



Cognitive styles and personality

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ARTICLE INFO

Article history:

Received 5 February 2016

Received in revised form 29 April 2016

Accepted 30 April 2016

Available online 21 May 2016

Keywords:

Cognitive styles

Cognitive-personality styles questionnaire (CPS-Q)

Cognitive-personality complexes

ABSTRACT

This paper investigates the relationship between cognitive styles and Eysenck personality dimensions. To measure cognitive styles, we developed a special twelve-scale questionnaire based on self-report (Field Dependence/Independence, Narrow/Wide Range of Equivalence, Flexibility/Rigidity of Cognitive Control, Impulsivity/Reflectivity, Concrete/Abstract Conceptualization, Tolerance/Intolerance of Unrealistic Experience). Two hundred and twenty eight second-year students (psychologists and teachers) took part in the study. We revealed four significant factors, one of which covered five cognitive styles and the other three included both cognitive and fundamental personality dimensions which we called “cognitive-personality complexes”. The first complex included personality trait Extraversion/Introversion and two cognitive styles Field Dependence and Impulsivity. The second complex covered Psychotic trait and such cognitive styles as Field Independence and Wide Range of Equivalence. The third complex contained Neurotic traits and one cognitive style Intolerance. Thus, we showed the existence of the factor of “authentic” cognitive styles, on the one hand, and three mixed cognitive-personality styles, on the other, in the structure of individual behavior. The data obtained are useful for understanding the nature of the cognitive styles and the sources of human individual differences.

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1. Introduction

Most contemporary psychologists regard cognitive style research as a promising approach to studies of personality individual differences (Cools, 2009; Curry, 2000; Kholodnaya, 2004; Riding, 2000; Riding and Rayner, 1998; Rusalov and Volkova, 2015; Sternberg, 2010; Tolochek, 2013; Witkin and Goodenough, 1982). It is known that cognitive styles are connected with many cognitive functions such as perception, learning, problem solving, thinking, intelligence, creativity (Hayes and Allinson, 1994; Kirton, 2003; Kozhevnikov, 2007; Sadler-Smith, 1998; Sternberg, 2010; Witkin et al., 1977). At the same time, Kirton (1994 and others) believe that cognitive styles are a direct expression of fundamental personality traits. Riding and Wigley (1997) claim that human behavior is determined primarily by personality resources (his/her meanings, plans, values, etc.), whereas the cognitive styles play a subordinate role by enhancing or weakening the efficiency of the person's resources. Shkuratova (1994) put forward an extreme point of view arguing that the cognitive styles should be eliminated from the category of “purely” cognitive formations and be referred to the category of personality traits.

Undoubtedly, cognitive styles reflect both intellectual and personality aspects of human behavior. In literature, there are already some data on the relationship between traditional cognitive styles and personality (including temperament and character). Many psychologists

(Glicksohn, Naftuliev, and Golan-Smooha, 2007; Rawlings, 1984; Sternberg, 1990, 1994; et al.) refer the given individual properties to personality characteristics. Hodgkinson and Sadler-Smith (2003) maintain that the cognitive style construct permits psychologists to unite cognitive and personality processes into a single whole. Sternberg pointed out that “styles could provide a bridge between the study of cognition (e.g., how we perceive, how we learn, how we think) and the study of personality” (Sternberg, 2010, p.134–135).

However, in any empirical study the question arises of the relationship between personality and cognition aspects of a concrete cognitive style. One can expect three possible versions of their combinations: (a) one combination may include only cognitive styles; (b) the other combination may consist of only personality traits; (c) another combination may cover both cognitive styles and personality traits, i.e. cognitive-personality styles (CPS).

As Kholodnaya (2004) justifiably emphasizes, cognitive styles and personality are complex psychological constructs. They are theoretically well founded, but the empirical data on their interrelationship are still scanty and highly disputable (Cools, 2009; Kholodnaya, 2004; Pervin, 1994).

We think that one of the causes of the controversies in cognitive style research is the lack of adequate methods of their measurement. On the one hand, the tradition remains of cognitive style evaluation using mainly sensory-perceptual laboratory techniques stemming from Witkin's Embedded Figure Test (Witkin, 1950) to measure, for instance, Field Dependence/Independence and Kagan's MFFT (Kagan, Rosman, Day, Albert, and Phillips, 1964) to measure Impulsivity/Reflectivity. Therefore, the existing methods of measurement may result in

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the ambiguity of interrelationships of cognitive style characteristics and personality traits of a higher order.

On the other hand, cognitive styles became interpreted as individual characteristics of the control of higher mental processes harmonizing the individual's needs with his/her requirements of the environment (Klein, 1970). As Federman, (1964) pointed out the cognitive styles are determined not so much by perceptual processes, but by the stable traits of active personality. In this connection, an urgent task appeared of developing new methods of evaluating personality aspects of cognitive styles. These new tools must reflect the newest theoretical views about cognitive styles as coordinating and controlling mechanisms of human individual's behavior (Kholodnaya, 2004).

In psychological literature, a few attempts have been made of creating questionnaires for measuring certain cognitive styles on the level of personality self-report. The comparison of Cognitive style questionnaires with other methods of measuring personality traits showed rather high validity (e.g. Bardi, Guerra, and Ramdeny, 2009; Blajenkova, Kozhevnikov, and Motes, 2006; Budner, 1962; Cools and Van den Broeck, 2007; Haefffel et al., 2008; Kornilova and Chumakova, 2014; Sternberg, 2010). Unfortunately, in these questionnaires the researchers estimated, as a rule, only a limited number of cognitive styles.

We believe that a direct comparison in a concrete experimental setting of cognitive styles, measured with new methodical tools on the level of self-report, with widely known fundamental personality dimensions such as Psychoticism, Extraversion and Neuroticism (PEN) suggested by the Eysencks and others, is rather logical and highly promising for understanding personality aspects of cognitive styles.

H. Eysenck and his colleagues maintain that namely these three fundamental dimensions are universal and inherent in all the representatives of *Homo sapiens*. At present time, there is a plenty of evidence in favor of the notion that Psychoticism, Extraversion, and Neuroticism are genetically determined to a considerable degree (Eaves, Eysenck, and Martin, 1989; Eysenck, 1990).

Evidently, the comparison of the cognitive styles, measured on the self-report level, with PEN will help us to understand deeper the interrelationship between cognitive styles and personality dimensions. In the journal "Personality and Individual Differences", there are several papers devoted to the study of the interrelationships among PEN and cognitive styles. For instance, Rawlings (1984, p. 591) compared Psychoticism with Impulsivity. His results support the Eysencks' view that the P scale of the PEN contains a strong impulsivity component. Glicksohn, Naftuliev, and Golan-Smooha (2007, p. 1175) studied whether performance on a standard task assessing the cognitive style of Field Dependence–Independence, the Group Embedded Figures Task (GEFT), is a function of an Extraversion (E) and Psychoticism (P) interaction. Thus, the authors made a considerable contribution into the understanding of the relationship between cognitive styles and personality traits.

The objective of the present study was to construct of a new method (Cognitive-personality styles questionnaire—CPS-Q) for measuring cognitive-personality styles and to reveal their correlations and factor structure with PEN.

2. Method

2.1. Procedure

We organized testing according to the generally accepted ethical norms.

Participants were volunteers. They filled out CPS-Q and Eysenck PEN-questionnaire in a large auditorium after classes during the first week of spring semester. Researchers helped students if the questions arose. Testing was anonymous.

2.2. Participants

Two hundred and twenty eight students (167 female and 61 male), aged 17–22 (mean 19.28 ± 2.1), took part in the present study. The participants were second-year-students of psychological and pedagogical departments of Moscow universities.

2.3. Measures

We used two following techniques: CPS-Q (Rusalov and Volkova, 2015) and PEN-questionnaire (28 items)—adopted, modified, and shortened Russian version (Akhmetova, Safronova, and Slobodskaya, 2006; Slobodskaya, Knyazev, and Safronova, 2006).

2.3.1. Cognitive personality styles

We used the descriptive behavioral attributes of cognitive styles presented in the Kholodnaya (2004)'s monograph for the construction of CPS-Q. The author regards cognitive styles as individual specific stable ways of information processing (perception, analysis, structuring, categorization, and evaluation of reality), which were acquired during mental experience. As distinct from the traditional unipolar psychological measurements of cognitive styles, widely-accepted in psychological literature, our method (CPS-Q) enabled us to specify Kholodnaya (2004)'s ideas about the "splitting" of cognitive styles into two poles and to evaluate each pole as an independent psychological formation or as an independent scale. The latest Kornilova and Chumakova (2014)'s study confirmed the hypothesis about the relative independence of two opposite poles of Tolerance and Intolerance of Unrealistic Experience.

In the present study, we transformed six main traditional cognitive bipolar styles into twelve unipolar independent scales. This means that theoretically each person, for example, a person with high Field Independence can have any value on the scale of Field Dependence (high, middle or low) and vice versa. The questionnaire contains 60 items (5 items in each scale). We rated each style on 5-point Likert scale. Thus, the concrete scale is a continuum of the individual trait, which varies from 5 to 25 points. The scales have approximately normal distribution. We checked reliability and validity in accordance with usual psychometric procedures on two independent samples (in total, 221 participants). All the scales under study, measured by CPS-Q, have a rather high level of internal consistency. Cronbach's Alpha varied around 0.7–0.9 for different scales. In the present study we used a shorten version CPS-Q-S, which contain the items with maximum values.

Taking into account the fact that in various studies the content of the cognitive styles differ, below we decided to give a short description of the conceptual content of the used CPS scales and examples of the items.

1. Field Dependence (FD) expresses person's orientation to the external world when solving problems. The people of this type trust more in external impressions
 - I easily agree with my friends' opinion.
2. Field Independence (FI) reflects individual's ability to rely on one's own knowledge and experience, ignoring the other people's opinion
 - My own experience is more important for me than the opinion of my friends.
3. Narrow Range of Equivalence (NRE) is characteristic of the individuals who orient themselves to the differences between objects of activity. These people are highly sensitive to details and nuances

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