

# ISSA Proceedings 2014 - A Cognitive Style Parameter Of Argumentation

*Abstract:* A cognitive style is viewed as individual traits in argumentation organization and processing. A parameter of CS is cognitive complexity (CC) / simplicity (CS). We studied how 200 Russian respondents used Toulmin functions in reconstructed argumentation of an education article. Claims given by both style groups were mostly of policy and evaluative. Evidence (Data) did not differ significantly. Warrants mostly had grouping semantics in both CC and CS. Backings and Reservations (Rebuttals) were more actively used by CC-respondents, Quantifiers - by CS-respondents.

*Keywords:* argument components, argument interpretation, cognitive style, poles of a cognitive style, cognitive complexity, cognitive simplicity, functional semantics, the Toulmin Model

## 1. Introduction

People's communicative activities are interpretative. In our perception of situations we often distort the initial state of affairs. According to psychological research such distortions are neither intentional nor accidental. They are based on personal peculiarities of people. The cognitive style approach is one of possible approaches that help operationalize such peculiarities in people.

According to psychological research cognitive style is an individual-specific mode of processing information about the environment manifested in peculiarities of perception, analysis, structuring, categorization and evaluation of a situation.

Depending on starting points of analysis, psychologists single out a number of independent dimensions that characterize individual features in processing information. Each of these dimensions have opposing sides (poles). They are: field dependence / independence; flexible / rigid cognitive control; tolerance / intolerance to non-realistic experience; focusing / scanning control; concrete / abstract conceptualization; cognitive complexity / cognitive simplicity. These features gave names to cognitive styles.

The cognitive style approach views a person in various types of activities, and the characterization of the person is linear.

What do these linear criteria mean? Their significance lies in opening a new road towards studying the intellectual actions of an arguing person. Earlier, it used to be a uni-polar psychological dimension of discourse activity. Respectively, the criteria were level-based, i.e. based on the principle 'high-rate VS low-rate'. Now the dimension becomes bi-polar with a typological criterion, i.e. belonging of a person to one or the other type of one and the same dimension. Also, the scheme of diagnostic analysis itself was changed. Earlier, an individual result was evaluated on the basis of its comparison with the norm. Now, there notion of norm is not used anymore, which means that no side of the same cognitive style is viewed as 'good' or 'bad' [Kholodnaya 2004].

## *2. Cognitive style principles for argument analysis*

To generate an argument, a person should comprehend, interpret, and evaluate a situation with debatable ideas. How do we do it? We do it on the basis of our subjective experience. Not only the situation, but also our experience has a specific organization which needs to be considered.

According to G. Kelly (1955), our personal experience can be represented as a system of personal constructs. A construct is a bi-polar scale, and it is person-specific. The scale has two principal functions: establishing similarity and detecting difference. These two functions manifest themselves when we evaluate people and things.

Constructs are not isolated phenomena, they are systematic, i.e. inter-related and inter-dependent. So, when we study argument activities, we are to remember that these activities are not identical - they depend on the arguing individuals. Argument is to a large extent an evaluative activity, and, as we all know, the evaluation differs from individual to individual. Still, such individuality can be systematized if we choose to view individuals as belonging to a group - for example, to one or the other pole of one and the same cognitive style. To study argument organization based on psychological principles we have chosen one cognitive style parameter - cognitive complexity / cognitive simplicity.

We can establish how complex or how simple our argumentative evaluative space is. To do that, we take into account the degree of differentiation and the degree of

integrity of a particular construct system.

According to J. Biery (1955), cognitive differentiation is an ability to construct social environment (in our case, argumentative process). Such construction is made on the basis of a number of distinct parameters. Cognitively complex individuals have strongly-differentiated cognitive structures, while cognitively simple people have weakly-differentiated cognitive structures.

Operationally, the degree of differentiation is measured by means of the so-called factorial analysis. A factor is, simply speaking, a single unit of measurement. The less inter-connected isolated constructs are, the more measurements, or factors, can be singled out in the procedure of factorization of a construct matrix - so, the more differentiated system of constructs we find in a given person; in other words, the more cognitively complex the person is.

Actually, quantity of factors is not a decisive criterion. It is only one of important criteria of cognitive complexity of a person. Applied to our field, it is not only important how many elementary arguments are given for supporting a standpoint. No less important is if they are organized in cluster-arguments or not. Also important is how complex those cluster-arguments are. I state that the more cluster-arguments for a standpoint are given in a written argument, the more cognitively-complex a person is.

On the other hand, functional semantics of arguments can give innovative data for cognitively complexity / cognitively simplicity. By functions I here mean the roles of argument components described by S. Toulmin (1958) and later elaborated by a number of argumentologists (cf. Ehninger 1974; Ehninger, Brockriede 1963, 1978; Crable 1976).

For example, we detect preferences in using certain functions, Y-functions by cognitively complex people, and Z-functions by cognitively simple individuals. Out of that, if we have sufficient statistics, we can make predictions that in the same type of argument situations, cognitively complex people will be likely to use Y-functions, while cognitively simple - Z-functions. So, knowing that, we can analyze the arguments and we can easily detect what kind of person has written it - a cognitively complex, or a cognitively simple one. What is important here is diagnostics itself: we can reveal the cognitive type of the author of an argument without using complicated psychological experiments. Moreover, the experiments,

like Kelly's grid, are made in the presence of live people. We, on the other hand, can detect the cognitive type of the author of written arguments with no physical presence of the former. In other words, we can speak about an innovative approach to argumentative expertise.

It is interesting for analytical purposes, but not only. For example, some cognitively complex students are known to prefer to hide their aggressiveness and use manipulative forms of communication. If we detect cognitively complex people by analyzing their arguments, we can be ready to confront or predict possible manipulation on their side in further communication with them.

### *3. Cognitive complexity/cognitive simplicity revealed in arguments: results of the experiment*

Based on research done by Y. Besedina (2011) and myself, the following can be formulated.

#### *3a. Experiment details and methods used.*

Processing (subordinate) purpose: to get (a) cognitive style attribution to 200 Tsiolkovsky Kaluga State University students (both sexes, age of 17-23); (b) their interpretation (responsive discourse) of a Russian language argumentative text on secondary school exams.

Ultimate (primary) purpose: comparison of using arguments by the persons of the opposing poles of the 'Cognitive Complexity / Cognitive Simplicity' style.

#### *Stage 1. Respondents' cognitive style identification.*

G.A. Kelly's personal constructs method of repertoire grids was used to reveal the respondent cognitive style; completed grids were processed by the IDIOGRID program for quantitative and qualitative analysis of the resulting constructs. Diagnostic Indices taken into account were: (a) the degree of differentiability (the 'matching score' parameter (Bieri 1955)); (b) the degree of integrity (the 'intensity' parameter (Fransella and Bannister 1967)).

Results for Stage-1: division of the respondents into Cognitively Complex persons (37%, or 74 people), Cognitively Simple persons (55%, or 110 people), and Mixed Type (8%, or 16 people).

#### *Stage 2. Argumentation trait detection in the experts' texts.*

The respondents were asked to analyze an argumentative text by fulfilling the

task “Expose the problems the author formulated and their argumentation”. Y. Besedina and myself gave our own expert analysis of the initial text argumentation structure and functions to have an opportunity of checking the quality of the respondents’ analysis.

3b. *Functional argument analysis of the respondents’ texts.*

The analysis in question was centered on detecting argument functional components and their semantics. We used R. Crable’s (1976) system of functional-semantic analysis who singled out the following:

- (a) Claims of four types - Declarative; Policy; Classificatory; Evaluative;
- (b) Evidence (=Toulmin’s Data) of three compound types:
  - (b-1) Occurrences (Contrived; Planned; Hypothetical);
  - (b-2) Reports of Occurrences (Unplanned; Contrived);
  - (b-3) Expression of Beliefs (Personal; Reported);
- (c) Warrants of four compound types:
  - (c-1) Comparison (Parallelism; Analogy);
  - (c-2) Grouping (Classification; Generalization; Residual);
  - (c-3) Causality (Correlation; Circumstance; Cause);
  - (c-4) Authority.

Also used were semantically non-differentiated Backings, Reservations (=Toulmin’s Rebuttals), and Qualifiers. Argumentative texts made by our respondents were then analyzed structurally and functionally, and the results were compared to the data given in the expert analysis. The results gave us the following peculiarities of the lingvo-argumentative responses of the bearers of CC and CS poles.

CC respondents re-organized initial arguments rather actively, though almost all initial Claims and Warrants were retained. Peculiarities of the argumentation by CC people were these:

- (1) most Warrants were made explicit;
- (2) Warrants of Causality were most often used;
- (3) Claims were mostly of Policy and Evaluative;
- (4) implicit intentions and information in the initial arguments were made explicit;
- (5) most arguments were structurally simple single and were manifested in

separate

paragraphs;

(6) Reservations and Backings were often used in the arguments;

(7) almost no Qualifiers were given in the argumentation;

(8) on the global level, the Macro-Claims were placed in the beginning of the text.

CS respondents did not change the initial order of arguments, i.e. the author's sequence of arguments was retained. Explicit Claims, Evidence and Warrants given in the initial text were sometimes made implicit in the interpretations under this style. Peculiarities of the argumentation by CS people were these:

(1) Warrants in the arguments were sometimes implicit;

(2) Warrants of Generalization were most often used;

(3) among Claims, 3 types were practically equally used - Declarative, Policy, Evaluative;

(4) implicit intentions and information in the initial arguments remained implicit;

(5) many argumentative functions of the initial text were not used in resulting texts of this style;

(6) most arguments were structurally simple single and were manifested in separate paragraphs;

(7) almost no Reservations and Backings were used;

(8) Qualifiers denoting supposition were actively used;

(9) on the global level, the Macro-Claims were placed in the end of the text - as conclusions.

#### 4. *How valid are the results?*

Some people would ask: does the cognitive style pole remain the same in all situations? No, it does not have to. In real conditions there can be movement from one pole to the other and even change of the poles [cf. Kholodnaya 2004]. But it is important to stress for our study, that we had only one problematic situation in our experiment. It means that there were no significant factors that could somehow influence the style-change (which is of frequent occurrence when people communicate in different situations). Thus, in our experiment, the temporal factor was stable (the time for the written assignment did not change for different respondent groups). The physical environment was also the same (the experiment was made in the same university classroom at the same time of the day). In other words, the conditions were stable, so our results are valid for at least Russian academic student atmosphere and there were no factors which

could entail the 'pulsation' of the constructs that could make them move from one pole of the line to the other. It is also important to note that our both experiments (dividing our respondents into polar groups and their making their own argumentation) were made in the similar environment by the same experiment makers.

## 5. Conclusion

In sum, we detected considerable differences in argument interpretation by representatives of CC and CS poles of the style in question. It means that knowing such principal features of argument making, an argumentation scholar having no special training in psychology and using no special psychological techniques can differentiate the poles of the style using only such features and can see what kind of person gave specific arguments; the scholar can also predict how CC and CS people would construct argumentation in similar conditions.

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