, & Allilaire, 1999), worse verbal learning (Castaneda, Suvisaari, Marttunen, Perälä, & Saarni, in press; Smith et al., 2006), and malfunctions of inhibition processes (Joormann, Krejtz, & Sędek, 2006) in the group of depressive people.

Hypothesis

The results of the above empirical studies suggest that (1) efficient functioning of working memory mechanisms and of inhibition processes is necessary for the good processing of metaphorical meanings and that (2) in the group of depressive people we can observe the deterioration of cognitive functioning, especially in the working memory and attention aspects (attention is more often attracted by negative stimuli). Based on these findings I presume that (1) persons with depression, because of the fact that metaphorical processing is more difficult for them, will produce fewer metaphors of the analyzed notions than healthy individuals, that (2) they will create more metaphors of notions with negative axiological meaning (e.g., SADNESS) and that (3) generally all metaphorical expressions produced by depressive people will have more often negative axiological meaning, independently of the semantics of the metaphor topics. This would run contrary to the cognitive linguistic assumption about common and universal mechanisms of metaphorical conceptualization.

Method and procedure

Stimuli and experimental methods

Six notions occurring in the theoretical characterization of depressive disorder were chosen for analysis: PAST, PLEASURE, FUTURE, JOY, SADNESS, and HAPPINESS since in the literature describing symptoms of this disease they are often used with reference to cognitive distortions prevalent among the patients with depression (e.g., Pużyński, 2002, p. 360; Seligman, Walker, & Rosenhan, 2003, p. 272; see also the description of depression symptoms in ICD-10, Pużyński & Wciórka, 1997). Depressive people perceive their past as a chain of failures

and they see the future only in dark colors. Sadness is a prevailing mental state of persons suffering from depression; they aren't able to feel pleasure and joy, they aren't in a position to be happy.

The study involved the two following tasks assessing the process of metaphor production: an unfinished sentences task and a narrative task. The first one was constructed on the basis of different theoretical characteristics of metaphorical expressions. Five sentence schemas were used for each notion: (1) *X is Y* (e.g., *Future is…*; Lakoff & Johnson, 1988), (2*) X equals Y* (Dobrzyńska, 1994), (3) *X is like Y on the score of z* (End, 1986), (4) *When I imagine X, I see Y* (Stępnik, 1988), (5) *It might be said that X is not X but Y* (Wierzbicka, 1971). The constructions were presented in random order. Additionally, they were mixed with randomly chosen entries from the Polish adaptation of the Rotter's Test of Unfinished Sentences (1998). The second task was an instruction to write six short narratives (with the following titles: *Past*, *Pleasure*, *Future*, *Joy*, *Sadness*, *Happiness*). The goal of this method, borrowed from narrative psychology, was to reveal the metaphors spontaneously produced by the investigated subjects.
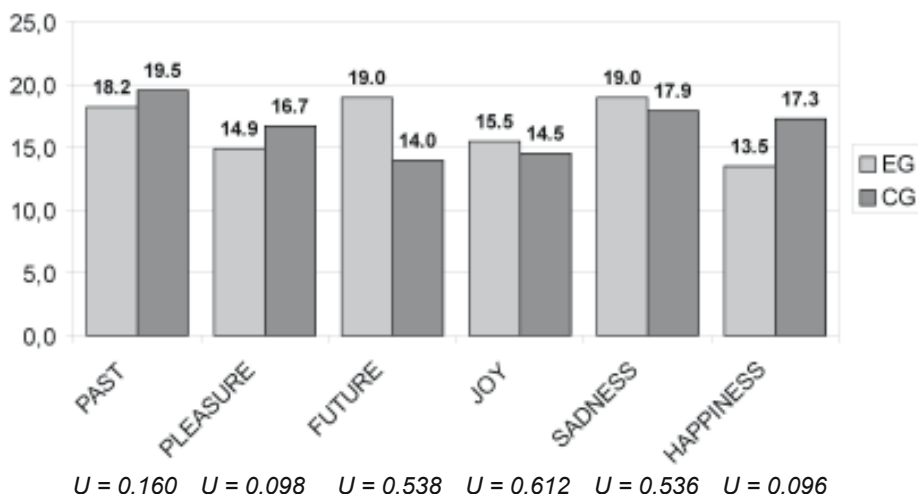
As a metaphorical expression was treated a construction in which the vehicle denoted more concrete or basic domain than the topic (all topics were abstract notions). For instance, the expression of analyzed notions in terms of sensory feelings (e.g., *It might be said that pleasure is not pleasure but drinking cold beverages in heat*) or in terms of really existing elements of reality (e.g., objects, animals, plants, other people, cf., *Pleasure is a medusa*) was interpreted as a metaphorical process, but describing HAPPINESS as *a splendid emotion* was not. To expressions which were classified as metaphors were described as an axiological characterization: positive (e.g., *Sadness, my sweet sadness, my little darling*), negative (e.g., *When I imagine the future I see dark clouds*), or neutral (e.g., *The past is a traveller falling into oblivion*).

The gravity of depression was measured by means of Beck Depression Inventory (BDI). It is composed of 21 entries, and each of them measured particular symptom of depression (e.g., suicidal thoughts, insomnia, increased tiredness, feeling guilty) on a four-point scale. Similarly to other empirical studies on depressive people, it was assumed that if an individual obtained 10 points or more, he or she would be suffering from depression (Beck et al., 1987; Ruscio & Ruscio, 2002; see also Fajkowska & Marszał-Wiśniewska, 2006).

Participants and procedure

Ten depressive and 10 healthy subjects participated in the study. The experimental group (EG) was composed of adult psychiatric patients of one of the Warsaw hospitals (Szpital Wolski), BDI: $M = 20.7$, ranging from 14 to 39. The control group (CG) included non-depressive medical workers of the same hospital, BDI: $M = 4.1$, range 0-9. Both groups were balanced for sex (EG: $M = 50.2$, range 21-70; CG: $M = 49$, range 25-77), education (EG: 7 people with higher and 3 with

Figure 1. Percentage of metaphorical expressions produced for each notion in the unfinished sentences task. EG = experimental group, CG = control group.

$U = 0.160$ $U = 0.098$ $U = 0.538$ $U = 0.612$ $U = 0.536$ $U = 0.096$

medium education, CG: 8 and 2 persons, relatively), and residence (EG: 9 people lived in a city bigger than 500 000 inhabitants, and 1 – in the country; CG: 8 and 2 subjects, relatively).

The participants were given a sheet with unfinished sentences to complete, white notepaper, and six randomly arranged, entitled envelopes[1]. The instruction stated to complete the sentences with expressions which first come to mind, to write six short narratives (of unrestricted length and form), and after that to put the filled notepaper into an envelope with a suitable title. In consideration of the increased tiring of depressive people, the instruction allowed a participant to stop writing and come back to the study at another convenient moment (the time limit of the study was not restricted, subjects could follow the procedure at their home if they wished). All participants were symbolically rewarded with a pen with Warsaw University logo.
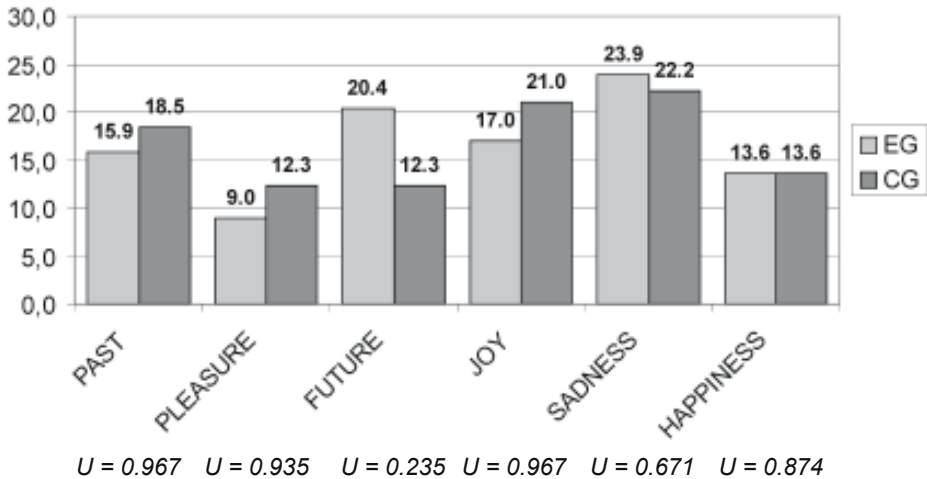
Results

The frequency of metaphorical processing in the group of depressive and non-depressive people

In the unfinished sentences task, it was the control group which created more metaphorical expressions (179 vs. 148 metaphors). For EG, the most metaphors were produced for SADNESS (19%) and FUTURE (19%), and the fewest – for

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[1] The present study is part of a bigger project *Cognitive representation of some notions in a group of depressive and of non-depressive people*.

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Figure 2. Percentage of metaphorical expressions produced for each notion in the narrative task. EG = experimental group, CG = control group.

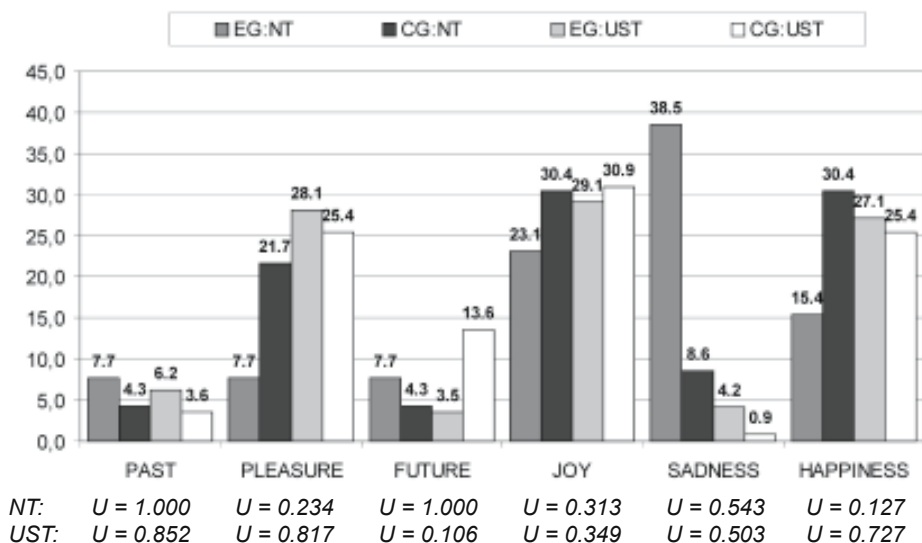U = 0.967   U = 0.935   U = 0.235   U = 0.967   U = 0.671   U = 0.874

PLEASURE (14.9%) and HAPPINESS (13.5%). For CG, the analogical results were to PAST (19.5%) and, similarly to EG, SADNESS (17.9%) versus JOY (14.5%) and FUTURE (14 %, see Figure 1). However, the intergroup differences turned out to be statistically non-significant.

The results obtained in the narrative task form a similar pattern (see Figure 2). The largest number of metaphors were spontaneously created for SADNESS (23.9%) and FUTURE (20.4%); the fewest for HAPPINESS (13.6%) and PLEASURE (9%) in the EG, whereas for the healthy individuals the most frequently expressed in the metaphoric way were the notions of SADNESS (22.2%) and JOY (21%), and most rarely of PLEASURE (12.3%) and PAST (12.3%). As well as in the unfinished sentences task, when it comes to frequency specification, neither did the narrative method reveal any statistically significant findings (the intergroup difference in the number of HAPPINESS metaphors were the most important finding, $U = 0.096$). It should be also said that, in contrast to the first task, in the narratives it was the experimental group which used globally more metaphors (88 vs. 81).

The axiological characterization of metaphors created by the investigated subjects

The number of positive, neutral, or negative metaphors of each analyzed notion was treated as an indicator of its axiological characterization (called also *positive*, *neutral*, or *negative valence*, respectively). Generally, neutral metaphors were most frequently created by both of the groups and in both tasks (unfinished sentences – EG: 44.3%, CG: 46.9%; narratives – EG: 61.3%, CG: 50.6%), and the negative one were the least numerous (unfinished sentences – EG: 23.1%,

Figure 3. Percentage of metaphors with positive axiological meaning. EG = experimental group, CG = control group, UST = unfinished sentences task, NT = narrative task.

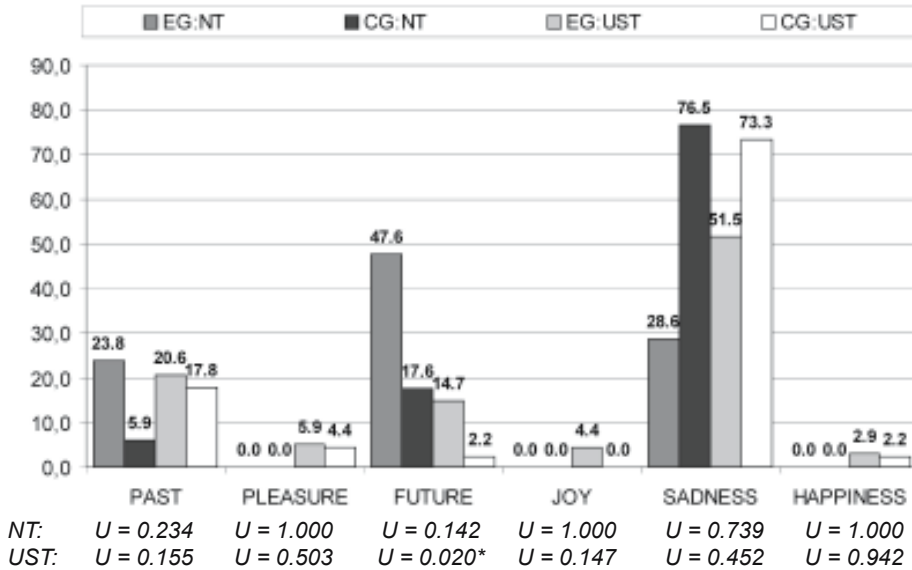|	PAST	PLEASURE	FUTURE	JOY	SADNESS	HAPPINESS
NT:	U = 1.000	U = 0.234	U = 1.000	U = 0.313	U = 0.543	U = 0.127
UST:	U = 0.852	U = 0.817	U = 0.106	U = 0.349	U = 0.503	U = 0.727

CG: 15.4% ; narratives – CG: 21%). The sole exception was the number of negative metaphors produced by EG in the narrative task: They outnumbered the positive metaphorical expressions (23.9% vs. 14.8%).

Passing on to the level of separate notions (see Figures 3 and 4), quite different results were obtained in the unfinished sentences task and the narrative method. In the first one, the outcome was similar in both groups: Depressive people, as well as healthy participants, composed the biggest number of positive metaphors for JOY (EG: 29.1%, CG: 30.9%), PLEASURE (EG: 28.1%, CG: 25.4%), and HAPPINESS (EG: 27.1%, CG: 25.4%); whereas SADNESS (EG: 51.5%, CG: 73.3%) and PAST (EG: 20.6%, CG: 17.8%) had the greatest negative valence. The only one statistically significant difference concerned the axiological characterization of FUTURE – for this notion depressive people produced more negative metaphors than CG (14.7% vs. 2.2%; $U = 0.020$).

What about the second task? Indeed, non-depressive subjects created the biggest number of positive metaphors for the same as for previous notions (JOY: 30.4%, HAPPINESS: 30.4%, PLEASURE: 21.7%); however, results obtained in the EG were striking: It was the notion of SADNESS which had the greatest positive valence (SADNESS: 38.5%, JOY: 23.1%, HAPPINESS: 15.4%). That finding became less spectacular after data analysis: It appeared that almost all positive metaphors of SADNESS were produced by one person (with the highest, distinguishing Beck Depression Inventory index, BDI = 38). That is why the difference has turned out not to be significant in the statistical analysis. In both experimental and control group, the biggest number of negative metaphors was created for SADNESS (EG:

Figure 4. Percentage of metaphors with negative axiological meaning. EG = experimental group, CG = control group, UST = unfinished sentences task, NT = narrative task.

	PAST	PLEASURE	FUTURE	JOY	SADNESS	HAPPINESS
NT:	U = 0.234	U = 1.000	U = 0.142	U = 1.000	U = 0.739	U = 1.000
UST:	U = 0.155	U = 0.503	U = 0.020*	U = 0.147	U = 0.452	U = 0.942

28.6%; CG: 76.5%) and FUTURE (EG: 47.6%; CG: 17.6%). The intergroup differences still didn't reach the statistical significance level.

The correlation between the depth of depression and the number of metaphorical expressions as well as their axiological characterization

The last step in the data analysis was the assessment of the correlation between obtained results and the intensity of depression (measured by the means of BDI). The correlation was checked separately for each group. Let's start from the number of metaphors produced by investigated subjects. Data from the unfinished sentences task suggest that in CG, the depth of depression negatively correlated with the number of metaphorical expressions created for FUTURE (ρ = -.567, $p < 0.05$). For the depressive participants, we managed to obtain statistical significant results with the help of the narrative method: the deeper the depression, the more metaphors of FUTURE ($\rho = 0.555$, $p < 0.05$) and SADNESS ($\rho = 0.738$; $p < 0.01$).

Let's now pass on to the dependence between depression depth and the number of positive, neutral, or negative metaphors. For the unfinished sentences task, in EG, the gravity of depression positively correlated with the number of negative metaphors of JOY ($\rho = 0.552$, $p < 0.05$), whereas in the CG – with the number of positive metaphorical expressions of HAPPINESS ($\rho = 0.826$, $p < 0.01$) and negative metaphors of PAST ($\rho = 0.628$, $p < 0.05$). In the narrative task, only the correlation between the intensity of depression and the number of neutral metaphors of SADNESS created by depressive subjects was statistically significant ($\rho = 0.604$, $p < 0.05$).

Discussion

The first part of our hypothesis stated that due to some deficits in the working memory and inhibition processes, depressive people would have difficulties with metaphorical processing and they would produce fewer metaphors than healthy individuals. We also presumed that subjects with depression would produce more metaphors for negative notions, because their attention was attracted mainly by negative stimuli. These assumptions were partially confirmed: Indeed, EG created globally fewer metaphorical expressions in the unfinished sentences task, but no more in the narratives. Taking into account the number of metaphors for separate notions, no statistically significant differences were found (the most important finding concerned the notion of HAPPINESS: In the narrative task, EG created fewer metaphors than healthy individuals).

When it comes to the correlation with BDI, the assumption about difficulties in metaphor processing in depression seemed to be true only for FUTURE and CG: In the unfinished sentences task, subjects with a higher BDI index produced significantly fewer metaphors. Results of EG weren't consistent with this schema, and what is more, were completely contrasting: Individuals with deeper depression created even more metaphors for FUTURE and SADNESS than less disordered participants.

Why are the results so ambiguous? First of all, it should be said that (a) no regularity common for all notions was found and that (b) there were quite different regularities for the depressive and control group. The first remark suggests that this is the semantic component which can't be ignored in formulating generalizations concerning the metaphorical processing by patients with depression. In light of the obtained results, two notions seem to be crucial on the ground of intergroup differences: one from the chronological axis (FUTURE), and one from the affective dimension (SADNESS). This finding can be treated as an argument confirming Beck's theory of cognitive triad also on the notional level. Referring to the observation about different regularities in the EG and CG, we can speculate that the influence of decrease in mood on the metaphorical processing doesn't have a linear character: Not before reaching the sick level, it specifically influences this aspect of cognitive functioning. Depressive people might pay their attention to the notions with negative axiological meaning (e.g., SADNESS) or to negatively represented concepts (e.g., FUTURE; cf., cognitive triad theory).

Let's pass on to the assumption that depressive people in comparison with non-depressive subjects would create more negative metaphors, independently of the semantics and valence of a notion. Taking into account the general specification, it seems that EG really produced more negative metaphorical expressions than CG. However, this difference appeared statistically non-significant: Generally, the largest number of metaphors created by both groups had neutral axiological characterization, and the fewest (with one exception) were negative. On the level of separate notions, the performance of EG usually doesn't differ from that of CG:

The majority of positive metaphors were created for JOY, PLEASURE, and HAP-PINESS by both groups, whereas the greatest number of negative metaphorical expressions described the notions of SADNESS and PAST. The only one statistically significant difference, confirming the stated hypothesis, was connected with FUTURE: Depressive people in the unfinished sentences task produced significantly more negative metaphors of this notion than CG (that tendency was observed also in the narrative method, but the intergroup difference didn't reach the level of statistical significance). This outcome once again confirmed the remarkable role of the notion of FUTURE and its specific dysfunctional construction in the depressive cognitive representations.

What about the correlation between the valence of metaphors and BDI index? Similarly to the number of metaphors, the obtained results were ambiguous. The following findings can be treated as a confirmation of the assumption about the increased number of negative metaphors in a deteriorated mood: for the EG, the highest BDI index, the more negative metaphors of JOY (unfinished sentences task), and for CG, the more deteriorated mood, the more negative metaphors of FUTURE. Correlation between the deterioration of the mood and larger number of SADNESS' neutral metaphors (EG, narrative method) may also be interpreted in line with our assumption (the increased number of neutral metaphorical expressions in comparison with the negative ones reflects the fact that depressive people cognitively situate the notion of SADNESS nearer the positive pole on the axiological axis than do healthy subjects). Nevertheless, formulating certain and univocal conclusions concerning the direction of mood and metaphor valence dependence is impossible: One wonders that healthy subjects produced even more positive metaphors (not negative ones) of HAPPINESS when their mood was worse.

How can we explain this contradiction? As it was said before, it is possible that the influence of mood on the metaphorical processing may be different in the control and experimental group: Perhaps in CG, the decrease in mood is too low to evoke the cognitive mechanisms typical for people suffering from depression (e.g., we can speculate that in the state of dejection, non-depressive individuals activate some defense mechanisms, inaccessible for depressive subjects, and begin to wittingly concentrate their attention on positive stimuli, e.g. on the notion of HAPPINESS). Interestingly, in both groups there was no regularity concerning all of the notions. This is the next argument manifesting the importance of semantic dimension while studying depressive individuals' language and cognitive functioning. The qualitative analysis of metaphors produced by EG and CG may also bring a lot of important findings to our study, but that is the topic for a separate paper.

There may be some doubts concerning the generalization of the above findings. For instance, one can ask about the accuracy of the experimental methods: Can an unfinished sentences task and a narrative task really serve as tools examining the process of metaphor creation? Are the schemas, used in the unfinished sentences task, adequate metaphorical formulas? Are the narratives written by investigated

subjects long enough to give a sufficient number of metaphors for each notion? Are the two used tasks interconnected? It appeared that not all of the results received by means of the two methods were correlated (statistically significant correlations were observed for the following aspects: the number of metaphors of FUTURE, $\rho = 0.519$, $p < 0.01$; the number of positive metaphors of PAST, $\rho = 0.625$, $p < 0.01$, and of SADNESS, $\rho = 0.999$, $p < 0.01$; the number of neutral metaphors of HAPPINESS, $\rho = 0.395$, $p < 0.05$). Which method should we then rely more on? On the one hand, the unfinished sentences task prevails on the aspect of the possibility to compare the metaphors created by separate subjects: All expressions were produced on the base on the same schemas, arranged in the same order. On the other hand, the narrative method allows for creating metaphors in a more spontaneous way (after all, the former task forces the use of metaphors in some way), it gives participants the possibility to produce metaphors with more original construction (or not to use metaphors et all), and, from the experimenter's point of view – to make a more reliable quantitative list of used metaphors. The construction of accurate and reliable tool examining the processing of metaphors by different groups of people is a great challenge for the future.

To sum up, the results obtained in this study suggest the existence of a tendency to creation a smaller number of metaphors by depressive people (especially concerning the notion of FUTURE). This could indicate some difficulties in metaphorical processing in the depressive state. However, the findings weren't univocal. Individuals with depression produced fewer positive metaphors of HAPPINESS, which could be interpreted as an argument for the assumption about difficulties in the processing of positive meanings in depression, as well as for the Beck's cognitive content specificity hypothesis. Moreover, depressive subjects produced more negative metaphors of FUTURE and neutral metaphorical expressions for SADNESS. It could be a sign of some interesting mechanisms connected with axiological revaluation of some notions by people in depression. Nevertheless, one should remark that all the observed dependencies weren't universal and differed according to notion. This fact testifies to the necessary regard for semantics in studies on the mechanisms of metaphorical processing in the group of depressive people. Our results show also usefulness of inclusion to the cognitive linguistic theory of metaphor the possibility of influence of some variables (e.g., decrease in mood) on the shape of the metaphorical conceptualization of some notions.

Acknowlegdments

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