

RELATIONSHIP BETWEEN STRATEGIC THINKING AND DIMENSIONS OF PERSONALITY

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Abstract: The article aims to provide data to address the gap in the potential relationships between the level of strategic thinking and dimensions of personality. In today's turbulent and complex environment, it is important for managers who are in leadership positions to have specific personality traits and a higher level of strategic thinking. This study aims to identify (i) potential relationships between the level of strategic thinking and individual dimensions of personality, and (ii) the strength of these relationships. The basic interpretive study was conducted with managers across all security branches (military, security, police). The participants were tested and results were reviewed and discussed. The testing development process was also explored in depth. Findings were verified via member checks and triangulation. The three tested groups of managers showed a higher level of strategic thinking.

Keywords: leadership; strategic thinking; personality types; dependency analysis; correlation

1 Introduction

In today's rapidly changing global environment (Chatterjee, 2014), the importance of competent leadership is highlighted. It is the leadership, as suggested in scientific studies (Bolwijn, Kumpe, 1990; Waldman, Bass, 1991; Stoker et al., 2001) that facilitates innovation. However, although the extant leadership literature has focused on various outcomes, such as satisfaction, efficiency, and performance, it has not addressed the impact of leadership on innovation (Bass, 1990; Howell, Higgins, 1990; Jelaca et al., 2020). De Weerd-Nederhof (1998) concluded that direct control is a common result of teams, but leadership and the impact of individual personality characteristics of team members, especially the team leader on the innovation process, is not clear (Stoker et al., 2001). Chatterjee (2014) attempted to fill this literature gap by creating a dimension of the leadership capabilities of innovators and defenders' organizations. It is important to identify the basic personality dimensions and how personality factors predict behaviour in the work environment. Additionally, the leadership literature has always placed more emphasis on the behavioural characteristics of leaders, since the importance of "personality" as an individual variable of leaders cannot be ignored (Stříbrný et al., 2022; Smiljanic, 2016).

Since the 1980s, there have been studies on the relationship between Myers-Briggs Type Indicator (MBTI) and NEO Personality Inventory-Revised (NEO-PI-R) results. Myers and McCaulley (1985) found that the extraversion, intuition, feeling, and judging scales of the MBTI correspond to the E (the general tendency to be outgoing), O (the general tendency to be curious about both inner and outer worlds), A (the general tendency to be altruistic), and C (the general tendency to be able to resist impulses and temptations) of the NEO-PI-R model, respectively. Several studies examined the relationship between the MBTI and NEO-PI-R Five Factor model of personality (Myers, McCaulley, 1985; McCrae, Costa, 1989, 1991a, 1991b; Furnham, 1996). Furnham, Moutafi, & Crump (2003) argued that the four MBTI indices measure aspects of four of the Five Factor Model dimensions.

A substantial literature survey shows that several studies have examined the relationship between leaders' personality styles and other managerial competencies. However, no previous study has examined the connection between a higher degree of strategic thinking, which every leader should have, and the individual dimensions of personality (May-Chiun et al., 2015).

With the development of personality type testing for managerial positions, scientific research has focused on analysing the relationships between personality types and other managerial competencies. For example, Sieff & Carstens (2006) investigated the relationship between personality type and leadership, Bajcar, Babiak, & Nosal (2015) studied the relationship between leadership style and the level of strategic thinking. Ambrozová et al. (2016) explored modern trends in management, using knowledge of cognitive and behavioural sciences (results of research on the relationship between stress and mental condition, and the level of critical thinking, problem-solving, and decision making). Ullrich et al. (2019) identified the personality potential and sources of professional managers that are crucial for the effective management of challenging situations, and Newcomer & Connelly (2020) investigated personality type by MBTI and leadership and their potential impact on their level of strategic thinking.

Thus, there is an elaborate theory of personality typology according to the MBTI framework (Myers, McCaulley, 1985) and the levels of strategic thinking for individual personality types. However, it is preferable to understand them as only indicators.

Gallén (1997) investigated the cognitive style and strategic decisions of managers and top management teams building on many studies (e.g. Henderson, Nutt, 1980; Haley, Stumpf, 1989; Haley, Pini, 1994), then completed his work in his dissertation (Gallén, 2010) producing interesting results. The MBTI is used to classify managers' behaviour, particularly, their cognitive style. The strategy was analysed using Miles & Snow's (1978) organizational typology. The main research question was: does the cognitive style influence the strategic decisions of managers and the preferences of top management teams? He summarized the results of his four published articles in the dissertation. The most important conclusions of his research are as follows:

- He presented a theoretical model in which he summarized the proposed relationships between the cognitive styles and strategy types;
- he emphasized that managers' self-understanding is very important and that the differences in strategic decisions cannot be attributed to different information but different interpretations based on the managers' cognitive styles;
- the way of perception has an effect on the strategic decisions of managers;
- cognitive composition has an effect on the preferences of top management teams with respect to strategies.

Nevertheless, the extant literature lacks a comprehensive analysis of the relationship between personality types according to various standardized questionnaires and the level of strategic thinking. Therefore, this study is essential for researchers and academics because it addresses two main gaps in the literature. First, it provides data to address the gap in the complex system literature by making comparisons and investigating potential relationships between the degree of strategic thinking (measured using a basic test) and the dimensions of personality (evaluated by selected modern personality tests).

Second, because the research group comprises a very specific group of managers with a certain level of education, a specific type of profession, managerial experience, and work experience, a certain level of strategic thinking can be assumed. The study investigates how strategic thinking, measured using the Strategic Thinking Self-Assessment from Harvard University (2005), is affected by personality types, measured using modern personality types and other selected tests. These selected modern personality tests include The Short Dark Triad Test (SD3), the NEO-Five Factor Inventory (NEO-FFI), the System of Basal Psychological Self-Regulation of Personality (SPARO test), and the Golden Profiler of Personality (GPOP test). Furthermore. Additionally, the Coping Strategies Questionnaire (SVF-78) was

used, which describes the strategies that an individual uses to manage stressful situations. Totally, 121 variables were developed and tested in this study.

1 Theoretical Background and Hypotheses Development

Mintzberg (1994) defined strategic thinking as based on the need for recognition of new possibilities and the ability to put pieces together to see the big picture.

Experts have been dealing with the issue of strategic thinking and its absence among senior managers since the 1990s (Mason, 1986; Zabriskie, Huellmantel, 1991; Mintzberg, Ahlstrand, Lampel, 1998; Liedtka, 1998a, 1998b; Bonn, 2001, 2005; Essery, 2002; Tovstiga, 2010). According to Hambrick (1989), as the basis of competencies, identifying the strategic characteristics of a leader is as essential for understanding competencies as why and how organizations behave and perform. Despite all the research so far, it can be stated that developing tools for the identification of strategic thinking competencies remains somewhat elusive (Steptoe-Warren, Howat, Hume, 2011).

The current research in the field of strategic thinking focuses on the study of relationships between strategic thinking dimensions and entrepreneurship (Ghorbani, Fattahi, 2013), analysing the impact of strategic thinking competencies on building intelligent organization (Al-Zu'bi, Al-Nawasrah, 2017), and developing scales to measure strategic thinking (Dhir, Dhir, Samanta, 2018).

The closest research to the examined issue in this study is that of Nuntamanop, Kauranen, & Igel (2013) who created a new model of strategic thinking competency. They included the following competencies in their model: conceptual thinking, visionary thinking, creativity, analytical thinking, learning, synthesizing, and objectivity. However, this new model of strategic thinking competency lacks a very important competence, that is, critical thinking, which is addressed by our study. Further research was conducted by Goldman and Scott (2016) to investigate the competency models used by organizations to assess the strategic thinking ability of their leaders, managers, and other employees. Dragoni et al. (2014) focused their research on developing leaders' strategic thinking through global work experience. Moreover, the structure and process of strategic thinking have been explored by Amitabh and Sahay (2012).

Newcomer & Connelly (2020) investigated the potential impacts of officers' personality types and characteristics on their ability to lead in the military. This research resembles ours but differs in that it used the results of the MBTI test, a four-digit preferred type of personalities. Nevertheless, the authors themselves saw the limitations of their research, as this tool does not measure the size of each preference but assigns a preference type according to the test results. Our research removes this limit, as it does not work with the results of the MBTI test, that is, a four-digit preference type, but with single preferences.

Personality tests can be divided according to various aspects. One of the possible divisions is into projective methods, questionnaires and inventories, objective personality tests, and assessment scales. We focus mainly on questionnaires and inventories, and especially on multidimensional ones that map and cover more dimensions of personality. These questionnaires include SD3 (Jones, Paulhus, 2013), NEO-FFI (McCrae, Costa, 1989), SPARO original Czech questionnaire (Mikšík, 2004), and GPOP (Golden 2005). Additionally, we used the SVF-78 questionnaire, which describes the strategies used by an individual to cope with stressful situations (Janke, Erdman, 2002).

2 Aim, Methodology and Data

First, the article aims to provide data to address the gap in the complex system literature by making comparisons and investigating potential relationships between the level of

strategic thinking (measured by a basic test) and personality traits (evaluated using selected modern personality tests).

Second, we analyse the dependence of the degree of strategic thinking (measured by the Strategic Thinking Self-Assessment from Harvard University) on personality types (evaluated using selected modern personality type tests: SD3, NEO-FFI, SPARO, and GPOP). Furthermore, the SVF-78 questionnaire is used to describe the strategies that an individual uses to cope with stressful situations. For analysis, the examined values (i.e. the results of individual tests) were recalculated using the same scale (in our case, a scale from 0 to 10) so that the Pearson correlation coefficient could be used for the correlation analysis.

The research has been carried out since 2019. The study shows the results of test analyses for 2019. The tests had a 100% return. The total number of managers in 2019 was 16, 25, and 10 in Prague, Brno, and Bratislava, respectively. The total number of accepted tests was 51, which represents 100% of the respondents. The Strategic Thinking Self-Assessment (Harvard, 2005), comprises 25 basic questions with the answers evaluated on a scale from 1 to 5 (1 = rarely, 5 = usually). According to the number of achieved points, the level of strategic thinking is evaluated as follows:

- 104–125 (Exceptional): You are a talented strategic thinker who possesses many of the traits, behaviours, attitudes, and cognitive capacities that are necessary for thinking strategically.
- 78–103 (Superior): You are a highly effective strategic thinker in many areas, but would benefit from refining some of your skills.
- 51–77 (Adequate): You know and practice many of the basics of strategic thinking. However, you can increase your success by further expanding your skills.
- 25–50 (Deficient): You will need to work broadly on your strategic thinking skills so that you can learn how to analyse opportunities and problems from a broad perspective and understand an action's potential impact on others.

The Short Dark Triad Personality Test (SD3) is a brief personality test that was developed by Jones & Paulhus (2013). Apart from the many normal personality traits, some traits are unpleasant for others. There are three overlapping types of dark personality traits known as the dark triad. The triad (i.e., group of three) consists of Machiavellianism, psychopathy, and narcissism. There is a total of 27 statements in this test, and the respondent answers on a scale from 1 (strongly disagree) to 5 (strongly agree).

The NEO Five-Factor Inventory (NEO-FFI) was developed by Costa & McCrae (1985, 1989, 1992, 1995). NEO-FFI is a revised version of NEO-PI-R (Costa, McCrae (1991) with 60 items used for testing statements, where the subject assesses the degree of adequacy of statements for his personality, again on a five-point scale. The method determines the degree of individual differences according to the five-factor theory and provides data on five general dimensions of personality: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Over the past two decades, the Five-Factor Model has become a dominant paradigm in personality psychology. Costa & McCrae (1995) focused on these five general dimensions of personality, neglecting other traits.

The SPARO test (Mikšík, 2004) is the basic tool of the DIAROS diagnostic toolbox. It is a redesigned and further developed variant of the SPIDO - IHAVES - VAROS - IHARO - IHATRANS series. It consists of 300 questions to which the subject answers yes or no by recording answers in a record sheet. The subject must always lean towards one of the two answers. In case of a difficult decision, it records this difficulty with a more pronounced dot at the cross.

The SPARO test assesses the basic components of basal-mental integration: cognitive, emotional, regulatory, and adjustment

variability. More basal scales of general variability include the general level of mental (internal) arousal and spontaneity and motor (or external) momentum.

For a deeper insight into the individual characteristic specifics of basal self-regulation of personality, other tested personality traits are integrated into more comprehensive dimensions: N, S, R, I, V, K and P. Dimension N, which measures the features of normality, includes relationships, suspicion, mental lability versus mental stability, and personality anomalies and extremity. Dimension S, which measures the optimal level of stimulation, includes sensory impression, intensity of inner experience, movement restlessness, dynamics of interaction with the environment, social disinhibition, and the general stimulation level. Dimension R, which measures the individual tendency to take risks, includes level of aspiration, level of anticipation, whether the person tends to rely on chance, social exhibitionism, and the general level of acceptance or rejection of risky activities. Dimension I, which measures the effective integration of personality, includes anxiety, emotionality, and effective capacity of reason, level of resistance to disturbing stimuli, and level of effective personality integration. Dimension V, which measures interpersonal relationships and ties, includes closedness versus connectivity, level of benevolence and tolerance, compliance and tendency to independence. Dimension K, which measures internal correction and regulation of interactions, includes rigidity versus flexibility, recklessness versus responsibility, detachment versus homestead, frustration versus directionality, and correction versus impulsivity. Dimension P, which measures self-promotion, includes suppression versus high self-confidence, stubbornness versus optimism, experiential versus responsive approach, inconspicuousness versus self-assertion, and a feminine versus masculine type of interaction.

The questionnaire included two types of criteria of credibility (or relative reliability) for the respondent's answers. The first is to assess the relationships between the results on the scales to affect a certain set of the aforementioned features and the results specifically created. For truthfully completed questionnaires, the scales for general stimulation level, general level of acceptance or rejection of risky activities, and dimension of effective personality integration must be characterized by the nature of the deviation of central values of the comparable population, which results from the trend of deviations in the set of features entering this dimension. The second criterion is the so-called K-score of extreme statements, which verifies the significance of disproportions in relations between the aforementioned scales traditionally according to the concept of 'lie score'.

The Golden Profiler of Personality (GPOP) test from Golden (2005) is based on the MBTI method (Myers, McCaulley, 1985) that has its origin in Jung's typology, enriched with the fifth dimension of personality: disposition to stress. The authors of the German version of this questionnaire presented GPOP as one of the most serious and respected tools in the field of human resources, executive education, and management and organization: "GPOP opens access to complex relationships of each person, team, company". The name GPOP was introduced for distribution to the European market, while the questionnaire is known worldwide as the Golden Personality Type Profiler (GPTP).

The GPOP is a 116-item questionnaire. Its results are captured in ten global scales grouped into five pairs: extraversion / introversion, senses / intuition, thinking / feeling, decision orientation / perception orientation, and tension / relaxation. Each scale has several subscales.

The questionnaire contains five pairs of scales, each of which has five subscales. The first pair scale, extraversion (E) / introversion (I), captures the source of an individual's psychic energy. This scale has the following subscales: 1. vigour / calmness; 2. orientation to society/privacy; 3. sociability / discretion; 4. entrepreneurship/reluctance; and 5. spontaneity / judiciousness. The second pair scale, senses (S)/intuition (N),

indicates the way of perceiving reality. The subscales are: 1. practicality/innovation; 2. specificity / abstractness; 3. realism / imaginativeness; 4. rewards specific / rewards abstract; and 5. stability / change. The third paired scale, thinking (T) / feeling (F) indicates the process of decision-making. It has subscales: 1. distance / empathy; 2. objectivity / subjectivity; 3. autonomy / authenticity; 4. leadership/adaptability; and 5. criticality / acceptance. The fourth paired scale, decision-making orientation (J) / perception orientation (P) indicates the lifestyle of an individual. The decision-making orientation speaks to a style that has order and is organized and structured. Conversely, the orientation to perception speaks of immediacy, flexibility, and adaptation. It has the following subscales: 1. focus on the goal / process; 2. structuredness / impulsivity; 3. reliability / looseness; 4. sense of detail / whole; 5. stability / openness to opportunities. The last pair, tension (A)/relaxation (G), refers to how an individual responds to stress. It has five subscales: 1. scepticism / credulity; 2. uncertainty / equanimity; 3. caution / audacity; 4. negative / positive attunement; and 5. pessimism / optimism.

The output is 16 personality types: ISTJ, ISFJ, INFJ, INTJ, ISTP, ISFP, INFP, INTP, ESTP, ESFP, ENFP, ENTP, ESTJ, ESFJ, ENFJ, and ENTJ.

The Coping Strategies Questionnaire (SVF-78) by Janke and Erdmann (2002) is an abbreviated new version of the original SVF questionnaire. In the SVF-78 version, 13 scales are: S1– underestimation; S2– denial of guilt; S3– deviation; S4– substitute satisfaction; S5– situation check; S6– control of reactions; S7– positive self-instruction; S8– the need for social support; S9– avoidance; S10– escape tendency; S11– perseveration; S12– resignation; and S13– self-blame.

3 Results

A total of 121 scientific variables were formulated based on experts' estimation, to investigate the dependence of the level of strategic thinking (measured using results of the Strategic Thinking Self-Assessment test) on specific personality traits (evaluated using the sub-components of individual personality tests or the components of the SVF-78 test).

The methods of descriptive statistics, analysis of variance with tests of hypothesis, and correlation analysis were used for the study. STAGHRAPHICS Centurion XVIII software was used for statistical analysis.

The results of the descriptive statistical analysis of the Strategic Thinking Self-Assessment test showed that the lowest value was 5.4, the mean was 7.4, the median was 7.4, and the mode was 7.3. As mentioned above, after recalculating the data, these results correspond to the category 51–77: adequate (You know and practice many basics of strategic thinking. However, you can increase your success by further expanding your skills). Then, the variables were established about the relationship between the dependent variable (strategic thinking) and the independent variables (subtests of personality tests and the SVF-78 questionnaire). Regression analysis was used to analyse this relationship at the significance level $\alpha = 0.05$.

According to the results of F-statistic and P-value, we either accept the null hypothesis (H0) or reject it in favour of the alternative hypothesis (H1) If the alternative hypothesis (H1) is accepted, then the strength of the dependence relationship (correlation, Pearson correlation coefficient) is examined. For correlation, more parameters were included, namely R-squared in percentage, R-Squared adjusted for d.f. in percentage, the standard error of estimation and t-test. The R-Squared statistic indicates the percentage that a fitted model explains in terms of the variability in the dependent variable after transforming to a logarithmic scale to linearize the model.

Of the 121 variables, 18 variables were accepted, confirming the dependence of the degree of strategic thinking on specific individual personality traits. As for the intensity of the dependence relationship, it was relatively weak in 16 and

moderately strong in 2 variables. The following tables present the research results and their statistical derivation. The results in Table 1 show relatively weak relationships between the level of strategic thinking and:

- from SD3: machiavellianism;
- from NEO-FFI: conscientiousness;
- from SPARO: emotional variability, personality anomalies, extremity, general stimulation level, and suppression versus high confidence;
- from GPOP: intuition, abstract rewards, change, authenticity, sense of the whole, uncertainty, and release and positive mood;
- from SVF-78: resignation; and moderately strong relationships;
- from SPARO: the general level of acceptance or rejection of risky activities;
- from GPOP: optimism.

Table 2 shows the results of analyses where the relationship between the examined variables was not confirmed, with a P-value of 0.05. If an analysis of dependence were performed with a recommended P-value lower than 0.0001, then only one hypothesis would be confirmed – a moderately strong relationship between the level of strategic thinking and SPARO: the general level of acceptance or rejection of risky activities. For this reason, we performed an analysis of the dependence on the significance level $\alpha = 0.05$. All gained results are displayed in Appendices 1 and 2.

4 Discussion and Conclusions

As already mentioned, the extant literature lacks a comprehensive analysis of the relationship between personality types according to various standardised questionnaires and levels of strategic thinking among managers. There are studies dealing with the results of analyses of relationships between personality types and other managerial competencies.

Significant studies include Sieff & Carstens (2006) investigated the relationship between personality type and leadership. The results of the study show that the five Leadership Focus Questionnaire (LFQ, developed by the authors) first-order factors and two second-order factors, seven factors in all, were correlated against the four attitudes (Extraversion, Introversion, Judging and Perceiving), and the four processes (Sensing, Intuition, Thinking and Feeling) of the Myers-Briggs Type Indicator instrument using the Pearson Correlation Coefficient to determine any statistically significant relationships.

The relationship between leadership style and the level of strategic thinking studied Bajcar, Babiak, & Nosal (2015). They based their research on Fiedler's theory (1971) as guidance aimed at investigating the relationships between thinking and behavioural strategies and leadership styles (as strategic thinking indicators) to explore existing interdependencies among them. The main findings of the research include those values of path coefficients leading from strategic thinking factors to structuring style, indicating that this leadership style is determined to a more significant extent by thinking-oriented strategies than by behaviour - oriented strategies. Other significant research findings included that structuring style mediates the relationships between thinking and behaviour - oriented strategies and produces positive effects on disciplinary behaviours - controlling style, rewarding style and a participative style and negative effects on behaviours leading to absenteeism in leadership processes, expressing in distant style.

Newcomer & Connelly (2020) were partially engaged in similar research - investigated personality type by MBTI and leadership and their potential impact on the level of strategic thinking. However, their research took place in a specific environment, namely with military officers (Adult male and female officers from around the world were used for this study; however, most of the officers surveyed were US officers—most of which were US Air Force-affiliated.). They discuss their partial results with

the work of Bullis (2009). The first conclusion from the above statistical results and discussion relates to the topic of conformism - intellectual conformism is likely to have significant drawbacks, even without consideration of the complex, uncertain, and ambiguous operational and strategic environments found today in every geographic command. A second consideration is the possible deeper meanings behind a high concentration of S-F-Js in military populations. Bullis argues that working in the military requires the practice of N-F-P preferences in cognitive and leadership behaviour, that strategic thinkers need to "discover underlying interdependent or reciprocal relationships (N)," "place primacy on the interpersonal component of their interactions (F)," and "apply patient decision-making techniques (P)." However, their results showed that they had a higher proportion of S-F-J personalities in the sample. In the results, they discussed how this affects the need to think strategically.

The research results fill a significant gap in investigating the relationship between personality types according to various standardised questionnaires and levels of strategic thinking among managers. The results of this study show a relationship between a higher level of strategic thinking and specific personality dimensions according to various standardised tests conducted on 121 variables, of which only 18 were confirmed. Suppose these results can be repeated every year. In that case, the resulting data can be generalised, thus enabling us to identify how a higher level of strategic thinking depends on selected individual personality traits.

The study has the following limitations. Although a representative research sample was obtained in all study groups, these results cannot be assumed as generally valid for all managers. Thus, the research team decided to continue the study and test new managers in security environment. The findings could provide valuable insights to practitioners regarding enhancing the assessment of strategic thinking in existing competency models by incorporating personality dimensions.

Suppose the results of this research are confirmed in the coming years. In that case, a new test for objective evaluation of the level of strategic thinking can be developed by incorporating personality dimensions in the existing competence models. Furthermore, future research can extend the results of this study by identifying the relationship between strategic and critical thinking levels.

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Appendix 1

Table 1. Proven dependencies of strategic thinking on other variables and intensity of the dependence

	Analysis of variance			Correlation					
	F	P	Result	R2	R2 adj.	Std.er.	T	Correl.	Intensity
M – Machiavellianism	7.16	0.01	H1	12.751	10.970	13.962	-2.762	-0.35709	relatively weak
Resignation	4.48	0.0394	H1	8.37563	6.50575	14.3074	-2.11642	-0.28941	relatively weak
Conscientiousness	6.23	0.016	H1	11.28945	9.47399	14.0685	2.49655	0.335924	relatively weak
Emotional variability	4.67	0.0357	H1	8.6955	6.83214	14.2723	-2.16023	-0.29488	relatively weak
Personality anomalies	6.6	0.0133	H1	11.868	10.0694	14.0321	-2.56874	-0.3445	relatively weak
Extremity	7.25	0.0097	H1	12.8855	11.1076	0.386158	-2.69218	-0.35896	relatively weak
General stimulation level	6.22	0.016	H1	11.2696	9.45882	1.26055	-2.49469	-0.3357	relatively weak
General level of acceptance or rejection of risky activities	28.97	0.0000	H1	37.1557	35.8732	0.327616	-5.38242	-0.60956	moderately strong
Suppression versus high confidence	4.29	0.0437	H1	8.04683	6.17023	14.3331	2.07075	0.283669	relatively weak
Intuition	4.98	0.0302	H1	9.22812	7.37563	14.2407	2.23192	0.303778	relatively weak
Abstract rewards	5.98	0.0181	H1	10.8835	10.8835	14.1103	2.44627	0.329902	relatively weak
Change	4.07	0.0493	H1	7.66232	5.77788	14.3528	2.01646	0.276809	relatively weak
Authenticity	4.42	0.0407	H1	8.27432	6.40236	14.3153	2.10242	0.287651	relatively weak
Sense of the whole	6.94	0.0112	H1	12.4116	10.624	13.9888	-2.63504	-0.3523	relatively weak
Uncertainty	7.32	0.0094	H1	12.9956	11.22	13.942	2.70536	0.360494	relatively weak
Release	6.39	0.0147	H1	11.5431	9.73786	14.0579	2.52868	0.339751	relatively weak
Positive mood	7.36	0.0092	H1	13.0639	11.2897	13.9366	2.71352	0.36144	relatively weak
Optimism	16.66	0.0002	H1	25.3745	23.8515	12.9122	4.08181	0.503731	moderately strong

Source: own work by authors

Appendix 2

Table 2. Results of analyses where the relationship between the examined variables was not confirmed

<i>X (independent)</i>	Analysis of variance			<i>X (independent)</i>	Analysis of variance		
	F	P	Result		F	P	Result
Narcissism	2.60	0.1131	H0	Extraversion	2.07	0.1567	H0
Psychopathy	0.17	0.6804	H0	Vigour	1.7	0.1986	H0
Underestimation	2.56	0.1161	H0	Orientation to society	1.78	0.1878	H0
Denial of guilt	1.12	0.2961	H0	Sociability	0.13	0.7191	H0
Departure	0.9	0.3484	H0	Entrepreneurship	0.61	0.4373	H0
Substitute satisfaction	2.74	0.1043	H0	Spontaneity	2.93	0.0931	H0
Checking the situation	1.42	0.239	H0	Introversion	0.41	0.5256	H0
Reaction control	3.66	0.0614	H0	Calmness	1.11	0.2966	H0
Positive self-instruction	1.59	0.2136	H0	Orientation to privacy	0.88	0.3528	H0
The need for social support	2.39	0.1282	H0	Discretion	0.25	0.6196	H0
Avoidance	0.61	0.4404	H0	Reluctance	0.12	0.7292	H0
Escape tendency	2	0.1641	H0	Judiciousness	0.84	0.3636	H0
Perseveration	0.63	0.4312	H0	Senses	0.42	0.5217	H0
Self-blame	3.41	0.071	H0	Practicality	0.82	0.3697	H0
Neuroticism	1.39	0.2443	H0	Specificity	2.4	0.1281	H0
Extraversion	2.34	0.1327	H0	Realism	0.57	0.4537	H0
Openness to Experience	1.22	0.2757	H0	Rewards specific	3.48	0.0683	H0
Agreeableness	1.75	0.1918	H0	Stability	0.13	0.7169	H0
Cognitive variability	0.34	0.5634	H0	Innovativeness	1.97	0.1669	H0
Regulatory variability	0.18	0.6724	H0	Abstractness	0.53	0.4682	H0
Adjustment variability	0.2	0.6551	H0	Imaginativeness	3.13	0.0829	H0
General level of mental (internal) arousal, spontaneity	0.48	0.492	H0	Thought	1.34	0.2518	H0
Motor (or external) momentum	1.32	0.2561	H0	Distance	2.74	0.1044	H0
Relationships. suspicion	0.38	0.5401	H0	Objectivity	0.24	0.628	H0
Mental lability versus mental stability	3.07	0.0862	H0	Autonomy	0.32	0.5759	H0
Sensory impression	0.39	0.5374	H0	Leadership	0.13	0.7244	H0
Intensity of inner experience	1.68	0.2009	H0	Criticality	1.45	0.2345	H0
Movement restlessness	0.71	0.4021	H0	Feeling	2.14	0.1499	H0
Dynamics of interaction with the environment	0.1	0.7563	H0	Empathy	0.44	0.5117	H0
Social disinhibition	0.85	0.3613	H0	Subjectivity	2.14	0.1502	H0
Level of aspiration	0.18	0.6692	H0	Adaptability	0.48	0.4912	H0
Level of anticipation	0.87	0.3558	H0	Acceptance	0.92	0.3431	H0
Tendency for relying on chance	1.88	0.1761	H0	Decision orientation	2.07	0.1563	H0
Social exhibitionism	0.99	0.3242	H0	Target focus	4.04	0.0501	H0
Anxiety	0.6	0.4413	H0	Structuredness	2.08	0.1559	H0
Emotionality	2.41	0.1267	H0	Reliability	2.27	0.1387	H0
Effective capacity of reason	2.78	0.102	H0	Attention to detail	1.89	0.1757	H0
Level of resistance to disturbing stimuli	0.85	0.36	H0	Stability	1.19	0.2812	H0
Dimension of effective personality integration	0.99	0.3234	H0	Orientation to perception	0.18	0.6771	H0
Closedness versus connectivity	2.35	0.1317	H0	Focus on process	0.11	0.7413	H0

Level of benevolence and tolerance	0.86	0.3586	H0	Impulsivity	1.21	0.2765	H0
Conformity	1.5	0.2272	H0	Looseness	0.49	0.4872	H0
Tendency for independence	0.38	0.5385	H0	Openness to opportunities	0.13	0.7215	H0
Rigidity versus flexibility	1.49	0.2277	H0	Tension	3.18	0.0807	H0
Recklessness versus responsibility	0.63	0.4298	H0	Scepticism	1.79	0.1868	H0
Detachment versus homestead	1.11	0.2969	H0	Caution	1.32	0.2558	H0
Frustration versus directionality	1.39	0.2438	H0	Negative attunement	0.49	0.4894	H0
Correctness versus impulsivity	0.38	0.5411	H0	Pessimism	1.91	0.1736	H0
Stubbornness versus optimism	1.64	0.2066	H0	Credulity	2.95	0.092	H0
Experiential versus responsive approach	2.55	0.1168	H0	Equanimity	2.81	0.1001	H0
Inconspicuousness versus self-assertion	0.65	0.4251	H0	Audacity	3.53	0.0662	H0
Feminine versus masculine type of interaction	1	0.3224	H0				

Source: own work by authors