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Cognitive Distortions in Thinking in Connection with Positive and Negative Emotions of Employed and Unemployed

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Abstract

The research presents an analysis of links between the occurrence of cognitive distortions specified by means of 10 categories of cognitive distortions based on the Beck's Cognitive Theory and the positive and negative emotions of the employed and unemployed as two separate categories. The research sample consisted of 336 respondents (183 employed and 153 unemployed). Cognitive distortions were identified by means of daily records containing 10 pages per diary. Spearman Rank Correlation Coefficient revealed the differences in relations among cognitive distortions within the observed groups in connection to the positive and negative emotions. Occurrence of positive and negative emotions was observed with the help of SEHP.

Keywords: Cognitive distortions, Thinking, Errors, Emotions, Employed, Unemployed.

1. Introduction

Investigation of the inclination to error-making implicitly presupposes existence of differences between predictions of normative approaches (how we should make decisions within the intentions of logic or the quantitative disciplines such as mathematics and statistics) and descriptive approaches (how we actually make decisions). Intuitive judgments of people in a large number of decision-making and reasoning tasks deviate from the appropriate norms of rationality (Samuels *et al.*, 2004). Baláž (2006) distinguishes the tendencies to make errors into cognitive and emotional tendencies. While cognitive tendencies originate in an incorrect collection of analysis and the information use, emotional tendencies originate in feelings, intuitive attitudes and inherent preferences. Newell and Simon (1972) point at the fact that thinking abilities of a person to formulate and solve complex problems are very little comparing to the amount of these problems. That is why when people try to make a decision about a certain problem, they do not meet the criteria of objective rationality and often they are not even close to meeting them. The idea of imperfection of the human intellect in the form of cognitive errors or distortions was already considered by Aristotle. Nevertheless, people in an effort to overcome their limitations construct not only tools but also modern computers and they elaborate heuristic principles of creative thinking.

The research in deductive reasoning places in focus the use of logic systems to characterize abstract structures and it deals with the whole range of tasks from syllogistic thinking, through reasoning with spatial conjunctions, to reasoning with propositional connectives, e.g. “when”, “or”, “and”. The theory of abstract rules regards the logical concept of validity as a normative model of reasoning. According to this theory, individuals arrive at valid conclusions by applying an abstract content-independent inferential rule by the means similar to deriving proofs in logic. In order to derive conclusions from premises, individuals use mental logic. During this process they may make errors because certain inferences are more complex than others or because they misunderstood the premises of the given deductive problem (O’Brien *et al.*, 1994). The theory of mental models also regards logical interpretation of validity as its normative model (Johnson-Laird, 1999). It assumes that when reasoning, individuals manipulate with mental models of the set of premises by the means similar to the semantic method of proving in logic. They create mental models for themselves which represent possible states of the world and then they describe and verify these models in order to arrive at valid conclusions. A conclusion is valid when there is no counterpart to it. Individuals make errors when they must represent a large number of models which exceed the range of their working memory (Johnson-Laird and Byrne, 1991).

Beck (1998) elaborated a famous cognitive depression theory highlighting the cognitive structures as an essential part of the emergence, maintenance and return of depression. The cognitive structures are a source of information not only about the environment but also about the own self and the activity programs which make it possible to achieve the given goals. Thanks to them individuals are aware of their own identity and are able to orientate themselves in the outside world. Without this experience they would not understand their actual status and potential and would not be able to act actively in a real environment. In accordance with Beck (1990), cognitive processes are hierarchically structured. He distinguishes three levels of cognitive processes:

1. **Cognitive events:** thoughts or ideas, certain units of cognitive processes. These thoughts or ideas may be volitional, automatic, cold and hot.
2. **Cognitive processes:** a more complex action in which the individual cognitive events are mutually interconnected, compared, evaluated and placed into the context of past experience. The processes of inductive thinking, deductive thinking, understanding of meaning, evaluation of meaning, etc. belong to this category.
3. **Cognitive schemas:** the theory of cognitive schemas of personality disorders. They are programs in which various personality types in combination with the influence of environment may reflect the maladaptive behavioral, cognitive and emotional strategies. Beck created three categories of schemas: performance, acceptance, power.

The specific thinking schemas are stable cognitive formulas by which people interpret their experience. They are basic „silent" attitudes in the center of our cognitive system which people use to understand the reality. Thinking schemas create the base for interpretation of a certain event. If a cognitive schema is maladaptive, the created interpretation will lead to stress and maladaptive behavior. Thinking schemas are probably most significantly fixed by learning through experience during early childhood (Beck, 1979). Cognitive distortions are systematic errors in thinking and perception, repeated automatic incorrect judgments or assessments which lead to the persistence of negative schemas – despite the opposite fact. Because of cognitive distortions, individuals maintain their negative thinking schemas and claim them particularly in stressful situations. People are usually not aware of their cognitive distortions (errors in logic). They are aware only of their final decisions. The typical cognitive distortions enabling assimilation according to the cognitive schemas are, in accordance with Beck (1979), as follows:

1. **Unsubstantiated conclusions** (arbitrary deductions) – the person arrives to a certain opinion on the basis of an insufficient amount of information; it is a conclusion-drawing by making „a leap".
2. **Distorted selection of facts** (selective abstractions) – the person notices only what verifies their conclusion and ignores the facts which prove the opposite.
3. **Over-generalization** – the person draws a far-reaching conclusion from a particular situation.
4. **Exaggeration and downplaying** – a tendency to attach an excessive importance to certain actions and understate others.
5. **Touchiness (personalization)** – a tendency to relate to oneself random events and take responsibility for something which a person cannot really influence.
6. **Black-and-white thinking** (dichotomous thinking) – thinking in absolute categories "all or nothing".
7. **Thought-reading** – judgments about what others think on the basis of some completely vague signals.
8. **Negative prophecies** – hasty catastrophic conclusions when the worst consequences are expected in advance.
9. **Disqualifications of the positive –** neutral or positive phenomena are changed into negative ones.
10. **Argumentation through emotions** (catathymic thinking) – tendencies to adjust the assessment of the surrounding events to one's own emotional state regardless of the reality.
11. **Marking** – assessment in which a complex phenomenon is simplified into one, often negative attribute (Praško, 2003).

Emotions are an important factor which influences the cognitive functions. They are a reflection of the biological quantity of stimuli from the viewpoint of their significance for the subject (Höschl, 2002). The contemporary neuropsychological view regards the relationship between emotions and the cognitive functions as crucial. Under normal circumstances, our emotional reactions and cognitive processes are connected in a way that makes the whole processing of information as effective as possible. Emotions and cognitive processes are closely interconnected. Emotional stimuli are preferred according to our cognitive experience. On the other hand, emotions closely affect the processing of cognitive information. On the basis of a cognitive process, the emotional reaction may be developed or suppressed. Influence of the mood facilitates the recollection of the emotionally equally colored material. Another important aspect is the information attribute of emotions, when negative emotions direct the organism to deal with its surroundings more, and contrarily, positive emotions cause the organism to relax. Negative emotions, such as fear or anxiety, narrow the focus of attention. Emotions influence the storage of information into memory. Strong emotions may lead to distortion of the long-term or short-term memory. Feelings play a crucial role in how our memory actively perceives the world, which is reflected into thinking and behaving. Good mood invokes positive information (memory of a happy childhood invokes good feelings). Contrarily, negative mood selects negative information. There is a relationship between emotions and other aspects of cognition. Feelings affect all other aspects of cognitive functions, including memory, attention and decision-making (Adolphs *et al*., 2001). Feelings and cognition are, in accordance with Forgas (2001), not separated, individual abilities, as it is often suggested. There is dependence between feelings and thinking in human social life. Our emotional experience is connected to how the information about the world is stored and represented. On the other hand, experience and mood strongly affect memory, information, warning and the way by which we react to social situations. Feelings and emotions may also influence the thinking process (how we solve social information), the contents of thinking, opinions and behavior (what we think and do), and the process of cognition. Positive feelings produce such thinking which gives way to our inner

thoughts, ideas and dispositions. Contrarily, negative feelings produce the more outward-oriented way of thinking which perceives the requirements of the outside world and gives priority to them over the inner thoughts (Bless, 2000). The social part is represented by social intelligence which is described in various studies by several different authors (Orosová, 2004; Makovská and Kentoš, 2006; Štefko and Butoracová Šindleryová, 2008).

2. Research

The research was carried out on the sample of 336 people applying for a psychodiagnostic testing at the Center of clinical and psychological care, Ltd. in Prešov, Slovakia. The respondents agreed to write a diary by applying psychodiagnostic methods and using the data for the research purposes. When writing a diary, the respondents followed one common instruction. Writing the report in one 25-page diary differed among the respondents from 1 to 3 months before the submission deadline. Collecting the diaries from all 336 respondents took approximately 5 years. The diaries were divided into two categories: the diaries of the employed respondents and the diaries of the unemployed respondents. Identification of the cognitive distortions was carried out by a single reviewer (one of the authors of this report) who mastered the Cognitive-Behavioral Therapy training and has a ten-year experience with the method of cognitive restructuralization.

2.1. Research Sample

The research sample is a set of 336 individuals (166 men, 170 women) of the age between 18 and 67 years, the average age being 35.18 years. The number of the employed respondents is 183, 153 are unemployed.

2.2. Research Methods

The presented research is supported by Beck's theory of cognitive schemas and cognitive distortions. For the purposes of this research, ten following categories were selected: Unsubstantiated conclusions, Distorted selection of facts, Over-generalization, Exaggeration and downplaying, Touchiness, Black-and-white thinking, Thought-reading, Argumentation through emotions, Marking, and "I should, I must" in thinking. Cognitive distortions were identified with the help of the diaries. Into their diaries the individuals wrote their thoughts in the situations which were emotionally significant to them. The instruction was: "At the moment when you realize any emotion significant to you (positive or negative), observe the situation you are in and the thoughts that run through your head at that moment. Write down the thoughts exactly the way they produce themselves." The diaries were collected from 336 respondents and in each diary of 25-page length; the ten categories of cognitive distortions were identified.

Positive and negative emotions were mapped by means of the SEHP questionnaire (English translation: EHSW – Emotional Habitual Subjective Well-Being questionnaire; (Džuka and Dalbert, 2002). It is a brief tool for measuring the emotional habitual subjective well-being which distinguishes the positive and the negative side of experiencing and simultaneously integrates physical feelings. It does not measure the intensity of the current experienced emotions but detects the frequency of experiencing the individual conditions within a longer time interval, which were divided by the authors of the questionnaire into the positive conditions and the negative conditions. The positive conditions consist of: Joy, Happiness, Pleasure, Physical vigor. The negative conditions contain: Fear, Guilt, Sadness, Pain, Anger, and Shame. The questionnaire consists of 10 items and the respondents express their answers in relation to the frequency of experiencing a particular emotion on a 6-point scale (almost never, rarely, sometimes, often, very often, almost always). The non-standardized scale of the SEHP contains, according to Nábělková and Diškán (2009), two dimensions: 4 items saturating the dimension of positive emotional condition (Cronbach's alpha: 0.77; n=97) and 6 items saturating the dimension of negative emotional condition (Cronbach's alpha: 0.74; n=97). The higher the scores in the SEHP dimensions, the higher the degree of the positive or negative condition.

3. Results

Interconnections among the individual categories of cognitive distortions in thinking, gender, age and the positive and negative emotions in the group of employed and unemployed individuals was determined by means of Spearman's rank correlation coefficient. Table-1. illustrates the statistically significant interconnections amongst the 10 categories of cognitive distortions in thinking and the positive and negative emotions of the employed individuals. The results demonstrate that Distorted selection of facts correlates negatively with Pleasure, Physical vigor and Happiness. Black-and-white thinking correlates positively with Pain as well as Argumentation through emotions. Marking correlates positively with Sadness and "I should, I must" in thinking correlates negatively with Joy of the employed persons.

Table-1. Correlations among the cognitive errors and the SEHP methodology of the employed persons

	Unsubstantiated conclusions	**Distorted selection of facts**	**Over-generalization**	**Exaggeration, downplaying**	**Touchiness**
Pleasure		-.249**			
Physical vigor		-.166*			
Happiness		-.194*			
	Black-and-white thinking	Thought-reading	Argumentation through emotions	Marking	"I should, I must" in thinking
Pain	.223**		.223**		
Joy					-.243**
Sadness				.283**	

** p < 0.01 * p < 0.05

Table 2 represents the statistically significant links amongst the 10 categories of cognitive distortions in thinking and the positive and negative emotions of the unemployed persons. It was demonstrated that Distorted selection of facts correlates positively with Fear and negatively with Happiness. Over-generalization correlates positively with Anger and negatively with Pleasure. Exaggeration and downplaying and Touchiness correlate positively with Happiness. Thought-reading correlates positively with Sadness. Black-and-white thinking correlates positively with Joy. Argumentation through emotions correlates negatively with Pain, "I should, I must" in thinking correlates positively with Pleasure as well as Shame of the unemployed persons.

Table-2. Correlations among the cognitive errors and the SEHP methodology of the unemployed persons

	Unsubstantiated conclusions	**Distorted selection of facts**	**Over-generalization**	**Exaggeration, downplaying**	**Touchiness**
Anger			.166*		
Pleasure			-.170*		
Fear		.237**			
Happiness		-.211*		.175*	.175*
	Black-and-white thinking	Thought-reading	Argumentation through emotions	Marking	"I should, I must" in thinking
Feelings of guilt					.180*
Shame					.192*
Pain			-.171*		
Joy	.167*				
Sadness		.176*			

The values of the calculated correlation coefficients between the individual factors are considerable. The extracted factors of cognitive distortions mutually correlate or, in other words, they are on the borderline of the statistically significant correlation. This is documented by the fact that these factors are interconnected. The statistically significant values of these correlations are, however, not very high, which means they describe different although interconnected areas.

Black-and-white thinking, Unsubstantiated conclusions, Distorted selection of facts, Argumentation through emotions and "I should, I must" in thinking inter-correlate negatively. Negative interconnections were detected also between the Distorted selection of facts and Exaggeration, downplaying. Positive correlation was found between Touchiness and Unsubstantiated conclusions as well as between Distorted selection of facts and "I should, I must" in thinking.

4. Discussion

As Macháč *et al*. (1985) state, an emotion may be weakened or dissolved by means of a rational analysis, but a strong emotion may, contrarily, deform the degree of a rational analysis. Thinking is usually significantly influenced by emotions. For instance, it was found out that emotional reactions reduce the flexibility of problem-solving (Ruisel, 1999). Chronic frustration reduces the fluency of verbal demonstration. For this reason individuals who undergo strong emotional reactions often use their knowledge insufficiently and they transfer it into their working memory only in a limited degree (Heppner and Krauskopf, 1987). Emotions are used also in acquiring declarative and procedural knowledge. Identification of a notion with strong accompanying emotions leads to placing also the emotional reaction into the working memory along with the given notion. For example, a person with ophidiophobia (fear of snakes) may, in an unexpected encounter with this animal, decode "the snake" in company with a highly emotional reaction regardless of the actual danger in a particular situation. Sternberg (1985) accentuated the importance of the hidden knowledge for practical intelligence. In various areas of practice the experts differ from the newcomers exactly in this hidden ability or skill which usually does not correlate with the traditional degrees of verbal intelligence. Fedáková (2004) found out that the differences between the employed and the unemployed of the selected age categories and components of the attitude to work were, in certain post-hoc comparisons, confirmed to be statistically significant. The comparisons demonstrate that between the employed and the unemployed of the same age categories there are no statistically significant differences in assessing the cognitive component of the attitude to work, and they were also not confirmed between the age categories within the group of the employed and the unemployed. Furthermore, she detected the differences in assessing the emotional component of the attitude to work. While among all the employed in all age categories this component was evaluated in the same manner, the group of the unemployed in their young and middle adulthood reflected a statistically significant difference ($p<0.021$) in assessing the emotional component of the attitude to work. Fedáková (2004) further stated that the employed of all age categories as compared to the unemployed evaluated the cognitive component of the attitude to work more positively, while the emotional and behavioral component of the attitude to work were more positively evaluated by the unemployed. Ivanovičová and Gropel (2009) clarified the relationship between irrational opinions and satisfaction with life. The research partly confirmed the existence of this relationship and in accordance with the given hypothesis also its negative character. This means that people who referred about a higher degree of satisfaction with life also demonstrated a lower degree of irrational opinions, and people with a higher degree of irrationality seemed to be less satisfied with their own life. They claimed that despite the fact that both variables create a cognitive component of evaluation of their own life's events, the mutual interconnection seems to be transferred more to the level of overall subjective well-being. As the detected correlations prove, there exists a stronger relationship of irrationality and the overall subjective well-being, which means not only the cognitive but

also the affective component of well-being. They, therefore, recommended studying the connections of irrational opinions and both components of the subjective well-being – affective and cognitive.

The results of this research confirmed the differences in relationships between the cognitive distortions in thinking in connection to the positive and negative emotions in the group of employed and unemployed individuals. In the category of Unsubstantiated conclusions, relationship was confirmed neither among the employed nor the unemployed in connection to emotions. Distorted selection of facts of the employed correlates negatively with Pleasure, Physical vigor and Happiness. It can be noticed that this category identically negatively correlates with the positive emotions. In the group of employed individuals the occurrence of a distorted selection of facts worsens pleasure, physical vigor and happiness. In the group of unemployed individuals, Distorted selection of facts correlates positively with Fear and negatively with Happiness. Distorted selection of facts and its occurrence in thinking supports among the unemployed the presence of fear and worsens the feeling of happiness. Over-generalization in the group of the employed does not correlate with any emotion. However, in the group of the unemployed it correlates positively with Anger, negatively with Pleasure. The presence of over-generalization in thinking of the unemployed supports the presence of anger and worsens pleasure as a positive emotion. Exaggeration and downplaying in the group of employed individuals does not correlate with any emotion. In the group of unemployed individuals it correlates positively with Happiness. The presence of the cognitive distortion of exaggeration and downplaying thus supports the feeling of happiness. We presume that the downplaying of a situation plays the major role here. Considering the presence of a positive emotion, there is an assumption that this emotion will fix the presence of a cognitive distortion in the sense of positive reinforcement. Touchiness in the group of the employed does not correlate with any emotion. In the group of the unemployed it correlates positively with Happiness. The presence of blaming others, transferring responsibilities to others and distrust cause in the group of the unemployed a support of the feeling of happiness. In this case it may also be assumed that a cognitive distortion will be reinforced by a positive emotion. Black-and-white thinking in the group of the employed correlates positively with the emotion of Pain but in the group of the unemployed it correlates positively with the positive emotion of Joy. In this case there is also a relationship between a cognitive distortion and a positive emotion in the group of the unemployed and there is a possibility of positive reinforcement. Thought-reading in the group of employed individuals does not correlate with any emotion. In the group of the unemployed it correlates positively with the emotion of Sadness. The presence of this distortion in thinking supports the presence of sadness among the unemployed individuals. Argumentation through emotions correlates positively with Pain in the group of the employed – its presence therefore supports this emotion. It is contrary to the group of the unemployed, where Argumentation through emotions correlates negatively with the same emotion. The method of argumentation through emotions helps the unemployed ease the presence of pain which makes this category of cognitive distortions in this group stronger and more fixed. In the group of employed individuals, Marking correlates positively with Sadness. In the group of the unemployed, Marking is in no relationship with any of the observed emotions. "I should, I must" in thinking in the group of employed individuals correlates negatively with Joy and in the group of the unemployed it correlates positively with Feelings of guilt and Shame.

Comparison of the results in the groups of employed and unemployed persons clearly demonstrates that in the group of employed individuals the occurrence of cognitive distortions is not connected to the positive emotions and if so then in their negative form. According to the theories of teaching and operant conditioning, this group reflects positive enfeeblement. Positive enfeeblement is a process in which the probability of certain behavior – in this case the presence of cognitive distortions – decreases because it leads to undesirable and unpleasant consequences. In the group of the unemployed, a positive reinforcement takes place through the relationship with positive emotions in four categories of cognitive distortions, namely Exaggeration and downplaying, Touchiness, Black-and-white thinking and Argumentation through emotions. A positive emotion may in all cases strengthen and fix the wrong way of thinking among the unemployed individuals. Positive reinforcement is a process during which a certain kind of behavior leads to the consequences which increase the probability of occurrence of certain behavior. It means that the probability of maintaining cognitive distortions is higher in the group of the unemployed than among the employed.

Contrarily to Prokopčáková (2010), who studied the influence of counterfactual thinking and negative emotions and arrived at the conclusion that individuals with a higher degree of negative emotions are hampered by the counterfactual thinking which does not help them, our findings indicate the negative influence of positive emotions in relation to the observed cognitive distortions in thinking in the group of unemployed respondents. When comparing the average values of the frequency of the occurrence of cognitive distortions in the group of employed and unemployed persons no great differences between the groups were detected. A significant difference was found only in the category of Distorted selection of facts which is significantly more present in the group of the unemployed. These respondents notice only what verifies their opinion and they overlook the facts which prove the opposite.

5. Conclusion

For number of scientific disciplines, unemployment is a challenge to elaborate own research activities. Coping with unemployment, as various authors indicate, places greater demands on an individual in several ways. The statistical findings proved that characterization of the individual categories of cognitive distortions differs within the observed groups. Identically, different interconnections between the cognitive distortions and the positive and negative emotions were detected. The results provoke us to think whether the detected differences contribute or not to the loss of work positions or whether they keep or not the position of unemployment in time.

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