

Psychological Type and the Regulation of the Individual Behavior

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The comprehensive study of basic personality preferences underlies understanding, valuing, and constructive use of individual differences. The assumption that personality characteristics affect behavior in a comparatively stable and predictable manner is wide spread. Modern research looks for the link between different aspects and levels of behavior regulation. Hence, the interrelations between the three psychological constructs—psychological type, cognitive style and decision-making style—are of serious conceptual and empirical interest. What are the relationships between these three constructs of psychic functioning, and what is the effect of more basic personality predisposition on those variables, which have a more direct behavioral reference. The reasons to focus on these three characteristics are as follows:

- All three constructs have explicit theoretical bases that consider individual differences in the way people collect and process information.
- All three constructs possess specific operational measures, which enable one to look for answers to our questions.
- A number of studies regarding correlations between psychological type and cognitive style, measured by MBTI instrument and Kirton Adaption and Innovation Inventory instrument have been carried out. (See Isaksen et al., 2003 for a review.) Most authors reported correlations between S-N and J-P MBTI factors and KAI total score (as well as its three subscales). The empirical data suggest that the relationships between KAI and the E-I and T-F dimensions of the MBTI are contradictory.

The term “style” is a joining category, a unifying axis on which the three constructs are located. Each construct characterizes a form of psychic activity and answers the question how psychic action proceeds rather than what the psychic action is and why. Thus, rather than content aspects of psychic functioning, stylistic aspects are the basic unit of analysis. Generally speaking, style is treated as a dimension,

which typically differs from content or level of functioning. It is defined as a stable individual differences in the mode or form of psychic functioning (Messick, 2001, cited by Roodenburg, 2003).

The psychological type model proposed by Jung and developed and operationalized by Myers and Briggs treats personality not only as a structure but as an interaction with the outer world, too. It consists of two types of dimensions—functional and attitudinal. Sensing-Intuition and Thinking-Feeling are posed in a wider context of non-cognitive personality characteristics that contain interactive aspects. Those are preferences for specific attitudes (Extraversion-Introversion and Judging-Perceiving). Central concepts of this theory involve information acquisition, information processing, and decision-making. According to this paradigm, variation in behavior is actually quite orderly and consistent owing to basic differences in the way individuals prefer to use their perception and judgement. Psychological type is described as a unique combination of mental attitudes (E or I and J or P) and mental functions (S or N and T or F) along with their dynamic interaction (Myers et al., 1998).

Cognitive styles generally reflect the relation between cognition and personality. They are viewed as stable characteristics of the individual and guide the individual’s way of gathering information, then processing, organizing, and storing it, as well as solving problems (Riding & Sadler-Smith, 1992).

Kirton (1976, 1987, 1989) described cognitive styles. His adaptive-innovative style is a cognitive bi-polar dimension involving creativity, problem solving, and decision-making. At one end of the adaption-innovation continuum, adaptors characteristically devise solutions that conform to the orthodox paradigms and expectations of the group they belong to. At the other end of the continuum, innovators tend to be less concerned with convention and consensus, and their problem-solving behavior often results in ideas and solutions that violate accepted orthodoxy. As the author states, both poles of this dimension express creativity. However, they differ qualitatively

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in the way they create—by adaption or by innovation.

A preference for adaption or innovation occurs early in life and remains stable across time and situations. This dimension contains three qualitatively different facets: Sufficiency-Proliferation of Originality, Efficiency, Rule/Group Conformity. All have the theoretical status of psychic traits (Mudd, 1996). They are described as follows:

- Sufficiency-Proliferation of Originality (SO) expresses a preference for changing the existing system, doing things differently.
- Efficiency measures a preference for coping with tasks in systematic and precise ways.
- Rule/Group Conformity measures a preference for operating within rules and structures, suggesting a need for security and norms.

Kirton (1989) reports several studies that have found positive correlations between the adaption-innovation dimension and measures of extraversion, intuition, perception, risk taking, sensation seeking, flexibility, radicalism, independence, dominance, and others. Negative correlations were found with dogmatism, intolerance of uncertainty, and need for structure and clarity.

The term “decision-making style” is connected with the individual inclination to apply monotype strategies of decision-making in similar situations. According to Nutt (1993) the decision style literature suggests how people with different styles are apt to behave when faced with seemingly identical situations. Nutt (1993) cites a number of studies supporting the notion that style is a factor that influences the development of strategy organization, the use of computers, information system design, the selection of criteria to measure organizational performance, and many other aspects of management.

Franken (1988) considers that an individual decision-making style exists, significantly related to management efficiency. He identifies two decision-making styles: Activity-Decisiveness and Individual Responsibility, and he finds that those styles are typical for the successful managers. The Active/Decisive style refers to the dynamic aspects of decision-making and it reflects the inclination to quick decision-making, decision-making when information is insufficient, abandoning plans and projects that do not work, and taking responsibility for the decisions made.

Franken (1988) identifies a second style labeled Individual Responsibility. It is characterized as a preference for freedom in making choices, looking for environments and situations where the individual is able to make de-

isions of his own and not being forced to execute the decisions of others.

With this background in mind, we can devise a threefold model of the relation of psychological type involving cognitive style and decision-making style. The model is similar to that proposed by Riding (1997) known as Cognitive Control Model. It can be conceived as three concentric circles. The inmost circle contains underlying personality preferences and gender. Moving out to the next circle is cognitive control. This provides the organizational and representational interface between the internal state and the external world. The outside circle contains learning strategies and also a set of cognitive responses that influence social behavior. (See Figure 1.)

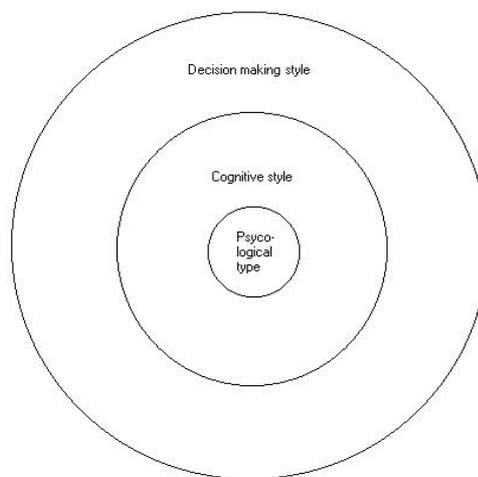


Figure 1. A threefold model of the relationships between psychological type, cognitive style and decision-making style

The aim of the present study was to look for an empirical confirmation of the model outlined, formulating the following hypotheses.

Hypothesis 1: Essential interrelations between different aspects of psychological type, cognitive style and decision-making style exist.

Hypothesis 2: Cognitive style mediates the relationship between psychological type and decision-making style.

Method

Measures

Myers-Briggs Type Indicator, Form G. (Bulgarian adaptation by Pencheva & Kazandjiev, 2001), containing 126 forced-choice items for the identification of four independent dichotomies. The poles of the dichotomies reflect opposite preferences of psychological type:

Extraversion (E) -	Introversion (I)
Sensing (S) -	Intuition (N)
Thinking (T) -	Feeling (F)
Judging (J) -	Perceiving (P)

To this we add the experimental MBTI Creativity Index, based on the continuous scores of Form G (Myers, McCaulley, Quenk, & Hammer, 1998, p. 198):

$$\text{MBTI-CI} = 3\text{SN} + \text{JP} - \text{EI} - .5\text{TF}.$$

The Kirton Adaption and Innovation Inventory (KAI). Kirton (1976) created the inventory to assess the adaptive-innovative style. It consists of 32 items, each evaluated by means of a four-degree scale. According to the author, the innovative style supposes "doing things differently," creating and problem solving outside a certain paradigm, established rules and procedures. The adaptive style aims at "doing things better," looking for decisions and generating ideas in the framework of the existing paradigm. Kirton's measure included three subscales of style:

- Sufficiency-Proliferation of Originality (SO) identifies a tendency to consider a wide variety of ideas to solve a problem and then generate solutions that may be seen as high risk and may radically break accepted norms.
- Efficiency (E) is concerned with precision and reliability.
- Rule/Group Conformity (R) deals with group security-seeking by attending to authorities, rules and norms, and avoiding risk.

Active/Decisive and Individual Responsibility Scales (AD/IR). designed by R. Franken (1988) (Bulgarian adaptation by R. Bozhinova, S. Vassileva and T. Pavlov). They are used to measure the style of decision-making. The first scale is named Activity/Decisiveness (AD). It involves preferences for:

- making decisions quickly.
- making decisions with incomplete information,
- abandoning plans or ideas that are not working, and
- taking responsibility in decision-making.

The second scale is named Individual Responsibility (IR). It measures the individual's preference for a personal freedom in decision-making without external interference.

Sample

A sample of 319 university students and professionals in different fields completed the questionnaires. Ages ranged from 18 to 60, with an average of 31.2. The participants were 196 men and 125 women.

Procedures

The study was carried out in 2002–2004 in Bulgaria. The participants were assessed individually or in groups. Correlation analysis and partial correlation analysis were performed to evaluate the data.

Results

The results of the correlation analysis between MBTI, KAI, and Franken's AD/IR are presented in Table 1. Only significant correlations are included.

Hypothesis 1 was supported partially. Interrelations between different aspects of the three dimensions were found but they were weaker than expected.

The Active/Decisive style correlated with nine other variables. This was the greatest number of correlations found. Table 1 shows the relation with Perceiving to be the strongest ($r = .36, p < .000$). Those scoring high on the Active/Decisive scale also scored high on the J-P scale. Activity/Decisiveness as a decision-making style accords well with open-mindedness, spontaneity, curiosity, and adaptability, characterizing the perceiving attitude. The MBTI Creativity Index was also correlated with the Sufficiency of Originality scale ($r = .32, p < .01$). Those scoring high on the Creative Index also scored high on the Sufficiency of Originality scale. It is consistent with theoretical assumptions and other findings that originality is a key factor in creativity and it is associated with the experimental MBTI Creativity Index (Fleenor & Taylor, 1994, Myers et al., 1998, Pencheva & Vassileva, 2004).

Weak though significant correlations were found between preferences for extraversion (negative E-I), intuition, and feeling, on the one hand, and Active/Decisive style, on the other hand, ($r = -.12, .13, \text{ and } .12$, respectively, $p < .05$). This means that high scoring on the extraversion, intuition, and feeling corresponds with high scoring on the Activity/Decisiveness. It seems that the action oriented tendency of extraverts, the original and creative potential of intuitives, and the human orientation of feeling types comply with the active style of decision making.

Total adaption-innovation scale also correlated with several other variables - extraversion ($r = -.21, p < .01$), intuition ($r = .22, p < .01$), feeling ($r = .24, p < .01$), perceiving ($r = .21, p < .01$), MBTI-CI ($r = .27, p < .01$) and Activity-Decisiveness ($r = .29, p < .01$). Those scoring high on the extraversion, intuition, feeling, perceiving, MBTI creativity Index and Active/Decisive scale also scored high on the

Table 1. Correlations between different dimensions

	Dimen- sions	M B T I					AD/IR	
		E -I	S-N	T-F	J-P	MBTI-CI	AD	IR
	R	-.13*		.22**			.17**	-.18**
K	SO	-.22**	.24**		.26**	.32**	.23**	
A	E			.18**			.22**	-.25**
I	KAI-T	-.21**	.22**	.24**	.21**	.27**	.29**	-.18**
AD/IR	AD	-.12*	.13*	.12*	.36**	.23**		
	IR			-.21**				

Note: R = KAI Rule/Group Conformity subscale; SO = KAI Sufficiency-Proliferation of Originality subscale, E = KAI Efficiency subscale, KAI-T = KAI total, E -I = Extraversion-Introversion, S-N = Sensing-Intuition, T-F = Thinking-Feeling; J-P = Judging-Perceiving, MBTI-CI=MBTI Creativity Index, AD = Franken Active-Decisive scale, IR=Franken Individual Responsibility scale.

KAI total. The conceptual nature of these psychological type preferences and the active decision-making style are close to the innovative cognitive style described as challenging the existing system (Myers et al., 1998; Franken, 1988). Negative correlation between total adaption-innovation scale with Individual Responsibility scale ($r = -.18, p < .01$) indicates that when the score of the Individual responsibility is high the score of the KAI-total is low. Hence, the preference to personal freedom in the decision-making process goes together with a more adaptive tendency for creativity.

The thinking-feeling scale correlated significantly with five other dimensions: Rule-Group Conformity ($r = .22, p < .01$), Efficiency ($r = .18, p < .01$), KAI Total ($r = .24, p < .01$), Activity/Decisiveness ($r = .12, p < .01$), and Individual Responsibility ($r = -.21, p < .01$). The positive correlations show that feeling types tend to: have less regard for structure, consensus, tradition or cohesion; deal with the problems in a broader, spontaneous way, disregarding the details; challenge the existing assumption; prefer an active style in decision-making. The last correlation is negative and suggests that thinking types have a greater willingness to assume Individual Responsibility in decision-making.

Rule/Group Conformity (R) was related to four variables. It correlated positively with extraversion ($r = -.13, p < .05$), feeling ($r = .22, p < .01$), Activity/Decisiveness ($r = .17, p < .01$), and negatively with Individual Responsibility ($r = -.18, p < .01$). The first three correlations prove that the preference for non-conformism corresponds with an eagerness to interact with outer world, orientation to human factor and activity in decision-making. The negative correlation indicates that those scoring low on the rule-group conformity

scale scored high on the individual responsibility. Hence, the predisposition to abide by both rule and group structure in order to make changes efficiently is associated with a preference for personal freedom in decision-making. Originality (SO) was associated also with five personality preferences: extraversion ($r = -.22, p < .01$), intuition ($r = .24, p < .01$), perceiving ($r = .26, p < .01$), MBTI Creativity Index ($r = .32, p < .01$), and with Activity-Decisiveness ($r = .23, p < .01$). Those scoring high on the sufficiency-proliferation of originality also scored high on the extraversion, intuition, perceiving scales, the MBTI Creativity Index, and the Active-Decisive scale. The first association is not surprising since the reported relationships between KAI scales and E-I dimensions of MBTI are contradictory—some of them are positive and others, negative (Isaksen et al., 2003). The next three relations with intuition, perceiving and creativity index, as expected, agree with other research results (Myers et al., 1998; Pencheva & Vassileva, 2004; Fleenor & Taylor, 1994). The last correlation indicates that the tendency to originality is linked to the active decision-making style.

Efficiency was positively related to feeling ($r = .18, p < .01$) and Activity/Decisiveness ($r = .22, p < .01$) and negatively to Individual Responsibility ($r = -.25, p < .01$). What does this mean? The tendency to deal with the task in a broader, more spontaneous manner and to be less concerned with the details is associated to a preference for a personal approach to judging as well as to an active decision-making style. On the contrary, when this tendency to efficiency increases, the need for individual responsibility decreases. In other words, the need for individual responsibility as a decision making style is connected with a preference for adaptive efficiency.

Table 2. Coefficients of partial correlation between different aspects of the psychological type and Active/Decisive style.

Variables	E-I		S-N		F-T		J-P	
	r	Part r	r	Part r	r	Part r	r	Part r
Activity/ Decisiveness	-.12*	-.07	.13*	.05	.12*	.04	.36**	.28**

Note: * $p < .05$; ** $p < .01$.

The theoretical model underlying the empirical research came from the idea that certain personality and cognitive stylistic characteristics might be linked with the decision-making style. The conceptual understanding of the nature of these links enabled us to treat the adaptive-innovative style as a mediator in the relation "psychological type, decision-making style." Such a supposition is theoretically based on the popular idea that cognitive styles generally reflect the connection between cognition and personality (Riding & Sadler-Smith, 1992). The established interrelations between extraversion, intuition, feeling, perceiving, activity/decisiveness and innovative cognitive style provide empirical grounds for such an assertion. The mediating function of Adaption/Innovation style was verified by using partial correlation.

Hypothesis 2 was also partially supported. The correlations between the three psychological type factors and the activity/decisiveness were reduced under the controlled effect of the adaption/innovation variable.

The results showed that the significant correlations between Activity/Decisiveness, on the one hand, and extraversion ($r = -.12^*$, Part $r = -.07$), intuition ($r = .13^*$, Part $r = .05$) and feeling ($r = .12^*$, Part $r = .04$), on the other, decreased to insignificant when the Adaption/Innovation variable was eliminated. (See Table 2.) Although the relationship between perceiving and Activity/Decisiveness remained significant under the controlled effect of the Adaption/Innovation style, a tendency to decrease its power was also observed ($r = .36^{**}$, Part $r = .28^{**}$). These findings show that the adaption-innovation cognitive style mediates the effect of extraversion, intuition and feeling on the active decision-making style. We could hardly say that the adaption-innovation style mediates also the effect of perceiving on the activity/decisiveness, because the difference between r and Part r was too small in that case.

Discussion

The results of this study indicated that interrelations between the different aspects of psy-

chological type, cognitive style and decision-making style do exist, but they are not as strong as we expected. Most of the correlations were in accordance with the theoretical assumptions and other findings. Activity/Decisiveness related to all other factors. Obviously, this behavioral variable is mostly affected by the basic personality characteristics. It represents the dynamic aspects of decision-making style. Hence, it seems reasonable to search for its roots in the genetically influenced level of activity (Craig, 1996).

There was one surprising relationship between Activity-Decisiveness and perceiving. At first glance, Active/Decisive decision-making style ought to correspond to purposefulness and decisiveness typical of the judging attitude. However, according to these data, it seems that flexibility, openness to experience and innovations, as well as final decision postponing characteristic for perceiving, are related to that style favoring an inclination for quick decision-making, but easily changes in response to new information. We may assume that openness to experience, tendency for sensation seeking and spontaneity are a common focus of Activity-Decisiveness and perceiving.

The psychological type is specifically related to the decision making style. Several harmonizing dimensions of the psychological type—extraversion, intuition, feeling, and perceiving influence the activity/decisiveness style, and only the thinking function supports the individual responsibility style.

The Individual Responsibility as a decision-making style does not interact with many other personality factors. Its relation with the impersonal approach to judging, typical for Thinking, seems logical but that with the adaptive cognitive style does not have a simple explanation and needs discussion.

Intuition, feeling, and perceiving as dimensions of psychological type correspond to the innovative cognitive style. This supports the evidence found for a connection between their core characteristics and creativity. The relation of innovative cognitive style with MBTI creativity index is logical and due to their common potential for challenging the paradigms. Similar is its connection with activity as decision making style characterized

by dynamic and quick reaction to changing situations. Although not theoretically proved, the positive relationship between extraversion and innovative style fits with other research results. It seems that the concept of the "creative loner" (Kirton, 1976) explains only one aspect of creativity behavior.

The mediating function of adaption-innovation style was found to be limited concerning only the influence of extraversion, intuition, and feeling over activity decisiveness.

Adaption-innovation, being a stable individual characteristic, reflects the preferable strategies of problem solving (Kirton, 1989). Thus, it might be the regulatory mechanism, which determines the influence of the psychological type parameters over activity/decisiveness as a decision-making style. These data allow for the treatment of the psychological type, and especially the outlined parameters, as prerequisites for Activity/Decisiveness if an Adaptive/Innovative is available. The results provide evidence that the relationships between the three constructs, psychological type, adaption-innovative cognitive style, and decision-making style, are not simple ones. Obviously, not only psychological type influences the formation of cognitive

aspects of personality. The weak correlations suggest that there are also other factors linked with individual differences, as well as with certain situational aspects, but they are beyond the scope of the present study.

Conclusions

Our conclusions are in support of the notion that psychological type, treated as a basic and biologically determined dimension, might be an antecedent to the formation of the adaption-innovation cognitive style. This style, being a narrower category with stable characteristics, is formed later in the course of the ontogenetic development and has a contextually more specific role (Goldsmith, 1989). It mediates the influence of extraversion, intuition, and feeling over Activity/Decisiveness as a decision-making style.

To a certain extent, the style of decision-making depends on the cognitive style, i.e., on the manner of information processing. Decision-making style has a dynamic character and depends on a number of factors. According to these results, we assume that one of those determinants lies deeper in personality and cognition.

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