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Emotions in relation to cognitive distortions in thinking of the employed and unemployed individuals

Abstract. This article presents a research in which the frequency of occurrence of cognitive distortions in thinking of the employed and unemployed individuals was compared and the possible relationship to the positive or negative emotions was observed. Ten categories of cognitive distortions based on Beck's Cognitive Theory were used for this study. Cognitive distortions were identified on the sample of 336 respondents by means of their daily records containing ten pages per diary. Various factors of cognitive distortions within the researched groups were generated by means of the factor analysis and Spearman's Rank Correlation Coefficient revealed the differences in relationships among cognitive distortions within the observed groups in connection to the positive and negative emotions. The occurrence of positive and negative emotions of the respondents was observed on the basis of the SHEWB (Subjective Habitual Emotional Well-Being) methodology.
Keywords: Employment; Emotions; Cognitive Distortions; Thinking

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Емоції в контексті когнітивних викривлень у мисленні працюючих і безробітних громадян

Анотація. Ця стаття являє собою дослідження, в якому зіставляється частота виникнення когнітивних викривлень у мисленні як працюючих, так і безробітних громадян; у ній було вивчено можливий зв'язок таких викривлень із позитивними та негативними емоціями. Для проведення дослідження були використані десять категорій когнітивних викривлень, які ґрунтуються на когнітивній теорії Бека. Когнітивні викривлення були виявлені за вибіркою, що охоплює 336 респондентів, шляхом вивчення їхніх щоденників, кожний із яких складається з десяти сторінок. Різні фактори когнітивних викривлень у межах досліджуваних груп були отримані за допомогою факторного аналізу, а також коефіцієнта рангової кореляції Спірмена. Відмінності між когнітивними викривленнями в межах досліджуваних груп були виявлені у зв'язку з наявністю позитивних і негативних емоцій. Поява у респондентів зазначених емоцій відстежувалася на основі методології звичного суб'єктивного емоційного благополуччя.
Ключові слова: зайнятість; емоції; когнітивні викривлення; мислення.

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Эмоции в контексте когнитивных искажений в мышлении работающих и безработных граждан

Аннотация. Статья представляет собой исследование, в котором сопоставляется частота возникновения когнитивных искажений в мышлении как работающих, так и безработных граждан; в ней изучена возможная связь таких искажений с положительными и отрицательными эмоциями. для проведения данного исследования были использованы десять категорий когнитивных искажений, основанных на когнитивной теории Бека. Когнитивные искажения были выявлены по выборке, охватывающей 336 респондентов, посредством изучения их дневников, каждый из которых включал десять страниц. Различные факторы когнитивных искажений в пределах исследуемых групп были получены при помощи факторного анализа и коэффициента ранговой корреляции Спирмена. Отличия между когнитивными искажениями в пределах наблюдаемых групп были выявлены в связи с проявлением положительных и отрицательных эмоций. Появление положительных и отрицательных эмоций у респондентов наблюдалось на основе методологии привычного субъективного эмоционального благополучия.
Ключевые слова: занятость; эмоции; когнитивные искажения; мышление.

1. Introduction

Unemployment is a serious social problem. Job loss, unsuccessfulness in search of a new one, fear of the employed of losing their job – these are the aspects which have a negative economic, social, mental and health-related impact. The basis of specification of the psychological approach to studying unemployment is, according to Vyrost and Fedakova (2003), an analysis of this issue from the perspective of cognitive processing, emotional experiencing and actions of an unemployed individual [1]. Hellgren and Sverke (2003) claim that stress evoked in those who lost their jobs is as intense as stress which is experienced by people who are employed in an insecure job [2].

2. Brief Literature Review

Studying the tendencies towards error-making implicitly assumes existence of differences between predictions of normative approaches (how one should make decisions within the intentions of logic or the quantitative disciplines, e.g. mathematics and statistics) and descriptive approaches (how one actually makes decisions). According to Samuels et al. (2004), intuitive judgments of people in a large number of decision-making and reasoning tasks deviate from the appropriate norms of rationality[3]. Balaz (2006) differentiates between the cognitive tendencies to make errors and the emotional ones [4]. Cognitive tendencies arise from an incorrect collection of analysis and the information use, whereas emotional tendencies arise from feelings, intuitive attitudes and inherent preferences.

When reasoning, individuals create mental models for themselves which represent possible states of the world. Then they describe and verify these models to be able to come to valid conclusions. A conclusion is valid when there is no counterpart to it. When individuals try to represent a large number of models which exceed the range of their working memory, they tend to make errors (Johnson-Laird and Byrne, 1991) [5]. In accordance with Brugger (1994), an error is a statement or claim which an observer makes without registering the real situation [6].

The term schema represents a structure, a framework or an outline. Stoic logicians considered schema to be a set of principles of logic in the form of judgmental schemas (Young, 2003) [7]. In cognitive psychology it characterizes organization of information by a person who accepts and processes it in the sense of creating and applying cognitive structures of various kinds. Beck (1967) characterizes schemas as freely associated main thinking contents, automatic thoughts, or mental images [8].

They serve to interpret one's self and the world. Padesky (1994) defines schemas as core convictions which play a key role in maintaining long-term mental problems [9].

The most famous cognitive depression theory was composed by Beck (1998) who highlights the cognitive structures as an essential part of the emergence, maintenance and return of depression [10]. These structures are a source of information about the environment as well as about one's own self and the activity programs which make it possible to meet the given objectives. According to this author, cognitive schemas are relatively stable ways of organising one's thoughts and evaluating events. Schemas represent a set of basic, often untold or unconscious convictions about what people are, what the world around them is and what they can expect from it.

Maladaptive assimilation occurs by means of cognitive errors or distortions. It highlights that these distortions against logical thinking occur in every person's life. Mental breakdown happens only when such thinking occurs frequently, repeatedly, it is systematic and the particular person regards it as convincing, he or she does not doubt it, and it invokes strong negative emotions. Specific thinking schemas are stable cognitive formulas by means of which an individual interprets his or her own experience.

Cognitive errors or distortions are, according to Beck (1979) systematic errors in thinking and perception, and despite the opposite, they are repeated automatic incorrect judgments or assessments which lead to the persistence of negative schemas [11]. Because of cognitive distortions or errors in logic, individuals maintain their negative thinking schemas and claim them particularly in stressful situations. People are often unaware of their cognitive distortions and aware only of their final decisions.

Emotions are an important factor with a great impact on the cognitive functions. They reflect the biological quality of stimuli from the perspective of their significance for the subject (Hoschl, 2002) [12]. Current neuropsychological viewpoints see the relationship between emotions and the cognitive functions as crucial. Under normal circumstances, emotional reactions and cognitive processes of people are interconnected to make the whole processing of information as effective as possible. People prefer certain emotional stimuli in accordance with their cognitive experience.

In his research, which took one month of observing subjective states of mind, Dzuka (Dzuka and Dalbert, 1997) used a

diary of time frames in which the participants were to answer certain particular questions six times a day in randomly selected times [13]. One of the questions was: «How do I feel right now?» The author observed the following structure of descriptions: concrete emotional reactions (angry, sad, happy, etc.), physical feelings (hungry, tired, etc.) and the so-called emotionally neutral descriptions (normal, nothing is going on, etc.).

3. Purpose

The proposed article, therefore, covers the issue of employment versus unemployment in connection to their management through emotions and cognitive distortions. It includes a brief insight into the studied psychological problem and a subsequent research on this phenomenon.

4. Research

The presented research was conducted on a sample of 336 individuals who applied for a psychodiagnostic examination at the Centre of Clinical-Psychological Care, Ltd. in Presov, Slovakia. Respondents agreed to write diaries by means of psychodiagnostic methods in order to utilize the gained data in a research. While writing their diaries, the respondents followed a common instruction. Diary entries covered from 1 to 3 months before the submission deadline and one diary consisted of about 25 pages of entries. Collection of all 336 diaries took about 5 years and the number was then divided into two categories – the diaries of the employed and the diaries of the unemployed carried out by a single judge (one of the research authors), who has completed a Cognitive Behavioural Therapy training and has a ten-year experience in cognitive restructuring.

Research sample. The total number of respondents participating in this research was 336; out of this number 166 participants were men and 170 were women. The age range was between 18 and 67 years of age, the average age being 35.18. The number of employed respondents was 183 and 153 respondents were unemployed.

Research methods. The presented research is based on Beck's (1979) [11] 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-generalisation», «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 by means of the aforementioned diaries. The participants wrote down into their diaries their thoughts in situations which were emotionally significant to them. The instruction was: «At the moment 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 all 336 respondents and their thoughts written on 25 pages were evaluated and categorized on the basis of the 10 categories of cognitive distortions.

Positive and negative emotions were studied by means of the SEHP methodology (SHEWB – Subjective Habitual Emotional Well-Being; Dzuka and Dalbert, 2002) [14]. It is a concise tool for measuring the subjective habitual emotional well-being which distinguishes between the positive and the negative side of experiencing and simultaneously integrates physical feelings. Instead of measuring the intensity of the current experienced emotions it detects the frequency of experiencing individual conditions within a longer time interval, which were divided by the authors of the methodology into the positive conditions and the negative ones. The positive conditions are: «Joy», «Happiness», «Pleasure» and «Physical vigour». The negative conditions are: «Fear», «Guilt», «Sad-

ness», «Pain», «Anger» and «Shame». The questionnaire contains 10 items and the participants provide their responses in relation to the frequency of experiencing a particular emotion on a 6-point scale (almost never, rarely, sometimes, often, very often, and almost always). According to Nabelkova and Diskan (2009), the non-standardized scale of the SEHP consists of 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) [15]. The higher the scores in the SEHP dimensions are, the higher degree of the positive or negative condition we observe.

5. Results

The relationship between 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. No statistically significant links in relation to the demographic data were detected.

Table 1 illustrates the statistically significant interconnections among the 10 categories of cognitive distortions in thinking and the positive and negative emotions of the employed individuals. The results prove that «Distorted selection of facts» correlates negatively with «Pleasure», «Physical vigour» 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 individuals.

Tab. 1: **Correlations of cognitive errors and the SEHP methodology of the employed individuals**

	Unsubstantiated conclusions	Distorted selection of facts	Over-generalisation	Exaggeration and downplaying	Touchiness
Pleasure		-.249**			
Physical vigour		-.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
Source: Authors' calculations

Statistically significant interconnections among the 10 categories of cognitive distortions in thinking and the positive and negative emotions of the unemployed individuals are illustrated in Table 2. «Distorted selection of facts» correlates positively with «Fear» and negatively with «Happiness», whereas «Over-generalisation» 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 individuals.

By means of the factor analysis (the main component method and the rotation of factors by means of the Varimax method), 4 factors of cognitive distortions of the employed respondents (Figure 1, Table 3) and 5 factors of cognitive distortions of the unemployed respondents (Figure 2, Table 4) were extracted.

In the group of employed individuals they were labelled as follows:

1. Selective-extreme thinking («Distorted selection of facts», «Over-generalisation», «Exaggeration and downplaying»). Individuals with the high scores in the given factor notice only what verifies their opinion, they overlook the facts which prove the opposite and they draw far-reaching conclusions from a single situation. They are also prone to attach an excessive importance to certain actions and understate others.

Tab. 2: **Correlations of cognitive errors and the SEHP methodology of the unemployed individuals**

	Unsubstantiated conclusions	Distorted selection of facts	Over-generalisation	Exaggeration and 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*			

Source: Authors' calculations

2. Personalization-composition thinking («Unsubstantiated conclusions», «Touchiness»). Individuals with the high scores in the given factor arrive to a certain opinion on the basis of an insufficient amount of information. It is a conclusion-drawing by making «a leap». They have a tendency to relate to themselves random events and take responsibility for something which a person cannot really influence.

3. Thinking in assumptions («Thought-reading», «Marking», «I should, I must in thinking»). Individuals with the high scores in the given factor make judgements about what others think on the basis of some completely vague signals and they make assessments in which a complex phenomenon is simplified into one, often negative attribute. They also use «I should and I must' thinking».

4. Dichotomous-emotional thinking («Black-and-white thinking», «Argumentation through emotions»). Individuals with the high scores in the given factor think in absolute categories «all or nothing». They also tend to adjust the assessment of the surrounding events to their own emotional state regardless of the reality.

In the group of unemployed individuals the factors of cognitive distortions are as follows:

1. Selective-dichotomous thinking («Distorted selection of facts», «Black-and-white thinking», «I should, I must in thinking»). Individuals scoring high in the given factor notice only what verifies their conclusion and ignore the facts which prove the opposite. They think in absolute categories and use «I should, I must in thinking».

2. Deductive-generalized thinking («Unsubstantiated conclusions», «Over-generalisation», «Exaggeration and downplaying»). Individuals with the high scores in the given factor arrive to a certain opinion on the basis of an insufficient amount of information. They draw a far-reaching conclusion from a particular situation and have a tendency to attach an excessive importance to certain actions and understate others.

3. Thought-reading. Individuals scoring high in the given factor make judgements about what others think on the basis of some completely vague signals.

4. Negative-personalisation thinking («Touchiness», «Marking»). Individuals with the high scores in the given factor have a tendency to relate to themselves random events and take responsibility for something which a person cannot really influence. They prefer assessment in which a complex phenomenon is simplified into one, often negative attribute.

5. Katathymic thinking («Argumentation through emotions»). Individuals scoring high in the given factor have a tendency to adjust the assessment of the surrounding events to their own emotional state regardless of the reality.

Considerable are also values of the calculated inter-correlation coefficients among the individual factors. The extracted factors of cognitive distortions mutually correlate or, in other words, they are on the borderline of the sta-

tistically significant correlation. It is supported by the fact that these factors are interconnected. Nevertheless, the statistically significant values of these correlations are not very high which means they describe different albeit interconnected areas.

Negative inter-correlations were detected among «Black-and-white thinking» and «Unsubstantiated conclusions», «Distorted selection of facts», «Argumentation through emotions» and «I should, I must in thinking», further also between «Distorted selection of facts» and «Exaggeration and 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».

Cognitive distortions were analysed from the perspective of employment whereas the comparison of the average values was performed. A more significant difference was found in «Distorted selection of facts», which was supported by the t-tests in favour of the unemployed (an employed individual: mean of 4.08, standard deviation of 1.779; an unemployed individual: mean of **7.85**, standard deviation of 1.312, t – 21.722, sig. **0.001**).

According to the comparison of the acquired results, in the group of employed individuals the occurrence of cognitive distortions is not related to the positive emotions and, if so, then in their negative form. As the theories of teaching and operant conditioning state, this group reflects positive
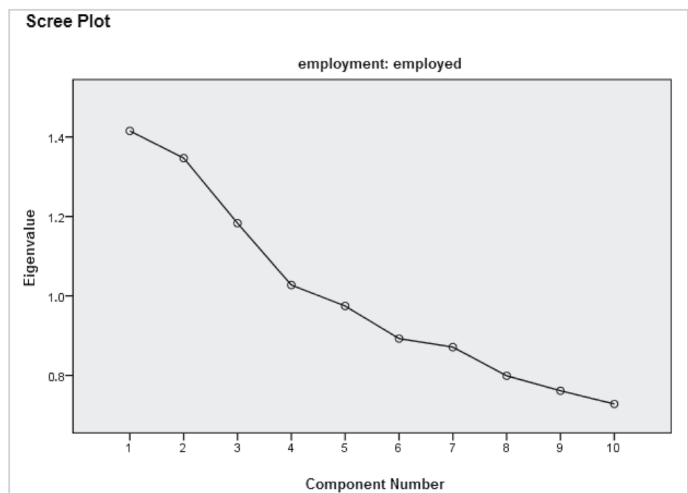

Figure 1: **Illustration of the cognitive distortions factors of the employed individuals**
Source: Developed by the authors

Tab. 3: **Factor structure of cognitive distortions of the employed individuals**

Rotated Component Matrix	Factors			
	1	2	3	4
Unsubstantiated conclusions		.746		
Distorted selection of facts	-.417			
Over-generalisation	.541			
Exaggeration and downplaying	.707			
Touchiness		.408		
Black-and-white thinking				-.582
Thought-reading			.483	
Argumentation through emotions				.648
Marking			-.641	
I should, I must in thinking			.703	

Source: Authors' calculations

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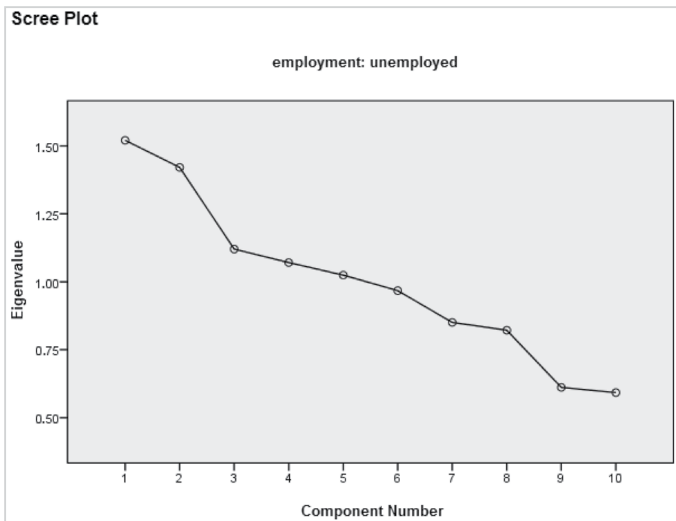
Figure 2: **Illustration of the cognitive distortions factors of the unemployed individuals**
Source: Developed by the authors

Tab. 4: **Factor structure of cognitive distortions of the unemployed individuals**

Rotated Component Matrix	Factors				
	1	2	3	4	5
Unsubstantiated conclusions		.675			
Distorted selection of facts	.720				
Over-generalisation		.539			
Exaggeration and downplaying		.517			
Touchiness				.602	
Black-and-white thinking	-.586				
Thought-reading			.810		
Argumentation through emotions					.920
Marking				.795	
I should, I must in thinking	.680				

Source: Authors' calculations

employed individuals. Positive reinforcement is a process during which a certain kind of behaviour leads to the consequences which increase the probability of occurrence of certain behaviour. It means that the probability of maintaining cognitive distortions is higher in the group of the unemployed than among the employed.

As opposed to Prokopcakova (2010) [16], who studied the influence of negative thinking and negative emotions and arrived at the conclusion that individuals with a higher degree of negative emotions are hampered by the negative 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 participants. No significant differences were detected in comparisons of the average values of the frequency of the cognitive distortions occurrence in the group of employed and unemployed individuals. 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 take into consideration only what verifies their opinion and tend to overlook the facts which prove the opposite. That is why the factor analysis was used to study more closely the possible differences in the researched groups in relation to the cognitive distortions. This factor analysis combined the individual cognitive distortions within the observed groups differently, in other words, the individual cognitive distortions were proved to interact differently in the group of the employed and the group of the unemployed participants.

5. Conclusions

Unemployment presents a challenge in elaboration of research activities in numerous scientific disciplines. As different authors indicate, coping with unemployment makes greater demands on an individual in several ways. The results of this research prove that no significant differences were registered in the frequency of the occurrence of cognitive distortions, except in the category of «Distorted selection of facts». Further statistical findings support the fact that the behaviour in the individual categories of cognitive distortions differs in accordance with the particular observed group. Identically different relationships of cognitive distortions were observed in connection to the positive and negative emotions. The results provoke one 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 (Zibrinova et al., 2014) [17].

enfeeblement. Positive enfeeblement is a process in which the probability of certain behaviour – 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 occurs 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». In all cases, a positive emotion may strengthen and fix the wrong way of thinking among the un-

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