

POSSIBILITIES OF IDENTIFICATION OF PREDICTORS OF OCCURRENCE OF COGNITIVE DISTORTIONS IN MANAGERIAL WORK

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Abstract: The presented report focuses on the possibilities of identification and specification of indicators which enable prediction of occurrence of cognitive distortions. On the sample of 130 male and female managers a new original methodology labeled as PCD (Prediction of Cognitive Distortions) was verified. Proposal for this methodology was based on the concept by Beck, who described formation and effects of dysfunctional cognitive schemas and cognitive distortions. It is clear that these distortions occur both in personal and work areas of life. The report also presents findings and knowledge which enabled extraction and specification of two predictors of occurrence of cognitive distortions in the work of managers. According to their content, these factors were defined as Distorted selection of facts and Over-generalization.

Key words: cognitive distortions, PCD methodology, managers

Introduction

Studying the tendencies towards cognitive distortions assumes existence of differences between normative thinking – how one should make decisions with logical intentions, and descriptive thinking – how one actually makes decisions. As an example it is possible to mention the decision-making of Spock and Kirk, two characters from a successful TV series Star Trek. It is clear that descriptive thinking, which is based on intuitive judgments, may deviate from the logical norms of rationality (Samuels et al., 2004).

Cognitive Distortions

Baláž (2006) divides the sources of cognitive distortions into cognitive and emotional tendencies. The cognitive factors originate from an incorrect collection, analysis and use of information, whereas the emotional ones are based on feelings, intuitive attitudes and innate preferences or schemas. In spite of the aforementioned differentiation it is possible to assume that there is a mutual activity between the cognitive and the emotional sources of cognitive distortions.

The source of cognitive distortions is identified by Newel and Simon (1972) as an insufficient capability of human cognitive abilities to resolve complex problems. For this reason, human decision-making about a certain problem is sometimes far

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from the criteria of objective rationality; it often does not even approach them, is underlined by emotions and uses various schemas.

People are usually not aware of their cognitive distortions. A cognitive distortion is thus a wrong conclusion which a person makes during an actual situation without noticing that it is wrong (Zibrínová and Birknerová, 2012). That is one of the reasons why it is so difficult to detect cognitive distortions (Ruisel, 2012). From the perspective of their functioning as well as studying, it is crucial to point out the fact that people are not aware of them. In this sense it is appropriate to distinguish between the unintentional cognitive distortions and untrue argumentations carried out intentionally (Ruisel, 2012).

Cognitive distortions caused by a simplified strategy of information processing needs to be distinguished from other forms of distorted perceptions, such as cultural or organizational ones (Zibrínová et al., 2014).

Cognitive distortions are based on structuring a cognitive area as represented by simplified generalizations of former experience in the form of abstract mental representations. Cognitive structures affect each perceived situation and are related to the need to reshape the world and one's own life into a simpler and easily manageable form (Rybár, 2012).

Another way of studying the world and one's own self does not exist. Certain simplification which may lead to cognitive distortions is inevitable whereas the majority of everyday situations require no special efforts to process information. Cognitive schemas are used as a tool for understanding and perceiving the world and information, although it is important to recognize these simplified schemas as cognitive distortions and take into account their possible impact on decision-making and experiencing. To certain extent, schemas may hinder the acceptance of new information which is not part of these schemas.

Evaluation and interpretation of information by people is very subjective. Individuals with a tendency towards cognitive distortions experience systematic distortion of information and dysfunctional thinking. This tendency further affects the behavior and forms a dysfunctional belief (Beck, 2007). Identification, specification and categorization of cognitive distortions are debated by several authors, for example Dobelli (2012), Ruisel (2012), Mikuláščík (2003), Praško and Prašková (2007) and others.

In this context, Dobelli (2012) on the "me-other people" continuum highlights the effect of overestimation and the effect of crowd. The overestimation effect relates to overestimation of oneself with an excessive self-confidence; it is connected to the difference between what people really know and what they think they know. During this effect it is necessary to accentuate the obvious decrease of the self-reflection level and a critical approach to own conclusions. The crowd effect means that people are often affected by what is thought and done by the majority.

Through comparisons of the theoretical viewpoints and opinions of experts in this area, Ruisel (2012) specified 18 types of real cognitive distortions. When confronting the theoretical viewpoints and empirical applications, it is

possible to identify the essence of these subjective aspects of decision-making as: ad hominem arguments (instead of correct assessment of a certain statement, the values of people who agree with this statement are discredited), relevance distortions (premises of arguments are not related to the uttered judgments; non sequiturs arguments), representation distortions, appeal to authorities (*ad verecundium arguments*), appeal to popularity (*argumentum ad populum*), appeal to duty, distortions based on ignorance, distortions of maximization or minimization (of self-reflection), mental filter, assessment in circle (*petitio principii*), hornblende distortions, distortions of emotional assessment, distortions of excessive generalization, distortions of false cause, wrong analogies, distortions of gamblers, composition distortions, distortions of incorrect disjunctions.

Typical cognitive distortions, which are closely related to assimilation, may be in accordance with Beck (1979, Praško et al., 2003) specified as: Unsubstantiated conclusions (arbitrary deductions), Distorted selection of facts (selective abstractions), Over-generalization, Exaggeration and downplaying, Touchiness (personalization), Black-and-white thinking (dichotomous thinking), Thought-reading, Negative prophecies, Disqualification of the positive, Argumentation through emotions (*katathymic thinking*) and Marking. When comparing the individual approaches to specification and categorization of cognitive distortions, one may find in them elements connected both to cognition and to emotions. The presented finding confirms the aforementioned idea about effects of both the cognitive and the emotional attributes which lead to cognitive distortions. Simultaneously it is evident that these approaches repetitively display certain cognitive elements as opposed to those which are specific for the given categorization and do not occur elsewhere.

The presented specification and categorization of cognitive distortions is most likely not a complete set of possibilities of identification of cognitive distortion categories. Other deductive or inductive approaches could clarify and refine the individual compositions of cognitive distortions.

The following research focuses on categorization of cognitive distortions based on Beck's (1979) theory of this construct. A specific feature of this research is the fact that it was carried out on a sample of male and female managers.

Method

The presented research was conducted on a sample of 130 respondents. Out of this number, 73 (56%) were male managers and 57 (44%) were female managers. Average age of the respondents was 32 years (standard deviation: 7.812). The minimum age was 21, maximum was 49 years. The data were gained from the respondents by means of a questionnaire and were further processed and analyzed by SPSS 21, software for mathematical and statistical calculations.

The questionnaire was used to acquire basic socio-demographic information about the respondents and detect the degree of their tendencies towards cognitive distortions. For detection of the mentioned tendencies, a new original methodology

labeled as PCD – Prediction of Cognitive Distortions was used. The individual items were evaluated by managers on a 6-point Likert scale, where: 1 = definitely yes, 2 = yes, 3 = rather yes than no, 4 = rather no than yes, 5 = no, 6 = definitely no.

Results

By means of a factor analysis (Principal Component analysis with Varimax rotation), two factors or predictors of occurrence of cognitive distortions were extracted (Figure 1, Table 1). These factors explain 37.1% of variance and were specified as:

- *Distorted selection of facts* – people scoring low in this predictor of cognitive distortions notice only what supports their beliefs; they overlook the facts which prove the opposite. To make a decision they need only little information. They ignore facts they are not interested in, think in absolute categories, and decide on the basis of one, often negative, experience.
- *Over-generalization* – people scoring low in this predictor use a single finding to make far-reaching conclusions. They automatically utilize the experience from resolving one situation to resolve other situations. When trying to reach a conclusion they consider only facts they understand. They are optimistic, not expecting only the worst, have no problem thinking positively, and see the results of their decisions also rather positively.

Table 1. Factor structure of PCD methodology extracted on the sample of male and female managers

Items	Cognitive distortions attributes	
	Distorted selection of facts	Over-generalization
CD1: I express my opinion on a topic which I have insufficient information about.	.524	
CD 2: I notice mainly those facts which support my decisions.		.457
CD 3: I ignore facts which are of no interest to me.	.517	
CD 4: I make decisions based only on facts I understand.		.626
CD 5: Based on the experience gained from resolving one situation, I make decisions about other situations.		.468
CD 6: Every problem is characterized by a single important factor.	.703	
CD 7: I always decide either yes or no.	.489	
CD 8: I evaluate people by using only two categories – good or bad.	.684	

CD 9: I always expect the worst.		-.655
CD 10: If I fail once, I have no other chance.	.535	
CD 11: I tend to expect disasters without actual reasons.		-.552
CD 12: I see negative impacts in everything.		-.635
CD 13: Sometimes I am affected negatively also by favorable situations.		-.506
CD 14: I have difficulties with positive thinking.		-.617
CD 15: Reality must be evaluated on the basis of its negative trait.	.635	
CD 16: I evaluate situations on the basis of a single event.	.562	
Eigenvalues	3.104	2.829
% of Variance	19.4	17.7

Note: CD – Cognitive Distortion

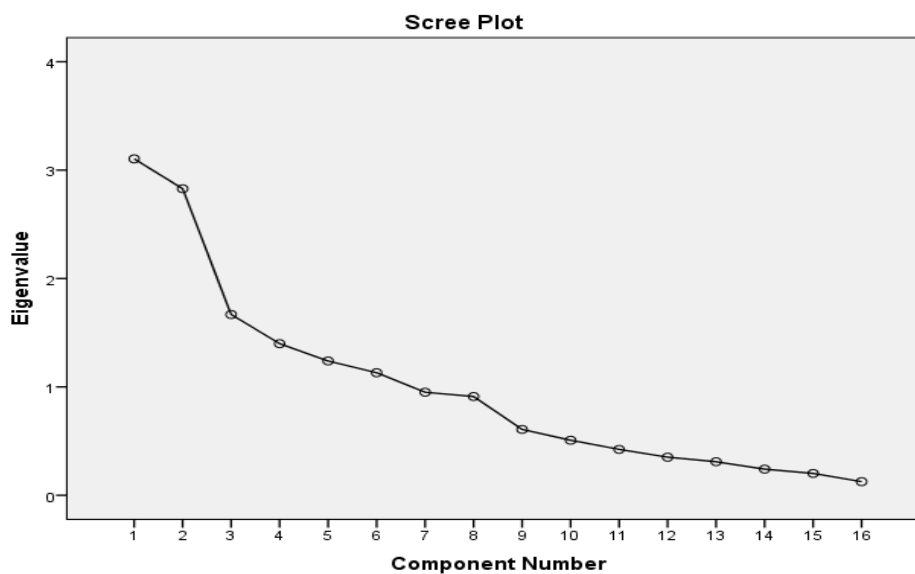


Figure 1. Scree plot of the extracted factors of cognitive distortions

The presented two-factor structure of predictors of cognitive distortions in managerial work is supported also by the satisfying values of Cronbach's alpha item reliability of the individual factors (Table 2, Table 3). If any of the items which saturate the extracted factors was omitted, the Cronbach's alpha value would not be increased.

Table 2. Item reliability of Distorted selection of facts

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CD1	28.94	25.633	.330	.717
CD 3	29.00	22.343	.371	.716
CD 6	28.32	23.129	.488	.688
CD 7	28.86	22.505	.396	.708
CD 8	27.88	21.480	.597	.662
CD 10	27.56	24.249	.365	.711
CD 15	28.60	23.677	.435	.698
CD 16	28.34	24.469	.422	.702

Cronbach's Alpha – 0.728

Table 3. Item reliability of Over-generalization

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CD 2	17.6462	20.075	.341	.688
CD 4	16.9385	16.973	.437	.664
CD 5	16.9923	18.504	.367	.680
CD 9r	16.8692	16.239	.455	.660
CD 11r	17.5077	19.275	.382	.679
CD 12r	17.2846	18.035	.480	.658
CD 13r	16.1077	16.764	.338	.698
CD 14r	17.3692	18.483	.444	.666

Cronbach's Alpha – 0.703; Note: r – reversed question

Adequacy of the presented factor structure of PCD is supported also by the calculated values of correlation coefficients between the individual extracted factors (Table 4).

Results of the correlation analyses confirm the fact that the individual extracted factors as predictors of occurrence of cognitive distortions do not correlate statistically significantly. It means that they function as two separate independent predictors.

Table 4. Correlation coefficients between the two extracted factors of PCD methodology

	Over-generalization
Distorted selection of facts	
Pearson Correlation	0.043
Sig. (2-tailed)	0.627

Subsequently, the difference in evaluation of these factors by managers was analyzed (Table 5). Results of the mathematical-statistical analysis (t-test for value pairs) confirmed the existence of a significant difference in evaluation of the extracted factors. Male managers had statistically significantly lower scores

in evaluation of Over-generalization than in evaluation of Distorted selection of facts. It means that when making a decision, they are more likely to agree with occurrence of the possible predictor of cognitive distortions Over-generalization. Contrarily, they are more likely to disagree with Distorted selection of facts as a possible cognitive distortion.

Table 5. Differences in evaluation of Distorted selection of facts and Over-generalization

	Mean	Standard deviation	t – test	Significance
Distorted selection of facts	4.087	0.641	21.935	0.000
Over-generalization	2.441	0.594		

The extracted factors as predictors lead one to consider four types of managers from the viewpoint of possible occurrence of cognitive distortions which are represented by four quadrants created by these factors as independent dimensions (Figure 2). The (+) and (-) marks mean that managers expressed high or low degree of agreement in evaluation of the aforementioned predictors of possible occurrence of cognitive distortions.

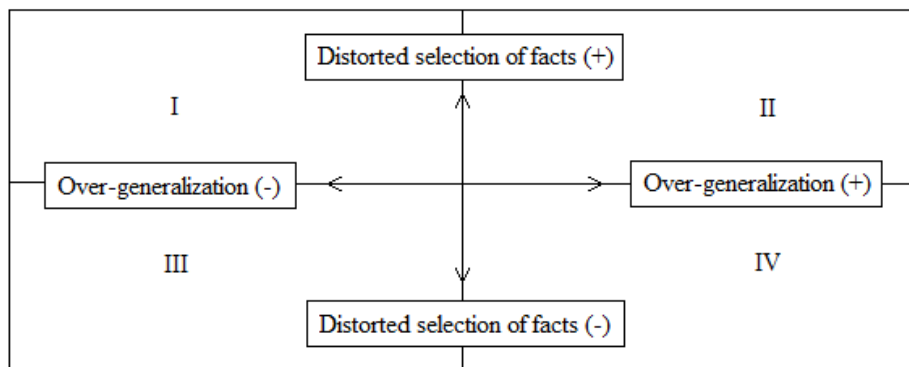


Figure 2. Types of managers from the viewpoint of possible occurrence of cognitive distortions

Manager of type I – decisions of managers may be influenced by distorted selection of facts but, simultaneously, these managers are careful with over-generalization. Managers of this type tend to take into account only those facts which support their knowledge and ignore all other facts. However, they are careful in drawing conclusions.

Manager of type II – decisions of managers may be influenced by distorted selection of facts but also over-generalization. Similarly to type I, managers of this type tend to take into account only those facts which support their knowledge,

but they are also willing to accept a general conclusion on the basis of a single piece of information.

Manager of type III – decisions of managers are influenced neither by distorted selection of facts, nor by over-generalization. Managers of this type take into account several facts including those which support their knowledge, and they accept decisions based on a wide range of information. They are careful in drawing conclusions and accept the general conclusion on the basis of a comparison of several alternatives; they think about the situations these conclusions may apply to.

Manager of type IV – decisions of managers are not influenced by distorted selection of facts but these managers have tendencies towards over-generalization. Managers of this type take into account several facts including those which do not support their knowledge. They tend to accept general conclusions also on the basis of experience from a single situation, but do not tend to make critical evaluations of these conclusions.

Discussion and Conclusion

In managerial work it is inevitable to account for particular facts and cognitive distortions in the work of managers are therefore a risk for the organization (Kondáš and Kordáčová, 2000). Managerial work is automatically connected to rational thinking, evaluation of facts, and avoidance of mistakes (Sucháček and Baránek, 2011; Dima et al., 2014). The main aim of the presented research is thus to highlight the possibilities of prediction of occurrence of cognitive distortions in the work of managers, e.g. during selection of staff for managerial positions or their education.

We understand that the presented results are only a first attempt at resolving this issue. Obvious limitations are given by the size and specificity of the research sample as well as operationalization of Beck's (1979) concept of cognitive distortions. Contribution of these results may be specified methodologically, theoretically as well as practically in relation to managerial work.

Theoretical contribution of our work lies in categorization of cognitive distortions which is based on Beck's (1979) concept. However, it reduces the original number of 11 categories into 2 attributes – predictors identifying possible occurrence of cognitive distortions. Methodologically, this work represents a contribution in the form of the proposal and verification of a new methodology PCD. Although the first steps in verification of this methodology were taken in managerial environment, we assume it could be applied in general settings as well. Practical contribution lies clearly in utilization of the PCD methodology in prediction of cognitive distortions within various social contexts including managerial work and managerial decision-making (Štefko et al., 2014).

From the perspective of prediction of possible occurrence of cognitive distortions, the proposed model of managerial types represents a high degree of abstraction and generalization of acquired findings. As it was mentioned before, it is merely a first

attempt at conclusion-drawing in this area. In relation to interpretation and conclusion of the results, we fully understand that they were gained on a limited sample and by operationalization of one of many possible theories, i.e. Beck's (1979) concept of cognitive distortions. Despite the aforementioned, we believe that the presented findings may contribute to discussions in this area of knowledge and may be utilized also in managerial practice (Štefko et al., 2010, Litavcová et al., 2015).

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MOŽLIVOŚCI IDENTYFIKACJI CZYNNIKÓW PREDYKCYJNYCH WYSTĄPIENIA ZABURZEŃ POZNAWCZYCH W PRACY KADRY KIEROWNICZEJ

Streszczenie: Prezentowany raport koncentruje się na możliwości identyfikacji oraz określeniu wskaźników umożliwiających przewidywanie wystąpienia zaburzeń poznawczych. Nowa oryginalna metodologia określona mianem PCD (Przewidywanie Zaburzeń Poznawczych) zweryfikowana została na próbie 130 mężczyzn i kobiet menedżerów. Wniosek dotyczący tej metody został oparty na koncepcji Becka, który opisał powstawanie i działanie dysfunkcyjnych schematów poznawczych i zaburzeń poznawczych. Oczywiście jest, że te zakłócenia występują zarówno w osobistych jak i zawodowych dziedzinach życia. Raport przedstawia również wnioski i wiedzę, które umożliwiły wydobycie i wyszczególnienie dwóch czynników predykcyjnych wystąpienia zaburzeń poznawczych w pracy kadry kierowniczej. Zgodnie z ich treścią, czynniki te zostały zdefiniowane jako Zniekształcony dobór faktów oraz Nadmierna generalizacja.

Słowa kluczowe: zaburzenia poznawcze, metodologia PCD, menedżerowie

鑑定賦存認知扭曲的管理工作預測指標可能性

摘要：提出報告側重於識別和規格指標的可能性，這使發生認知扭曲的預測。在130男性和女性管理者標記為PCD（認知扭曲預測）全新原裝方法樣品進行了驗證。建議對這種方法是基於貝克，誰形容的形成和功能失調的認知模式和認知扭曲效應的概念。很顯然，這些扭曲既在個人生活和工作區域發生。報告還介紹了調查結果和知識，這使提取和規範的出現認知扭曲的兩個預測在經理的工作。根據其內容，這些因素被定義為扭曲事實的選擇和過分概括。

關鍵詞：認知扭曲，PCD方法，管理人員。