

# COGNITIVE DESTRUCTIONS AS A CHALLENGE FOR LEARNING IN THE POST-LITERACY EPOCH

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## ABSTRACT

The article is devoted to the issue of learning from the cognitive perspective. As life-long learning is an integral part of our modern life, the authors were attracted by the phenomenon when even young people demonstrate cognitive “resistance” to learning. This particular study is focused on cognitive destructions as challenges to learning and is based on the idea of non-linear nature of a cognitive style. Eighty subjects participated in the study with different types of psychological tests employed, including Stroop test, embedded figure test, tolerance of ambiguity, assumptive worlds, personality characteristics in decision making. The main findings are the following: cognitive degradations, which are based on different types of rigidity, which impedes not only the process of learning but also social behaviour of a person as well; the second finding is the intensity of tolerance of ambiguity in a subgroup with extreme analytical thinking is a destructive cognitive phenomenon, one of the manifestations of a negative mental attitude - the closure to the experience. The results prove that the subjects with extreme types of cognitive styles tend to demonstrate a “close” type of mind. This raises the discussion of different understanding of the rigidity phenomenon and gives fruit for thought and prospects of further research into the field of the role of cognitive resources in learning.

## KEYWORDS

Cognitive Resources, Life-Long Learning, Rigidity/Flexibility of Cognitive Control, Field-Dependence/Field-Independence, Cognitive Destructions

## 1. INTRODUCTION

Globalisation of life and education is an integral part of our life, where learning is a key factor. The modern world with its diversity of sources of information and variety of sources of learning is, in fact, the world of post-literacy (McLuhan et al., 2011), where ideally people are learning their whole life, as it is an essential survival skill. Even if people do realise that their life depends on learning, their learning abilities differ and their learning is not always as effective as teachers want it to be. In this article, we tried to explore the possible reasons for learning effectiveness/ineffectiveness from the psychological perspective, namely, the differences in cognitive styles.

The development of the theory of learning is impossible without a systematic study of the cognitive sphere of the individual, both from the standpoint of searching for reserves, and destruction, deformation. Traditionally, research is aimed at the strengths of cognition. Our research focuses on cognitive degradation, i.e. mental phenomena weakening the ability to learn and self-learning, the integration of a new mental experience, social adaptation. Accordingly, requiring the development of new approaches to learning, including learning through life. The basis of the work is the use of a cognitive-style approach to the study of a person's mental life, which makes it possible to identify specific intellectual-personal ways of processing information inextricably linked with the features of the organization of mental experience.

Using the results of our empirical study, we try to prove that high speed indicators of intelligence can mask the destructive phenomena of the cognitive sphere. The choice of classical methods of cognitive style is justified by their wider experimental possibilities, approximation to objective tests, an alternative to self-reports, which diagnose not cognitive styles, but personality traits. So the study was focused on two cognitive styles: field dependence / polarity dependence (analyticity / synthetism); rigid / flexible cognitive control (rigidity / flexibility).

Our research assumption of cognitive destruction is based on 1) the idea of extreme values of cognitive style, as predictors of psychological maladjustment; 2) the phenomenon of the quadripolar structure of the cognitive style and its nonlinear structure, in particular, the isolation of special style groups as a result of splitting the poles of the style continuum; 3) the different nature of cognitive rigidity. 3) the idea of involuntary intellectual control (Kholodnaya, 2002); 4) a fundamental provision on the cognitive-personal nature of the style; 5) the different nature of cognitive rigidity.

## 2. METHODS AND MATERIALS

At different stages of the study, students from Russian universities took part in it: the total number of participants is 80 students ( $M = 19.4$ ,  $SD = 1.68$ ). Research methods administered individually for each participant in the study are the following: "Embedded figures test" G.Witkin (1950); Stroop test (1935). In addition, methods used to measure indices of tolerance of ambiguity and personal characteristics in Russian: the scale of tolerance to the ambiguity of N.Y.Stanley Budner (1962) and D.L.McLain (1993), as well as the questionnaire "Personal factors in decision-making" by T.Kornilova (1994), assumptive worlds by R. Janoff-Bulman (1989). To analyse the obtained data we used SPSS cluster analysis.

### 2.1 Cognitive Style: "Field-Dependence/Field-Independence"

During the splitting of poles of the cognitive style of field-dependence / field-independence, 3 subgroups were singled out. Thus, the field-dependence (synthetic) is represented by one subgroup, which is explained by the age and educational status of the subjects. Let us turn to an analysis of the splitting of the field-dependence (analytic), in particular, to a comparison of its extreme and moderate values. It is definitely established that the extreme values of the analytic style are associated with high tolerance of ambiguity, i.e. openness to new experiences and knowledge. It can be concluded that an analytical approach is more preferable in cognition and learning.

According to the research of Kholodnaya, highly analytical people demonstrate a minimal effect of mobility and flexibility. It is noted that their intellectual behaviour is distinguished by a high speed of structuring the field combined with a weak integration of their behaviour with the field (Kholodnaya, 2002). Thus, this subgroup is least influenced by situational factors, but it is also true that their behaviour modulation dependence on the context is low. The question arises: what is the reason for the high degree of tolerance of ambiguity in this category of subjects, in comparison with other subgroups? Or does a person with high analytical abilities react with cognitive closure, whereas the result is a consequence of protective mechanisms?

In the course of the experiment, it was established that participants in the study, showing concern and ambiguity about their own abilities, often turned to the "role model". Therefore, the first explanation of the result is related to the role of stability-anxiety in regulating the volume of working memory needed to solve a cognitive problem (Grimley et al., 2008). Probably, the extreme values of analytical thinking contribute to reducing the effects of emotional stress on the processing of information, which causes the emergence of new pieces of experience.

The second explanation of the result is determined by the fact that this subgroup takes extreme positions in the behaviour-style continuum. It is known that the effect of extreme values of cognitive style is associated with a decrease in the indicators of mental adaptation (Kholodnaya, 2002). It is shown that individuals with extreme values of analytical thinking, more often than other behaviour-style groups prefer to use psychological protection in the form of repression. In this case, the intensity of tolerance of ambiguity in a subgroup with extreme analytical thinking can be interpreted as a destructive cognitive phenomenon, one of the manifestations of a negative mental attitude - the closure to the experience. Its destructive significance lies in the weakness of the integration processes, as a component of the development process. The challenge for learning is that the new experience, knowledge is not integrated with the personality, which is expressed in the appearance of prejudices, stereotypes, the inertness of thinking.

## 2.2 Cognitive Style: Rigidity / Flexibility of Cognitive Control

Splitting the field of a flexibility of cognitive control (flexibility) and the field of a rigidity of cognitive control (rigidity) resulted in differentiating two style subgroups in each field. Thus, in this study, we obtained 2 groups with extreme values of cognitive style. We base our work on the idea of the unity of style, therefore we believe that ignoring the interfering context as one of the features of a subgroup with extreme values of flexibility, as well as abstracting from a distracting field (background) subgroup with extreme values of analyticity, is a manifestation of cognitive destractions related with rigidity.

In the literature, the phenomenon of rigidity is described in terms of inertia, stiffness, which is not comparable with high-speed indicators observed in subgroups with high flexibility and analytical thinking. At the same time, one important aspect of rigidity should not be overlooked, which has been repeatedly discussed in theories of intellectual development, for example by H. Werner. The phenomenon of rigidity is based on the mechanism of isolation, described as the fragmentation of various sub-regions of experience. In other words, there is a lack of integrity of an individual, which is achieved through integration. E. Frenkel-Brunswick stressed that the phenomena of disintegration and chaos, as well as the concreteness, literality of perception of reality, in fact, are different aspects of the same phenomenon, which is based on a combination of extremity and primitiveness of cognitive responses of ambiguity (E. Frenkel-Brunswick, 1949).

Special attention should be paid to the fact that "the benevolence of the outside world" is expressed in a subgroup with extreme flexibility. The combination of high values for this indicator of assumptive worlds with low risk readiness can be seen as one of the manifestations of the work of the negation mechanism, the expression of which will be the desire to "hold on" to defensive illusions, reinterpret new events and impressions within the framework of established patterns and beliefs. Mental attitudes of such people are aimed at protecting themselves against information that threatens their cognitive patterns.

The analysis of the subgroup with extreme rigidity values showed the severity of dysfunctional cognitive schemes in relation to the self, such as low self-esteem, belief about the uncontrollability of events of one's own life. Rigid people are fixed on negative impressions which do not allow them to maintain positive basic patterns that are significant in terms of psychological security and openness to new experiences. The cognitive resource deficit does not allow them to restructure the situation, see it from different perspectives and change the mode of attitude towards it.

## 3. CONCLUSION

This article was inspired by the research of life-long learning in post-literacy epoch and aimed at investigating the reasons of ineffective learning from the perspective of cognitive styles. Eighty university students were selected for the study. We employed different traditional cognitive tests to find out individual styles in learning. Our study was based on the idea of quadripolar structure of learning style as opposed to a bipolar one. Our type of approach helped us to focus on destructive aspects of cognitive sphere of a personality such as dogmatism and rigidity. The results demonstrate that apart from positive features, such as intelligence, creativity, intellectual talent, cognitive styles, learning activity, tolerance of ambiguity, openness to new experiences, the need for cognition, we focused on problem areas in cognition. We paid special attention to dogmatism, rigidity, authoritarian style of communication and behaviour, intolerance of ambiguity, the need for closure as features that might negatively affect the process of learning. The analysis of the obtained data proved that extreme values in cognitive styles: field-dependence/field-independence and rigidity/ flexibility of cognitive control are the two styles that have negative impact on learning.

This study has allowed us to identify cognitive degradations, which are based on different types of rigidity. The most dangerous type is the first type of rigidity associated with disintegration, when high indicators of cognitive resources are aimed at maintaining a closed mind (compartmentalisation, isolation, denial) that is a strategic challenge not only for learning but also poses a serious strategic threat to other social systems, because it affects the problem of dogmatism and its cognitive basis. We can argue that individuals with high rates of cognitive processes are not "ordinary" the usual sense of the word. Since the ability for learning is not only a quantitative but also a qualitative characteristic, which implies the presence of a variety of ways of tackling the problem, solving it, creating the cognitive image in different ways.

Whereas individuals with high rates of cognitive processes tend to cope with problems too “straightforwardly” not seeing different ways of dealing with it.

There are a number of questions that arise from this study that make up the basis for further studying the indicated issue: 1) why those individuals who have a high cognitive resource demonstrate a closed position in cognition; 2) what happens to these people during the cognitive aging process; 3) how, with the help of training, we can correct distortions in cognition; 4) how to motivate these people for life-long learning. The answers to these questions require further research that can be carried out within the framework of an interdisciplinary approach, its methodology provides an opportunity for a comprehensive description of the closed mind attitudes and ways of correcting them, by involving approaches, research designs, methods and techniques from various sciences.

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