

Vol. 5, Issue 1, April-2017
ISSN 2559-1649 (online)



ROMANIAN JOURNAL

ROMANIAN
STUDIES
PS
JOURNAL
PSYCHOLOGICAL

OF PSYCHOLOGICAL STUDIES

HYPERION UNIVERSITY



ROMANIAN JOURNAL OF PSYCHOLOGICAL STUDIES

Vol. 5, Issue 1, April-2017

ISSN 2559-1649, ISSN-L 2559-1649

Biannual journal published by Hyperion University,
Faculty of Psychology and Educational Sciences, Department of Psychology

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**DIFFERENCES IN FACIAL MICROEXPRESSION
RECOGNITION BETWEEN STUDENTS WHO STUDY AT A
TECHNIC PROFILE COLLEGE AND THOSE WHO STUDY
AT A HUMMAN STUDIES PROFILE**

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Abstract

Today, in areas such as psychiatric, business, judiciary and even everyday life, may be noticed an increased attention to non-verbal communication. Emotion indicators (including facial expressions, microexpressions, facial mimicry and pantomime) help us to predict any masked intentions of our interlocutor. Given that verbal language is often used for deception, representing an effective way of manipulation, non-verbal language can reveal gaps between the words and the feelings of a person; those gaps are also known as lies. This paper will address microexpressions (extremely fast facial expressions which betrays one of the person's basic emotions (anger, sadness, disgust, fear, surprise, contempt, happiness) as microexpressions are one of the most studied indicators of concealed emotions. Although there is a varied, individual combinatorics of the seven basic emotions, microexpressions are almost universal. The ability of microexpressions recognition, as an interpersonal communication skill is an advantage for the ordinary individual and at the same time is a necessity in the domain of psychologists, clinicians, medicine practitioners and security.

Today, testing and training packages in microexpressions recognition are available for the interested public because of the work of scientific researchers like Paul Ekman or David Mtsumoto that developed with their teams autotraining and self-testing tools METT Advanced at <http://www.paulekman.com>) and Micro Expression Recognition Tool available as MIX at www.humintell.com)

Keywords: *microexpressions, facial expressions, METT*

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1. THEORETICAL FRAMEWORK

Microexpressions study acquires relevance for psychology in the context of the importance of identifying the emotions that others manifest. There is a special interest in studying emotions because they are transient, involuntary, unconscious bio-psycho-social reactions (Matsumoto et al. 2013) and thus they are a major source of motivation and action onset by creating the momentum that causes behavior (Frijda, Kuipers & Ter Schure, 1989; Matsumoto, Hwang, & Frank, 2013; Tomkins, 1962, 1963). Emotions are expressed mainly through the face (Ospovat, 1995; Ekman 2003; Izard, 1994) and most people can accurately interpret these expressions when displayed prominently (Biehl et al.1997).

When these expressions are less visible - as in microexpressions - such signals can become very difficult to identify.

The idea of "microexpression" has its origin in Darwin's research (1872/1998) who suggested that facial expressions are part of an emotional response and that could be triggered by the force of nerve impulse and determined to transcend volitional control of the person (Ospovat, 1995). Later research confirmed that emotions can be triggered unintentionally - in the subcortical area of the brain - and also be controlled voluntarily (Miehlke, Fisch & Eneroth, 1973; Hurley et al., 2014). Expressing primary emotions, such as anger, contempt, disgust, fear, happiness, sadness and surprise can trigger the appearance of involuntary facial expressions and also unique physical and physiological changes in muscle tone, voice and brain activity (Christie and Friedman, 2004; Damasio et al., 2000; Ekman, Levenson & Friesen, 1983).

Microexpressions are actually a special case of basic facial expressions that express emotion, occurring faster and that have a fragmented display (Matsumoto, Yoo & Nakagawa, 2008; Porter and Ten Brinke, 2008). Haggard and Isaacs (1966) observed for the first time their existence studying clinical interviews. They argued that these fast expressions of emotion were caused by an unconscious repression of a conflict that could not be observed in real time.

2. OBJECTIVES AND HYPOTHESES

2.1.OBJECTIVES

The objective of this research is to determine whether there is a statistically significant difference between students from the Faculty of Psychology of the University of Bucharest and students from the Polytechnic University of Bucharest in the innate ability to recognize facial microexpressions.

2.2. HYPOTHESES

H1: Psychology students have a more developed innate capacity for recognizing facial microexpressions than the Polytechnic University students

H2: Polytechnic University students have a more developed innate capacity for recognizing facial microexpressions than Psychology students

H3: There are no statistically significant differences between Psychology students and the Polytechnic University students regarding the innate ability to recognize facial microexpressions

3. METHOD

3.1. PARTICIPANTS

Two samples of 30 subjects each:

One sample of first year students from the Faculty of Psychology aged 19 to 23 years, selected through proportional stratified sampling.

One sample of students from the Polytechnic University aged between 19 and 27 years, selected through conventional sampling.

3.2. INSTRUMENTS

More tests were created with the purpose of testing skills in microexpressions recognition. The first of these tests that used in a scientific framework coded expressions and speed played by the tahistoscop was JACART, Japanese and Caucasian Brief Affect Recognition Test (Matsumoto & Griffin, 2000). After analyzing and improving the information obtained, the JACART test was converted in Micro Expressions Training Tool (METTv1, Ekman, 2003) that provided a superior image quality in a digital format. METT's Variations were used in assessing microexpressions recognition in students (Hall and Matsumoto, 2004), employees or consultants in the trial period (Matsumoto and Hwang, 2011), specialists in detecting deception, and in individuals with schizophrenia. While people can easily categorize facial expressions when they are displayed for approximately 10 seconds, most often resulting a recognition accuracy close to 90% (Biehl et al. 1997; Ekman et al. 1988), the process of microexpressions recognition seems to be more difficult, ranging mostly from 45 to 59% accuracy for people without training or without deficiencies in perception (Hall and Matsumoto, 2004; Matsumoto and Hwang, 2011).

3.3. PROCEDURE

To test the microexpressions recognition ability a program called METT was used (Micro Expressions Training Tool), precisely the pre-test specifically included in this program. The test consists of the presentation of fourteen short films illustrating randomly, one by one, one of the microexpression corresponding to each of the basic emotions (sadness, anger, surprise, fear, disgust, contempt, happiness).

Subjects watched the videos one at a time, after each video choosing from a list of seven emotions, the emotion shown in the video. METT converts raw scores expressed by correct answers in standard scores (percentile). The test does not show a time limit, after each video there is some thinking time determined by each subject.

3.4. EXPERIMENTAL DESIGN

The independent variable: Faculty of provenance.

The dependent variable: scores obtained at the METT Pre-test.

4. RESULTS

4.1. FIGURES AND TABLES

We compared the averages obtained on the two samples tested with the METT Pre-Test. Comparisons were performed using the T-test-students for comparing the averages of the two independent samples. All processing was performed using SPSS 22 software options for Windows.

The obtained data indicated a statistically significant difference between the mean ($t = 3.20$, $p < 0.05$).

The sample of subjects consisting of students at the Faculty of Psychology has achieved higher scores ($m_1 = 66.60$, A.S. = 14.71) than the sample of subjects consisting of students at the Polytechnic University ($m_2 = 52.93$, A.S. = 18.15).

The effect size calculated with the Cohen index indicates the presence of a large effect ($d = 0.82$), and the calculus with the omega square index indicates a medium effect ($w^2 = 0.13$) very close to the valence of a large effect (0.14).

Table 1. Independent t – Samples test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower
scor_METT	Equal variances assumed	1,445	,234	3,204	58	,002	13,667	4,265	5,128
	Equal variances not assumed			3,204	55,614	,002	13,667	4,265	5,121

5. CONCLUSIONS

Through our study we were able to demonstrate that there are statistical significant differences in the recognition of facial microexpressions between psychology students and polytechnic students. Starting from this we can argue that people who attend a humanistic profile faculty would have more developed cortical region than those who attend a technical university.

As more research found there are innate predispositions that determine both the professional orientation towards a humanistic profile and superior skills in microexpressions recognition.

We believe that this skill is very important in the practice of all psychologists regardless of their specialization.

Limitation: Lack of representativeness: the sample of psychology students belong to the first year of studies, students from the Polytechnic are also from other years of studies. Testing different from one sample to another, from the point of view of the test conditions (time, environment, lighting).

We did not consider testing of the variable interest in studying the microexpressions recognition, we noticed in some cases a higher score associated with people who had knowledge about microexpressions study, even if they never took the test for micro expressions recognition.

The lack of written instruction, standardized; training was conducted personally.

REFERENCES

- Biehl, M., Matsumoto, D., Ekman, P., Hearn, V., Heider, K., Kudoh, T. & Ton, V. (1997). Matsumoto and Ekman's Japanese and Caucasian Facial Expressions of Emotion (JACFEE): Reliability data and cross-national differences. *Journal of Nonverbal behavior*, 21(1), 3-21.
- Christie, I. C. & Friedman, B. H. (2004). Autonomic specificity of discrete emotion and dimensions of affective space: A multivariate approach. *International Journal of Psychophysiology*, 51(2), 143-153.
- Damasio, A. R., Grabowski, T. J., Bechara, A., Damasio, H., Ponto, L. L., Parvizi, J. & Hichwa, R. D. (2000). Subcortical and cortical brain activity during the feeling of self-generated emotions. *Nature neuroscience*, 3(10), 1049-1056.
- Ekman, P. (2003). Darwin, deception, and facial expression. *Annals of the New York Academy of Sciences*, 1000(1), 205-221.
- Ekman, P. & Heider, K. G. (1988). The universality of a contempt expression: A replication. *Motivation and emotion*, 12(3), 303-308.
- Ekman, P., Levenson, R. W. & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotions. *Science*, 221(4616), 1208-1210.
- Frijda, N. H., Kuipers, P. & Ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of personality and social psychology*, 57(2), 212.

Haggard, E. A. & Isaacs, K. S. (1966). Micromomentary facial expressions as indicators of ego mechanisms in psychotherapy. In *Methods of research in psychotherapy* (pp. 154-165). Springer US.

Hall, J. A. & Matsumoto, D. (2004). Gender differences in judgments of multiple emotions from facial expressions. *Emotion, 4*(2), 201.

Hurley, C. M., Anker, A. E., Frank, M. G., Matsumoto, D. & Hwang, H. C. (2014). Background factors predicting accuracy and improvement in micro expression recognition. *Motivation and Emotion, 38*(5), 700-714.

Izard, C. E. (1994). Innate and universal facial expressions: evidence from developmental and cross-cultural research. *Psychological bulletin, 115*(2), 288-299.

Matsumoto, D. & Hwang, H. S. (2011). Evidence for training the ability to read microexpressions of emotion. *Motivation and Emotion, 35*(2), 181-191.

Matsumoto, D. Hwang, H. C. & Frank, M. G. (2013). Emotional language and political aggression. *Journal of Language and Social Psychology, 32*(4), 452-468.

Matsumoto, D., Yoo, S. H. & Nakagawa, S. (2008). Culture, emotion regulation, and adjustment. *Journal of personality and social psychology, 94*(6), 925.

Matsumoto, Y. & Griffin, M. J. (2000). Comparison of biodynamic responses in standing and seated human bodies. *Journal of Sound and Vibration, 238*(4), 691-704.

Miehlke, A., Fisch, U. & Eneroth, C. M. (1973). *Surgery of the facial nerve*. Philadelphia: Saunders.

Ospovat, D. (1995). *The development of Darwin's theory: Natural history, natural theology, and natural selection, 1838-1859*. Cambridge: University Press.

Porter, S. & Ten Brinke, L. (2008). Reading between the lies identifying concealed and falsified emotions in universal facial expressions. *Psychological Science, 19*(5), 508-514.

Tomkins, S. (1962). *Affect imagery consciousness: Volume I: The positive affects*. (Vol. 1). New York: Springer.

Tomkins, S. (1963). *Affect imagery consciousness: Volume II: The negative affects*. (Vol. 2). New York: Springer.



**MEDIATING VARIABLES IN THE RELATION BETWEEN
PERSONALITY TRAITS AND TYPES OF COMMITMENT TO
AN ORGANIZATION. A META-ANALYTIC STUDY¹**

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Abstract

The present paper describes the manner in which employees with various personality traits might facilitate the appearance of one or more types of commitment towards an organization. We will support our theory with the arguments presented in the introductory section of our paper for which we have chosen to measure the personality of organization members according to the Big-Five model. To that effect, we will identify a series of factors that might act as mediating variables in the relation between personality traits and types of commitment an employee might evince towards their organization, as defined by Allen and Meyer Organizational Commitment Model (1990). Results and discussions presented rely on a revision of the literature.

Keywords: *Big-Five Theory of Personality, Affective Commitment, Normative Commitment, Continuance Commitment,*

1. INTRODUCTION

At present there are a series of meta-analytic studies that have been conducted in the field of identifying antecedents, correlations and consequences of organizational commitment. In order to offer a size range of the research conducted in this field, 100 studies have been generated for the past two decades, ever since 1980. These studies focused on the identification of antecedents and consequences in organizational commitment, but the research was restricted to union members only (Bamberger, Kluger & Suchard, 1999). Most of these antecedents were in the field of pro-union attitudes, job satisfaction as well as operational perceptions of employees and unions.

¹ The current paper is based on the research included in Țânculescu, L. (2015), Chapter 1.

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A different kind of paper (Mathieu & Zajac, 1990) draws attention to a series of 26 variables classified as antecedents, 8 as consequences and 14 as variables, correlated with organizational commitment. The results are discussed with respect to the type of organizational commitment (whether attitudinal or calculated) which is also a mediating variable for the present research study.

In a meta-analysis which studies the antecedents, correlations and consequences of the three types of commitment in an organization, Meyer et al. (2002) investigates variables such as job satisfaction and job involvement as main antecedents, while work disengagement and employee fluctuation appear as main consequences of organizational commitment. The investigation is done by including as many as 155 research reports which evince at least one of the three types of commitment discussed (affective, normative, continuance). The authors demonstrate that affective organizational commitment evinces the strongest and most preferable correlations with the results obtained at an individual level (for instance, with stress or clash between personal and professional life) and at an organization level (for instance, performance, involvement, organizational citizenship behavior), while normative organizational commitment evinces the second strongest such correlations. Conversely, continuance organizational commitment does not correlate or negatively correlates the results obtained at an individual or organizational level. Consequently, employees with a high degree of affective commitment want to be involved in their work because they identify themselves or share values with their organization.

This relation based on antecedents regarding individual traits in employees, especially profoundly psychological traits, such as, for instance, those related to personality, set of individual and organizational perceived values, satisfaction of psychological needs in the workplace has been studied only sporadically.

Considering what these types of antecedents can offer, we are surprised at the small number of research studies being conducted in this direction: that of establishing a comprehensive model combining personality with a set of individual values and with a perception of meeting work-related needs with a view to explaining a part of the variance in types of organizational commitment. In a paper that focuses on studying the role of personality in studying behaviors within organizations, Judge, Klinger, Simon and Yang (2008: 1983) note that “personality has proven to be relevant to individual and work-related attitudes in the same way in which one cannot deny the relation between effective team-work and effectiveness in an organization”. In the selfsame paper, the authors discuss the top 10 most important organizational and personality results, demonstrating how important studying personality turns out to be in the prediction of these results.

Moreover, they underline the fact that research studying the relation between personality and organizational commitment are in incipient phases, as the domain has hardly been studied so far. Many of the studies conducted in the field of work and organizational psychology have focused on the role of personality in relation

with a series of organizational results such as: job performance (Barrick & Mount, 1991), employee satisfaction (Judge et al., 2002), civic organizational behavior (Organ, 1990).

Considering the increased interest in the diversification of more and more competitive markets and industries, organizations have understood that focusing on the employee might offer an answer to achieving success.

2. STUDY OBJECTIVES AND HYPOTESIS

2.1. OBJECTIVES

The present meta-analysis aims at establishing the impact that various personality factors have over the various types of organizational commitment.

The objectives of the present study are: 1) to calculate the size of medium effect regarding the association between the three main types of organizational commitment (affective, normative and continuance) and the five fundamental personality dimensions, according to the Big-Five model; 2) to identify, wherever necessary, a series of mediating factors responsible for variations in the range of the effects noticed.

We have decided to include only those studies that investigated the impact of personality traits on organizational commitment and have excluded those studies regarding other types of organizational behaviors: job satisfaction, intention of quitting the organization, employee fluctuation. We have also chosen those studies – exclusively written in English – that provide data about the impact of personality traits (exclusively defined according to the Big-Five model) on organizational commitment and that also provide sufficient data for a calculation of the size of the effect.

To our knowledge, up to the moment of concluding this study (2011) upon which we report in the present article, no other meta-analysis has been published that investigated the impact of personality factors on types of commitment shown by members to that organization to which they belong.

2.2. HYPOTESIS

To meet the objectives of the current study, the formulated hypothesis were:

H1: There is a statistically significant correlation between personality traits as they are described by the Big-Five model and the organizational commitment.

H2: The type of organization mediates the relationship between personality traits and organizational commitment.

H3: The location of organization mediates the relationship between personality traits and organizational commitment.

H4: The length of service of the people in the organization mediates the relationship between personality traits and organizational commitment.

3. THE METHOD

3.1. REVISING THE LITERATURE

We identified potential studies published in the interval 1990 – 2011 with respect to our subject of investigation by an analysis of the data bases PsychInfo, EconLit and EBSCO, which implied using the following key words: “Five-factor model of personality”, “personality”, “big-five”, “personality traits” associated with “organizational commitment”, “work engagement”, “affective commitment”, “normative commitment”, “continuance commitment”.

Personality evaluated by the Big-Five model

The capacity that the Big-Five model has in investigating personality traits, in integrating personality traits and concepts expressed in other theories and models has been extensively discussed in the literature for the past two decades (Ozer and Reise, 1994). By factorial analysis of more personality tests, Costa and McCrae (1995) have noticed that five factors stand out: extraversion (or surgency), agreeableness, conscientiousness, neuroticism (the opposite of emotional stability) and openness to experience (similar to Goldberg’s intellect, 1990) (Sava, 2008).

Since organizational commitment is an attitude, the Big-Five model may also include aspects not covered by the dyad positive – negative work attitude (Watson, Clark, & Tellegen, 1988; Judge & et al., 2002), which can lead to a better understanding of development in organizational commitment (Erdheim & et al., 2006).

Last but not least, for an option of working with the Big-Five model, we find extremely relevant Goldberg’s statement (apud Ozer and Reise, 1994) according to which the Big-Five model has become the main system of reference in the field of research on personality, as it manages to identify links with other personality models and many research studies in the field which support a taxonomy of personality that relies on five fundamental factors.

With regard to personality in the study of work-related behaviours, or, to be more precise, of organizational results, there are very few studies discussing the problem of relating personality with organizational commitment.

Organizational commitment

One of the definitions of the concept of organizational commitment was proposed by Meyer & Allen (1991) who see organizational commitment as “a psychological state which can be characterized from three perspectives: affective, continuance in the organization and normative”. The various definitions provided for this concept, of “organizational commitment”, seem to regard three main lines of understanding: commitment as reflecting an affective relation with the organization, commitment as recognition of costs associated with quitting the

organization and a moral obligation of staying with the organization (Meyer & Allen, 1997).

Other authors have described “organizational commitment” as being the psychological link connecting the employee with the organization, a link which may have three forms, known under the name of compliance, identification and internalization, (O’Reilly & Chatman, 1986). Compliance is that form of organizational commitment which appears when those attitudes and behaviours valued by the organization are adopted by the employee, not because he shares them, but because this type of commitment is rewarded. Due to this, the attitudes of a certain person can vary in the organizational environment, being different on a personal level. Identification, as a form of organizational commitment, appears when a person accepts, though does not appropriate, the influences of the organization (whether these are expressed under the shape of goals and/or values within the organization). Internalization is that form of organizational commitment that presupposes an acceptance of values and goals of the organization because these are translated into adopting certain attitudes proposed by the organization, which, at the same time, are congruent with the personal values of the individual (Meyer & Allen, 1997; O’Reilly & Chatman, 1986; O’Reilly, Chatman & Caldwell, 1991).

According to Allen & Meyer (1990, 1991, 1997), each of the three dimensions of organizational commitment (affective, normative, continuance) describe the way in which it is formed.

Affective commitment refers to the way in which a person gets to identify themselves with, commit themselves to and emotionally involve themselves with the organization. Continuance commitment, or that type of commitment which regards the continuance of the person within the organization, is seen as a person’s choice to stay in the organization as a form of recognition of pecuniary implications that might arise as a result of their quitting it. Normative commitment reflects a feeling of loyalty towards the organization, based on the employee’s perception regarding the obligation they have towards the institution.

3.2. SELECTING THE RELEVANT STUDIES

A number of 1023 potentially relevant studies were initially identified as a result of analysing the aforementioned data bases. Of these, a number of 996 studies were excluded for reasons of irrelevance, and the remaining 27 studies were subjected to a closer investigation.

The following set of criteria were taken into consideration with a view to qualifying these studies in our meta-analysis: 1) the presence of quantitative data, sufficient to calculate the size of the effect, 2) the presence of information regarding the relation between personality traits of the group members and commitment, 3) reporting personality data measured by instruments built on the basis of the Big-Five model. After applying these criteria, 19 studies were excluded, so that the meta-

analysis effected within the present paper came to include as many as 8 relevant studies (see the data included in the table of Annex 1).

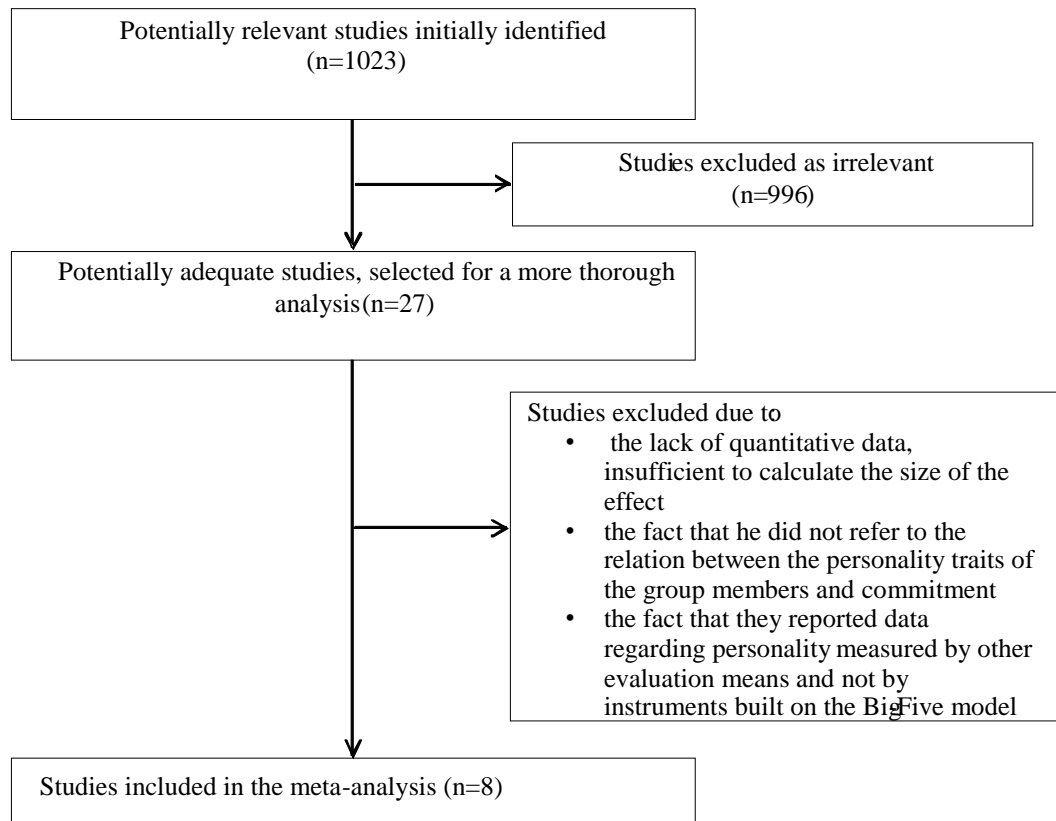


Figure 1. The QUORUM Diagram

3.3. PROCEDURE

For each of the selected studies we kept the following variables: the identification data of the respective study (author, year of publication), average age of subjects, the percentage of men included in the group of subjects, the type of personality trait studies with respect to organizational commitment, the type of organizational commitment evinced, the type of evaluation method for personality and the type of evaluation method for organizational commitment.

However, due to the great number of missing data (over 50% of these studies did not mention the average age of subjects, only the scope) and to the cases of low variability (for instance, almost all studies employed the same instrument of investigation for organizational commitment), we analysed variation in the size of the effect, calculated function of three potential mediating variables: type of

organization, location (culture) of the organization and length of service with the organization.

As for the statistical strategy employed here, we resorted to a meta-analysis of fixed effects with the aid of a specialized software programme, Comprehensive Meta-Analysis (CMA 2.0), due to similar reasons pertaining to a reduced number of available studies.

4. RESULTS

4.1. THE RELATION BETWEEN PERSONALITY DIMENSIONS AND AFFECTIVE COMMITMENT

The data we obtained after operating the statistic procedures presented in Borenstein (2009), by the aid of the software programme Comprehensive Meta-Analysis 2.0, the Lite version, are gathered in Table 1. The data in the table support H1, namely, demonstrate the existence of a statistically significant correlation between personality traits as they are in the Big-Five model and organizational commitment, especially affective commitment.

The values of the size of the effect r (presented in the grey-shadowed column) indicate values with low magnitude, but significant from a statistic point of view. With the exception of the reverse neuroticism and affective commitment, all the other four dimensions of personality stated here are in positive correlation with affective commitment. Also, with the exception of the variable openness to experience, all the other personality traits evince a heterogeneous effect, which requires identifying some potential mediating factors responsible for the variations observed at the level of effect size.

The present paper has analysed three potential mediators: the type of organization (non-profit or governmental vs. profit-oriented); the location of the organization (of the subjects) (Western culture vs. Eastern culture) and length of service with the organization (under 10 years of service vs. over 10 years/ at least 10 years of service with the respective organization).

Table 1

The results of the meta-analysis regarding the correlation between personality (OCEAN) and organizational commitment (the meta-analysis of fixed effects)

Relation	N	k	r	Tau ²	CI 95%	z	p	Q	I
N – AAf	2332	8	-.099	.005	[-.140-.059]	4.79*	.000	13.90*	49.64
E – AAf	2133	7	.099	.014	[.056 .141]	4.55*	.000	19.76*	69.63
O – AAf	1936	6	.069	.000	[.025 .114]	3.04*	.002	2.77	0.00
A – AAf	836	6	.099	.082	[.020 .176]	2.46*	.014	43.60*	88.53
C – AAf	2332	8	.145	.021	[.105 .185]	7.04*	.000	34.09*	79.46
N – AN	309	4	.018	.000	[-.095 .131]	0.31	.756	2.38	0.00
E – AN	309	4	.121	.045	[-.008 .231]	2.09*	.036	10.75*	72.10

O – AN	309	4	.073	.000	[-.041 .185]	1.26	.207	1.70	0.00
A – AN	309	4	.179	.041	[.067 .286]	3.11*	.002	10.00*	70.09
C – AN	309	4	.006	.000	[-.108 .119]	0.10	.921	1.33	0.00
N – AC	309	4	.201	.000	[.090 .307]	3.51*	.000	1.83	0.00
E – AC	309	4	-.173	.000	[-.281-.062]	3.02*	.002	3.02	75.10
O – AC	309	4	-.112	.029	[-.223 .001]	1.94	.052	7.92*	62.13
A – AC	309	4	-.012	.042	[-.125 .101]	.20	.836	10.22*	70.66
C – AC	309	4	.129	.016	[.016 .239]	2.23*	.025	8.37*	64.15

Note: N – Total number of participants; k – number of indicators of the size of the effect included in the analysis (number of independent studies analysed; r – the weighted mean noted for the size of the effect; Tau² – the dispersion associated with the weighted mean; CI 95% - the interval of trust of the mean with a probability of 95%; z – the statistical significance test; p – materiality threshold associated with the average size of the effect - z (* for p < .05); Q – the indicator of the heterogeneity of the studies (* for p < .05); I² - indicator of the extent to which the mediating factors can explain the heterogeneity of the results; N, E, O, A, C – acronyms for the five fundamental dimensions of personality – neuroticism, extraversion, openness, agreeableness and conscientiousness; AAF – affective commitment; AN – normative commitment; AC – continuance commitment.

The data are presented in Table 2. This table shows that the relation between personality traits and affective commitment is one of low intensity.

Table 2

List of mediating variables analysed and their effect on the relation between personality and affective commitment

Mediators in question	Type of organization (1 – non/profit; 2 –profit-oriented)	Location of organization (1 – Western culture; 2 – Eastern culture)	Length of service (1 under 10 years; 2 - ≥ 10 years)
Neuroticism	Q = .16, p = .69	Q = .20, p = .66	Q = .18, p = .91
Extraversion	Q = .61, p = .43	Q = 1.52, p = .21	Q = 1.97, p .37
Openness	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>
Agreeableness	Q = 8.73, p = .003	Q = 8.73, p = .003	Q = 5.38, p = .07
Conscientiousness	Q = .43, p = .51	Q = .10, p = .75	Q = .65, p = .72

The analysis of the heterogeneity of data indicates that the type of organization and its location play a mediating part in this relationship, as persons with a higher level of agreeableness are more affectively committed in the process, especially in the case of profit-oriented organizations. Moreover, unlike Western cultures, in Eastern cultures there can be perceived a statistically significant connection, albeit a negative one, between agreeableness and affective commitment.

4.2. THE RELATION BETWEEN PERSONALITY TRAITS AND NORMATIVE COMMITMENT

None of the complementary variables analysed in the present study seems to play a mediating part in the relation between personality traits and normative

commitment (Table 2), as there are other variables which can be held responsible for the variations seen in the scope of the effect.

Table 3

List of mediating variables analysed and their effect on the relation between personality and normative commitment

Mediators in question	Type of organization (1 – non/profit; 2 –profit-oriented)	Location of organization (1 – Western culture; 2 – Eastern culture)	Length of service (1 under 10 years; 2 - ≥ 10 years)
Neuroticism	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>
Extraversion	Q = .35, p = .56	Q = .35, p = .55	Q = .05, p = .82
Openness	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>
Agreeableness	Q = .02, p = .89	Q = .02, p = .89	Q = .02, p = .88
Conscientiousness	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>

At the level of main effects (Table 1) one can notice that the profile of those who tend to adopt an attitude of the normative commitment kind especially target those who show high levels of agreeableness and extraversion.

4.3.THE RELATION BETWEEN PERSONALITY TRAITS AND CONTINUANCE COMMITMENT

From the perspective of the personality profile of the employee who resorts to continuance commitment (see Table 1) one can notice that they have high levels of conscientiousness and neuroticism, but a low level of extraversion, as this profile is one typical of diffident persons, rather disinclined to explore other professional opportunities.

Table 4

List of mediating variables analysed and their effect on the relation between personality and continuance commitment

Mediators in question	Type of organization (1 – non/profit; 2 –profit-oriented)	Location of organization (1 – Western culture; 2 – Eastern culture)	Length of service (1 under 10 years; 2 - ≥ 10 years)
Neuroticism	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>
Extraversion	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>	<i>Homogeneous effect</i>
Openness	Q = 6.74, p = .01	Q = 6.74, p = .01	Q = .09, p = .76
Agreeableness	Q = .14, p = .71	Q = 14, p = .71	Q = .00, p = .99
Conscientiousness	Q = 1.61, p = .71	Q = 1.61, p = .20	Q = .09, p = .76

The data presented in Table 4 suggest that the type of organization and the location in which it operates are mediating factors of the relation between openness to experience and continuance commitment (Table 4). Thus, the negative relation between openness and continuance commitment is statistically significant against the background of profit-oriented organizations and Eastern cultures.

5. DISCUSSIONS AND CONCLUSIONS

The results presented in this meta-analytic study indicate a logical correspondence between a certain type of commitment and personality traits. Continuance commitment underlines the profile of the anxious, defined in the Big-Five terminology as persons with a high level of conscientiousness and neuroticism and a low level of extraversion, a triad supplemented under certain circumstances by persons with a low level of openness (to experience other alternatives). Also, normative commitment is higher in persons with a positive interpersonal style (high extraversion and agreeableness), with a high level of selflessness. Finally, of these three forms of commitment under scrutiny, affective commitment is the one which is most tightly linked with the personality profile, as it is the most frequently met in the personality profile of the optimist (the resilient), who shows high scores of conscientiousness, agreeableness and extraversion, but low scores of neuroticism.

In the study of the three types of commitment there have been identified a series of aspects contributing to the development of each of these three forms of commitment to organizations. For instance, we have argued that the main bases of development for affective commitment are built on personal involvement, identifying oneself with the goals of the organization and congruence with the set of values, both personal and promoted within the organization (Becker & Kernan, 2002), a fact which fits with our results, which show that persons with a high level of conscientiousness and agreeableness are more prone to develop this kind of attitude.

By contrast with this kind of attitude, normative commitment develops as a response to the cultural and organizational model of socializing and as a sign that a series of benefits have been received which activates the need to answer in kind, that is in a beneficial manner for the organization (Scholl, 1981; Wiener, 1982). The results of our study support the fact that persons with high scores for such traits as extraversion and agreeableness are the most likely to evince this kind of commitment, that is to adapt by a response to those aspects external to them, to the organization's "agenda", thus showing agreeableness.

Finally, that commitment regarding continuance of the employee with the organization develops as a result of that person's investment accrued during his contract with the organization, or other collateral implications (H. S. Becker, 1960), which would otherwise be lost if the person were to quit that organization and which result in a lack of alternatives in the present state of the employee (Powell & Meyer, 2004). The same personality structure, based on such aspects as extraversion and

agreeableness, is also apparent in the results of this meta-analytic study, which argues for the type of investment in external aspects (the contract with the organization) and actions that support fostering an agreeable attitude, one that is politically correct to the organization, rather than an attitude centred on one's own success, which would otherwise allow for flexibility in subsequently choosing another position. The high degree of uncertainty that a person with a high level of neuroticism may evince is strongly associated with those results regarding this type of commitment and neuroticism presented in Table 1.

The results of the present meta-analysis can be added to the fact that affective commitment is the strongest and most consistent predictor of some organizational variables seen as resultants, such as preserving employees within the organization (Meyer and Smith, 2000; Rhoades et al., 2001), a fact that may lead to drawing up some ideal profiles of future employees, function of the specificity and goals of the respective companies and of the job descriptions for those positions that need to be filled.

We are however bound to admit that the main limit of this meta-analytic endeavour is its reliance on a reduced number of studies, which makes the results obtained here sensitive to modifications in light of further studies worthy of being included in the meta-analysis (the Fail-safe N values are low in this respect).

REFERENCES

- Allen, N.J. & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63, 1-18.
- Allen, N.J. & Meyer, J.P. (1996). Affective, continuance, and normative commitment to the organization: An examination of the construct validity. *Journal of Vocational Behavior*, 49, 252–276.
- Bamberger, P.A., Kluger, A., Suchard, R. (1999). The antecedents and consequences of union commitment: a meta-analysis. *Academy of Management Journal*, 42 (3), 304-318.
- Barrick, M.R. & Mount, M.K. (1991). The Big Five personality dimensions and job performance. A meta-analysis. *Personnel Psychology*, 44, 1-26.
- Becker, H.S. (1960) Notes on the Concept of Commitment. *The American Journal of Sociology*, 66, 1, 32-40.
- Becker, T. E. & Kernan, M. (2003). Matching commitment to supervisors and organizations to in-role and extra-role performance. *Human Performance*, 16, 327–348.
- Borenstein, M., Hedges, L., Higgins, J. & Rothstein, H. Englewood. (2005). *Comprehensive meta-analysis, version 2.*: NJ: Biostat, Inc.
- Costa, P.T. Jr., McCrae, R.R. (1992). Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO PI-FFI). Odessa, FL, USA: *Psychological Assessment Resources*.
- Erdheim, J., Wang, M. & Zickar, M. J. (2006)*. Linking the Big Five personality constructs to organizational commitment. *Personality and Individual Differences*, 41, 959–970.
- Goswami, S., Mathew, M., Chadha, N. K. (2007)*. Differences in Occupational Commitment amongst Scientists in Indian Defence, Academic, and Commercial R&D Organizations. *Vikalpa: The Journal of Decision Makers*, 32 (4), 13-27

- Judge, T. A., Heller, D. & Mount, M. K. (2002). Five-Factor model of personality and job satisfaction: A metaanalysis. *Journal of Applied Psychology*, 87, 530–541.
- Judge, T. A., Klinger, R., Simon, L. S., Yang, I. W. F. (2008). The contributions of personality to organizational behavior and psychology: Findings, criticisms, and future research directions. *Social and Personality Psychology Compass*, 2, 1982–2000
- Mathieu, J. E., Zajac, D.M. (1990). A Review and Meta-analysis of the Antecedents, Correlates and Consequences of Organizational Commitment. *Psychological Bulletin*, 108, 171-194.
- Matzler, K., Renzl, B. (2007)*. Personality Traits, Employee Satisfaction and Affective Commitment. *Total Quality Management & Business Excellence*, 18, (5), 589-598.
- Meyer, J.P. & Smith C.A. (2000). HRM practices and organizational commitment: Test of a mediation model. *Canadian Journal of Administrative Sciences*, 17, 4, 319–331.
- O'Reilly, C. A. & Chatman, J. (1986). Organizational commitment and psychological attachment: The effects of compliance, identification, and internalization on prosocial behavior. *Journal of Applied Psychology*, 71, 492–499.
- O'Reilly, C. A. Caldwell. D. F. & Bameett, W. P. (1989). Work group demography, social integration and turnover. *Administrative Science Quarterly*, 34, 21-37.
- Organ, D.W. (1990). The motivational basis of organizational citizenship behaviour. *Research in Organizational Behavior*, 12, 43-72.
- Ozer, D.J., Reise, S.P. (1994). Personality assessment. *Annual Review of Psychology*, 45, 357-388.
- Powell, D. and Meyer, J. (2004). Side-bet Theory and the Three-component Model of Organizational Commitment. *Journal of Vocational Behavior*, 65, 157-177.
- Raja, U., Johns, G., Ntalianis, F. (2004)*. The impact of personality on psychological contracts. *Academy of Management Journal*, 47, (3), 350–367.
- Sava, F.A. (coord.) (2008). *Inventarul de personalitate DECAS*. Timișoara: Editura ArtPress.
- Scholl, R. (1981). Differentiating organizational commitment from expectancy as a motivating force. *Academy of Management Review*, 6, 589-599.
- Smith, M.A., Canger, J.M. (2004)*. Effects of supervisor “Big Five” Personality on subordinates attitudes. *Journal of Business and Psychology*, 18, (4).
- Țânculescu, L. (2015) *Impactul factorilor de personalitate înțeleși în cheia teoriei celor cinci mari factori de personalitate asupra angajamentului organizațional*. PhD Thesis (unpublished). Cluj-Napoca.
- Watson, D., Clark, L. A. & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Wiener, Y. (1982). Commitment in organizations: A normative view. *Academy of Management Review*, 7, 418-428.
- Witt, L. A., Kacmar, K.M., Carlson, D.W., Zivnuska, S. (2002)*. Interactive effects of personality and organizational politics on contextual performance. *Journal of Organizational Behavior* 23, 911–926.

Note:

*- articles included in the meta-analysis



THE MODEL OF INTERACTION BETWEEN OPTIMISM, LOCUS OF CONTROL AND HARDINESS

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Abstract

This research aimed to study the correlation between the locus of control and hardiness in case of optimistic individuals and of pessimistic individuals. Hardiness is a construct that anticipates the resistance to stress and the control on the resources required to go through exceptional situations. Locus of control indicates the modes of perception of the causes of success or failure as being internal or external, resulting from their own resources or under the influence of others. The biunique connection between the two constructs suggests that the adaptive modification of locus of control may have an effect on hardiness. The results of this research demonstrated that such relationship may be established only in case of optimistic individuals. In case of pessimistic individuals, there were no proofs of a correlation between locus of control and hardiness. According to the theoretical model resulted, meant to obtain results on hardiness, therapeutic assistance should be performed sequentially, first for the reinforcement of the disposition to optimism and, secondly, for the locus of control adaptive modification.

Keywords: *optimism, pessimism, locus of control, hardiness.*

1. INTRODUCTION

The personality factors of social-cognitive theory have an important role in the development of coping mechanisms, especially in crisis or unstable situations, and influence decision-making processes. Therefore, it is necessary to maintain a stable balance between such factors through self-regulation or therapeutic assistance from a specialist.

VasilIU (2016, 2017) investigated the connections between personality constructs of social-cognitive theory, such as locus of control and hardiness, leading to the conclusion that there are significant correlations between them. Lawler and Schmied, (1992) also revealed correlations between the two factors involved in sanogenesis and Robinson (2013) researched the health risks among African Americans. In 1995, Dave Clarke published an article on the vulnerability to stress depending on age, gender, locus of control, hardiness and personality in that he

revealed significant correlations among the analyzed constructs. Research was conducted on a sample consisting of 283 students at the Massey University Albany. In 2015, Sara Keyvan Ara and Dr. Susan Imamipour, published an article that showed the correlation between locus of control and hardiness on sports performance. Kooranian, Khosravi and Esmali (2008) approached the phenomenon of resignation of nurses depending on the locus of control presence and on the hardiness score and the conclusion was that the two constructs correlate and are predictors of the analyzed phenomenon.

1.1. Optimism

Seligman (1992) defined the concept of “learned optimism” and thereby initiated the researches on optimism. Scheier and Carver (1992) describe the disposition to optimism as a general trend, relatively stable, in having a positive vision on the future and life experiences. Optimistic individuals assess the social and physical environment in a positive manner, invest more effort to prevent problems or to transform them, enjoy life more and have a better behaviour under stress. In contrast with the optimism is described the pessimism defined by negative expectancies on the effect of actions taken. Pessimistic individuals react to problematic situation and disappointments by renunciation, avoidance and denial. Optimism is generally associated with favourable effects. However, unwanted consequences were observed, especially in case of unrealistic or naive optimism. Optimism may correlate with negative effects under two circumstances: when it determines a passive behaviour and the positive effect is expected from luck, divinity or from a friend and under the circumstances in which, even if such circumstances cannot be changed, an optimistic person persists tenaciously to change them.

1.2. Locus of control

Julian Rotter (1966) developed the concept of locus of control; the author argues that the attitudes and beliefs regarding the causal relationship between behaviour and effect take shape as a global personality trait and relatively stable. The concept defines the way a person explains the success or failure by internal or external causes, controllable or uncontrollable (Bandura, 2006). The internal locus of control is determined by the belief that the personal power and control can influence events and that the successes derive from the skills developed and from the work carried out by the person concerned. The external locus of control is shown by the belief that personal power influences events very little or not at all, being caused more by destiny, by the power of others or by luck. Experimental researches lead to the conclusion that, in the study of stress it is necessary to include locus of control. The internal locus of control might play the role of a protective factor. Externality may be defensive or passive. Furthermore, internality may take two forms: responsible and guilt-provoking. An individual oriented towards internal locus of control show resistance to stress.

1.3. Hardiness

In 1979, Suzanne C. Kobasa introduced for the first time the concept of hardiness (Rizeanu, Vasiliu, 2016). This model refers to the resistance to stress; delimiting the individuals who remain healthy from those who develop health problems under the influence of this model. Individuals with high hardiness have better performances under stress conditions. Hardiness, as a personality trait, comprises three dispositions that operate as resources for the resistance to stress: *Commitment, Control* and *Challenge*. The hardiness construct was elaborated based on the results of a prospective study carried out over seven years. In more than 900 participants was noticed the dynamic of the relationship between the stress and disease incidence. Research data substantiate that certain participants remain healthy despite the intense stress due to those personality traits defined by the authors of the hardiness concept.

2. OBJECTIVES AND HYPOTHESES

2.1. OBJECTIVES

This research sought to emphasise the correlations between locus of control and hardiness on one hand and influence of optimism on them, on the other hand. The objective of the survey was to reveal a possible intervention model on the locus of control in an adaptive direction, depending on the optimism or pessimism manifested by an individual, in such a way as to obtain a hardiness improvement. The intervention model should be verified at a later stage in the experimental and clinical conditions.

2.2. HYPOTHESES

Work hypothesis: Correlation between locus of control and hardiness is influenced by the disposition to optimism.

A consequence of this hypothesis is that there is a theoretical model that explains the combined effect of optimism, locus of control and hardiness.

Verification of the practical validity of the model shall be the object of a further research.

3. METHOD

3.1. PARTICIPANTS

Data were collected from 357 participants of Bucharest and other 12 regions in Romania. The participants were selected from different social categories and aged between 18 and 80. 164 were male (46%) and 193 female (54%).

3.2. INSTRUMENTS

Locus of control was determined based on the Rotter's Locus of Control Scale (1966), a 29-item questionnaire, calibrated for the population of Romania by Băban (1998). For optimism we used the LOT-R Scale (Scheier, Carver, 1994) calibrated and validated in 1998 by Băban (1998). The scale consists of 10 items with five multiple choice answers rated from 0 to 4. For scoring are considered the following items: 1, 3, 4, 7, 9 and 10. Hardiness was assessed with DRS15 Scale, the variants with 15 items, developed by Bartone (2005), validated and calibrated for the population of Romania by Vasiliu & all. (2015).

3.3. PROCEDURE

After the training of the participants in research were applied the questionnaires in order to assess the investigated constructs (optimism, locus of control and hardiness). The participants to this research were trained to tick off only one option for each scale item and were informed that all the options are correct. The administration method for each scale was paper-and-pencil. The scales administration had no time limit. In order to determine the significant correlations (the Pearson correlation coefficient) we used the $p=0.05$ significance threshold.

3.4. EXPERIMENTAL DESIGN

The experimental design chosen for this research was correlational study where „O” represents training stage, „O₁” represent the assessment of optimism, „O₂” the assessment of locus of control and „O₃” the assessment of hardiness.

R O O₁ O₂ O₃

The questionnaires were applied to each person or to the entire group.

4. RESULTS

The processed data showed that 43 participants (12%) are pessimistic and 314 participants (88%) are optimistic. Moreover, 280 participants (78%) had an internal locus of control and 77 participants (22%) had an external locus of control. In terms of hardiness, 27 participants (7.6%) have obtained a very low score, 76 (18.8%) a low score, 143 (40%) a medium score, 96 (26.9%) a high score and 24 (6.7%) a very high score. The descriptive analysis of data showed that the distribution of the Hardiness variable is slightly asymmetrical and leptokurtic. The distribution of the Locus of control variable is almost symmetric and platykurtic. For both distributions, the symmetry and kurtosis values are very close to the values of the Gaussian normal curve (Table 1).

Table 1. Descriptive statistics of data

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
Hardiness	357	14	45	31.90	5.613	-.346	.129	.070	.257
Locus of Control	357	0	22	9.29	4.016	.068	.129	-.157	.257
Level LOC	357	1	2	1.22	.412	1.388	.129	-.073	.257
Level Opt	357	1	2	1.88	.326	-2.342	.129	3.505	.257

The connection between the locus of control and hardiness has been confirmed only for the optimistic persons. The correlations were statistically significant and negative ($r=-0.432$, $p=0.001$). This means that the optimistic persons with an internal locus of control obtained higher scores for hardiness than those with an external locus of control. The association was moderate and the noticed effect was medium ($r^2 = 0.192$), i.e. 19.2% of the hardiness variation is explained by the locus of control variation. There was no correlation found between locus of control and hardiness for the pessimistic participants ($r=-0.202$, $p=0.195$) (Table 2).

Table 2. Correlations between locus of control and hardiness

	Hardiness	Locus of Control		Hardiness	Locus of control
Hardiness	1		Hardiness	1	
Locus of Control	-.432**	1	Locus of Control	-.202	1
	.000			.195	
	Optimistic participants			Pessimistic participants	

In order to study the combined effect of the optimism and locus of control over the hardiness we used the factorial variance analysis. Levene's test for homogeneity proved to be insignificant ($F(3.353)=1.462$, $p=0.225$) reason for which we used the statistical method. We found that the main effect of optimism on the hardiness ($F(1.356)=55.088$, $p=0.001$) was significant. Moreover, the main effect of the locus of control on the hardiness ($F(1.356)=5.840$, $p=0.016$) was significant. We found that between the two variables, optimism and locus of control, there is a significant interaction effect ($F(1.356)=5.174$, $p=0.024$) (Table 3).

Table 3. Effect of optimism and locus of control on hardiness

Dependent Variable: Hardiness					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2803.412 ^a	3	934.471	39.219	.000
Intercept	110357.774	1	110357.774	4631.612	.000
Level_Opt	1312.594	1	1312.594	55.088	.000
Level_LOC	139.148	1	139.148	5.840	.016
Level_Opt *					
Level_LOC	123.292	1	123.292	5.174	.024
Error	8410.957	353	23.827		
Total	374482.000	357			
Corrected Total	11214.370	356			

a. R Squared = .250 (Adjusted R Squared = .244)

The analysis of the contrast matrices showed that the optimistic persons have obtained significantly higher scores for hardiness (M dif=6.196, p=0.001) than the pessimistic persons. Furthermore, the persons with internal locus of control have obtained significantly higher scores for hardiness (M dif=-2.017, p=0.016) than the persons with external locus of control. In all the analyzed cases, the limits of the confidence interval of 95% did not include the zero value.

We have made the graphical representation (Fig. 1) of the theoretical model we found. According to this model, for the pessimistic participants the effect that the locus of control had on the hardiness scores was almost inexistent unlike the optimistic participants where we found that the effect was statistically significant and negative.

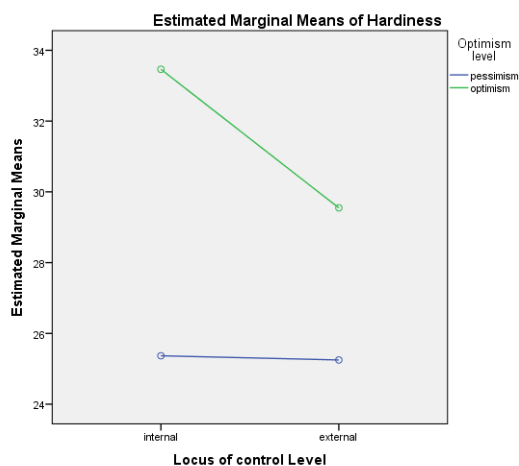


Figure 1. Combined effect of optimism and locus of control on hardiness

5. CONCLUSIONS

The statistical outcomes invalidated the null hypothesis and proved the existence of correlation between the locus of control and hardiness moderated by optimism. We have noticed that, for the pessimistic participants, the modification of the locus of control did not affect the level of hardiness. Pessimistic persons are characterized by negative expectations on the effect of the actions taken. Pessimistic persons react to problematic situations and disappointments by resignation, avoidance and negation. Changing their beliefs, in case of the external locus of control, i.e. the personal power is influencing just a little bit or not at all the events and such events are usually caused by the fortune, by the power of other people or by chance, will not lead to the modification of their attitude as regards their involvement in new actions or the acceptance of certain challenges generating new experiences. Pessimistic people will remain indifferent to the situation even if they feel that they can control it. These three general provisions which constitute the resources for an increased hardiness will thus remain stable maladaptive.

As a consequence, the theoretical model suggests that the psychological intervention to change the locus of control has positive effects on hardiness only if we act in advance to strengthen the disposition to optimism. The more optimistic the person will be, the more significant will be the effect of the locus of control on the hardiness.

REFERENCES

- Băban, A. (1998). *Stres și personalitate*. Cluj: Presa Universitară Clujeană.
- Bartone, P.T. (2007). Test-retest reliability of the Dispositional Resilience Scale-15, a brief hardiness scale. *Psychological Reports, 101*, 943-944.
- Clarke, D. (1995). Vulnerability to stress as a function of age, sex, locus of control, hardiness and Type A personality. *Social Behavior and Personality, volume 23, 1995, issue 3, pp: 285-286*.
- Keyvan, S.A., Imamipour, S. (2015). Comparison of Locus of Control and Hardiness in Professional and Novice Female Taekwondo Players. *Journal of Applied Environmental and Biological Sciences, 5(4S)12-17*.
- Kobasa, S. C. (1979). Stressful life events, personality, and health – Inquiry into hardiness. *Journal of Personality and Social Psychology 37 (1): 1–11. doi:10.1037/0022-3514.37.1.1.PMID 458548*
- Kooranian, F., Khosravi, A. R., Esmaeeli, H. (2008). The relationship between hardiness/locus of control and burnout in nurses. *Horizon of Medical Sciences 14(1): 58-66*.
- Lawler, K.A. and Schmied, L.A. (1992). A prospective study of women's health: the effects of stress, hardiness, locus of control, Type A behavior, and physiological reactivity. *Women Health 1 9(1): 27-41*.
- Rizeanu, S., Vasiliu, D. (2016). Correlation between hardiness and the sense of coherence. *Romanian Journal of Experimental Applied Psychology, vol. 7, issue 4, p 9-15. DOI: 10.15303/rjeap.2016.v7i4*.

Robinson, S.R. (2013). *Assessing the relationship of health locus of control, hardiness, and health risks in African Americans*. Central Michigan University. (<http://gradworks.umi.com/36/01/3601388.html>).

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80, 609-611.

Seligman, M.E.P. (1992). *Helplessness: On Depression, Development, and Death*. New York, N.Y: W.H. Freeman & Company.

Scheier, M.F. & Carver, C.S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research* 16: 201. doi:10.1007/BF01173489.

Scheier, M.F., Carver, C.S. and Bridges, M.W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.

Vasiliu, D. (2016). Correlations between Locus of Control and Hardiness. *Romanian Journal of Experimental Applied Psychology*, vol. 7, Special issue 2.

Vasiliu, D. (2016). Correlations between Self-Esteem, Locus of Control, Optimism and Sense of Coherence. *Romanian Journal of Experimental Applied Psychology*, Vol. 7, ISSUE 4, DOI:10.15303/rjeap.2016.v7i4.a2.

Vasiliu, D., Marinescu, D.A., Marinescu, G., Sîrbu, M. (2015). Evaluarea Robusteții. Proprietăți psihometrice pentru Dispositional Resilience Scale DRS-15. *Revista de studii psihologice nr. 2, București: Universitatea Hyperion*.

<http://www.hardiness-resilience.com> (visited in January 2015).



**SPEARMAN CORRELATIONS BETWEEN MODEL / STYLE
OF LEARNING SENSORY (PERCEPTUAL) AND MODEL /
STYLE OF LEARNING RATIONAL
(INFORMATION PROCESSING)**

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Summary

Human learning and developed based on them, have passed by several stages and varied approaches. Currently were created opportunities for information storage, synchronously or asynchronously transmission to any distance, and even teaching various interactions and participation in discussions avoiding physical presence in the same location. This framework requires some questions: learning styles have any influence on learning results? What are the specific learning styles of students from the faculty of psychology? How much influence sensory factor learning styles and internal processing based on performance information or teaching outcomes learning styles? There are correlations between sensory learning style and rational learning style? Current approach is trying to elucidate the possible answers to questions released by applying two questionnaires: VARK learning styles and Honey-Mumford learning styles. After results validation, it was verified potential association between variables by applying the coefficient of rank correlation (Spearman). So they could verify the assumptions made in research and also offered some indirect suggestions for a more efficient learning.

Keywords: learning style, perceptual, information processing, correlations.

1. LITERATURE REVIEW

The perspectives on education are continuously modifying and changing, beyond the classroom walls, to an augmented environment where processes like access to information, others opinions about the same subject etc. are facilitated. This expansion implicates the teachers and the student in different ways in relation with the classic forms of education. In the virtual area students can utilize their natural inclinations (converted into *styles*) more effectively in order to streamline the learning process. Also here they can analyses information unaffected by the present aspects of a traditional classroom, they can improve their collaborative personality

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traits and through these aspects can indirectly challenge teachers to adapt the classic methods to the new reality.

As criteria for learning performance evaluation, the personalized learning style represents one of the essential factors in the learning process (Mogonea, 2010). “If there is not difference between the learning styles, the university/college can transfer the same types of teaching/learning activities used in the traditional environment to distance learning having a similar success” (Diaz & Cartnal, 1999). The personalized learning style represents a personal characteristic that dictates the adopted cognitive strategies and produces the elaboration of an approach model on learning tasks and to future mnemonic adjustment. The registries of the observed situations among students were ample. The first category of students, and the most numerous one, prefers graphic illustrations (Silveira, 2015; Simonds & Brock, 2014) either when they receive specific explanations, or when they explain specific concepts or abstractions and implicitly remember in a better way everything they see. Other students prefer the audio materials and understand the information better when they hear it, others prefer kinesthetic reception and can very well remember operations that they executed at one point or operations that they practiced and applied (Căpiță, 2011).

In 2004 the research center for learning and skills develop a research during which there were synthesized 71 learning styles models, 13 of them are better known (Coffield, Moseley, Hall & Ecclestone, 2004). In these models, the cognitive style and learning strategies can change depending on different factors and depending on the context in which the learning process takes place, but “the biggest differences found in the individual plan are determined by psychomotor particularities” (Neacșu, 2015). The learning style of an individual will affect the way the information is processed and thought of within the learning process and these will have a considerable effect on the learning efficiency and effectiveness (Bencheva, 2010).

What is *the learning style*? “The learning style is a biological and in a constant development set forced by personal characteristics that render the same teaching method effective for some and ineffective for others” (Dunn, 1989). The learning style is a construct that, together with learning preferences and cognitive styles, can be included in the umbrella term “personal style” (Sadler-Smith, 1996). The personal style is an important psychological particularity in the learning process through which suitable characteristics can be verified, discovered and utilized in order to improve learning. ”Canfield and Lafferty bring into discussion the conditions, content, the ways and the expectations; Dunns lists stimuli and elements; Gregor focuses on distinct dualities and behaviors; Hunt refers at a conceptual level; Kolb brings into attention the hereditary baggage, the past experience and the environment; Schmeck puts in opposition the profound and superficial processing of information” (Dunn, Debello, Brennan, Krimsky & Murrain, 1981). The learning style results from more influence directions; there are correlations between the learning style and “emisfericity” (Scutelnic, 2010).

Formulations like “learning style”, “cognitive style” and “information processing style” are used by different researchers as having the same meaning and in some cases they are used in a unconsciously and vague way (Brown, Cristea, Cristea & Brailsford, 2005). Acknowledging the fact that the learning styles “work” in any given context (Brown, Cristea, Cristea & Brailsford, 2005), the teaching material approach will be identical or similar regardless if this is represented in a classic learning form or and online form. “The learning styles also called cognitive styles, are those cognitive, affective and generally psychological characteristics that indicate the way in which the persons that are learning perceive, interact and respond to the learning environment. They represent the total cognitive characteristics that have a decisive role in the learning process” (Élthes, 2013).

2. OBJECTIVES AND ASSUMPTIONS

2.1. OBJECTIVES

The objectives of the research and the activities were:

- establishing the preponderance of learning styles in students from the psychology university;
- (implicit) establishing the dominant styles;
- making the Spearman correlations between the VARK learning model focused on sensory (perceptual) and the Honey-Mumford style focused on rational (information processing).

2.2. ASSUMPTIONS

In this research 2 hypotheses were proposed:

Hypothesis 1: There are no dominant learning styles at any sensory or perceptual level regarding the students from the psychology university;

Hypothesis 2: The correlations between the 2 learning models/styles are non-existent or very weak.

3. THE METHOD

3.1. PARTICIPANTS

The participants of this questioning were 101 students from the Psychology Faculty from Hyperion University.

3.2. TOOLS

The instruments used in this research were the VARK (VACK) questionnaire and the Honey – Mumford questionnaire.

The VARK (VACK) questionnaire model targets the perceptual/sensory level, it was elaborated by Neil D. Fleming and Colleen Mills in 1992 and is also know under the VARK acronym (visual, aural, read/write, kinesthetic) or VACK.

The authors identify 4 learning styles based on the following sensory preferences: visual, aural, read-write and kinesthetic (Fleming & Mills, 1992; Fleming, 2012). A 5th multimodal mod is based on combining at least 2 preferences. The multimodal style characterizes 50-70% of the population (Bernat, 2003). The questionnaire consists in 16 questions with 4 possible answers for each question (Bernat, 2003). Each answer corresponds with one of the 4 mentioned styles. Subsequently the score is calculated and the style that has the highest score is the preferred way of learning.

Peter Honey and Alan Mumford (1982) have developed four custom styles to assimilate the information, based on the idea that each person analyses, processes and represents information in different ways. When the assimilation of information coincides with the custom style/s then the critical informational analysis and the reflection on itself increases in quality. The Honey-Mumford questionnaire (Honey & Mumford, 1982) contains 80 items with one possible answer, which are distributed on the 4 learning styles (Activist, Reflector, Theorist and Pragmatist), each style having 20 items or 20 points (Coffield, Moseley, Hall & Ecclestone, 2004). At the end all the points are summed (or all the checked items) and the predominant style is deducted depending on the scores obtained on the 5 scales (see table 1).

Table 1 – Honey-Mumford model scales

Activist	Reflector	Theorist	Pragmatist	Scale
13-20	18-20	16-20	17-20	Very strong preferences
11-12	15-17	14-15	15-16	Strong preferences
7-10	12-14	11-13	12-14	Moderate preferences
4-6	9-11	8-10	9-11	Low preference
0-3	0-8	0-7	0-8	Very low preference

3.3. EXPERIMENTAL DESIGN

The research design was cvasi-experimental, transverse and consisted of the application of a quantitative method to the mono-group. Afterwards the data obtained were processed in SPSS v.22.

4. RESULTS

The distribution of the averages in the VARK questionnaire creates a small depreciation of the visual style (having a 4.06 average) compared to the auditory style (6.08), the read-write style (5.69) and the kinesthetic style (5.22) (see figure 1).

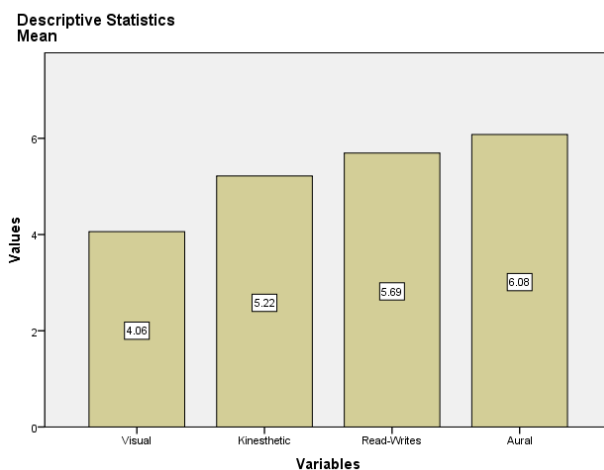


Figure 1 – Averages distributions of VARK questionnaire

The distribution relative to the learning strategies takes into account the fact that the difference between the first 2 scores is less than or equal to 2 (Bernat, 2003). The strategies related to this aspect suggest the fact that 31 (30.69%) students are unimodal and the remaining 70 (69.31%) students are multimodal. A more accurate reporting shows that of the 85 multimodal students, 26 (25.74%) are bimodal, 22 (21.78%) are trimodal and 22 (21.75%) are cvadrimodal. These results come close to the ones carried out in other universities (Prithishkumar & Michael, 2014; Moayyeri, 2015) where the predominance of students using multimodal strategies amounted to 87% (see figure 2).

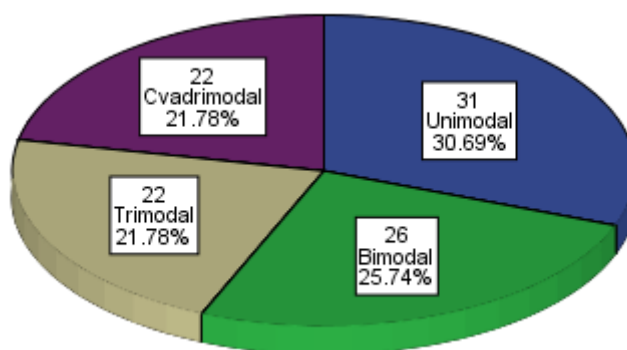


Figure 2 – Distribution reported to learning strategies

The SPSP simulations showed that the maximum variation interval for the 4 variables is between 0 and 14 units of score.

In the testes applied to the investigate students, the first style, auditory style, varies between 2 and 12 units of score with and average level of 6.08 units of score with a standard deviation of 2.52 units of score. The distribution is significantly different from the normal distribution (significance level of the Kolmogorov-Smirnov test = $0.000 < 0.05$). The Quartile variation is almost symmetrical, the average score is 6 units of score. According to the quartile values 50% of the central subjects have values between 4 and 8 units of score.

The kinesthetic style ranges between 1 and 12 units of score with an average score of 5.22 units of score and a standard deviation of 2.27 units of score. The distribution is significantly different from the normal distribution (significance level of the Kolmogorov – Smirnov test = $0.000 < 0.05$). The Quartile variation is almost symmetrical, the average score is 5 units of score. According to the quartile values 50% of the central subjects have a score of 4 to 6 units of score.

The read – write style varies between 0 and 12 units of score with an average score of 5.69 units of score and a standard deviation score of 2.63 units of score. The distribution is significantly different from the normal distribution (significance level of the Kolmogorov – Smirnov test = $0.007 < 0.05$). The Quartile variation is almost symmetrical, the average score is 6 units of score. According to the quartile values 50% of the central subjects have a score of 4 to 7 units of score.

The visual style varies between 0 and 14 units of score with an average score of 4.86 units of score and a standard deviation score of 2.26 units of score. The distribution is significantly different from the normal distribution (significance level of the Kolmogorov – Smirnov test = $0.001 < 0.05$). The Quartile variation is almost symmetrical, the average score is 4 units of score. According to the quartile values 50% of the central subjects have a score of 2 to 5 units of score (see tables 2 and 3).

Table 2 - VARK: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Aural	.126	101	.000	.952	101	.001
Kinesthetic	.154	101	.000	.931	101	.000
Read-Write	.106	101	.007	.975	101	.052
Visual	.119	101	.001	.935	101	.000

Table 3 - VARK: Statistics

		Aural	Kinesthetic	Read-Write	Visual
N	Valid	101	101	101	101
	Missing	0	0	0	0
Percentiles	25	4.00	4.00	4.00	2.50
	50	6.00	5.00	6.00	4.00
	75	8.00	6.00	7.50	5.00

In the case of the styles from the distribution diagram, there is no style that stands out as being dominant except the fact that in some of the students a style is missing (see figure 3).

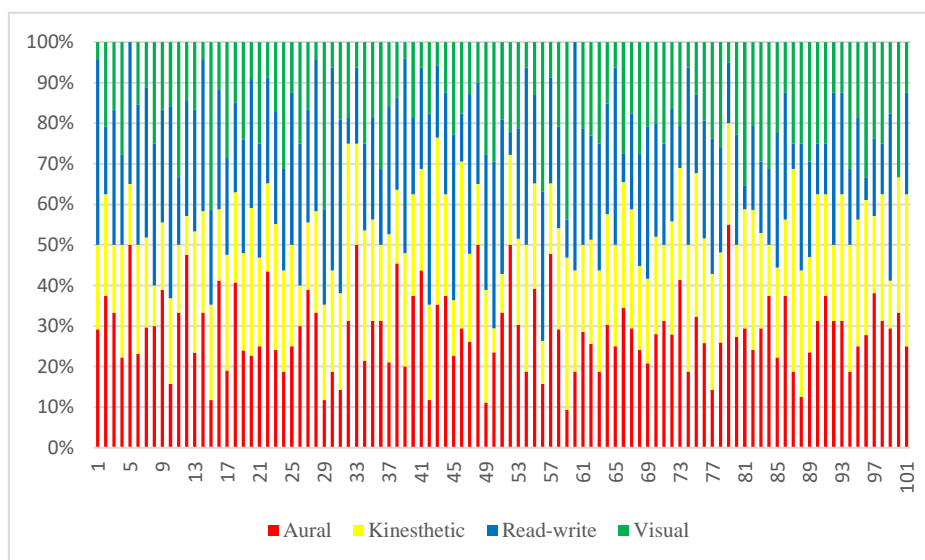


Figure 3 – Representing individual learning styles – VARK

Peter Honey and Alan Mumford have made some adjustments to Kolb’s experiential model, adjustments made in 2 parts: the first part was renamed learning cycles proposing something similar and based on experience, towards its analysis, to extracting of conclusions from the experience and planning the next steps. To the four steps of the first part they’ve assigned 4 learning styles: Activist, Reflector, Theorist and Pragmatist (Mumford, 1997). The 4 styles are rather adaptations to different circumstances and a tool for self-development than personality characteristics and are designed to strengthen styles in order to learn a wide range of daily experiences. According to the simulation based on the average score of all students, we have a predominantly reflective style with an average value of 10.68 followed by the theorist style (8.76), pragmatist (8.72) and activist style (8.69) (see figure 4).

In the scale distribution, students with the active style have the best scale representation “strong preference” (15 students) contrasting with the pragmatics that on the same scale have not registered presence. Also a consistent presence is observed of the number of students in the “low preference” and “very low preference” scale of the pragmatics (84 students theorists (71 students) and reflexives (56 students).

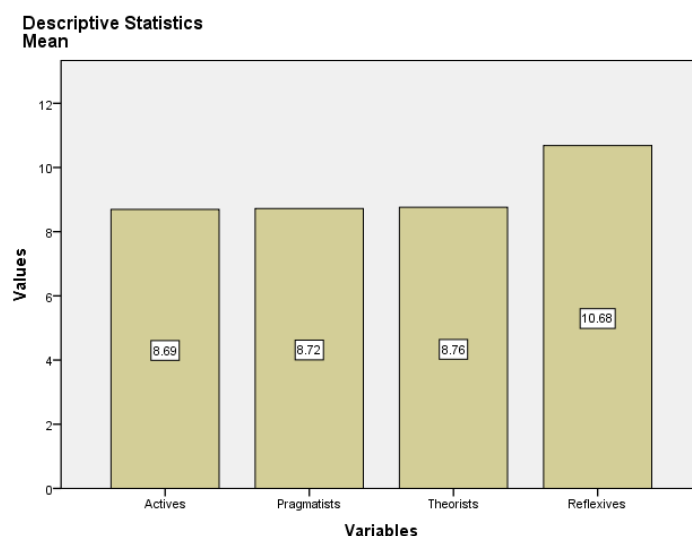


Figure 4 – Averages distributions of Honey-Mumford questionnaire

In the simulations, only the reflective style has three positive correlations (linear relationship between the values) of a small intensity with the auditory style ($r=0,215$, $p=0,030$, $N=101$); the kinesthetic style ($r=0,320$, $p=0,001$, $N=101$) and with the read – write style ($r=0,195$, $p=0,050$, $N=101$) (see table 4).

Table 4 – Spearman correlations

		Active	Reflexives	Theorists	Pragmatists
Spearman's rho	Aural	.084	.215	.082	.126
		.406	.030	.417	.211
		101	101	101	101
	Kinesthetic	.007	.320	.076	.180
		.947	.001	.451	.071
		101	101	101	101
	Read-Write	.036	.195	.174	.146
		.724	.050	.081	.145
		101	101	101	101
	Visual	-.105	.061	.034	.105
		.297	.545	.738	.297
		101	101	101	101
	Multimodal strategies	-.129	.021	.034	-.026
		.197	.837	.733	.793
		101	101	101	101

5. CONCLUSIONS

Within the research, hypothesis no. 1 was confirmed; thus, we cannot speak of certain dominant learning styles at any level sensory and perceptive than any slight inclination for a particular style from the one given model. Confirmation of the hypothesis no. 2 revealed that there are only three positive correlations between variables checked mild.

Additionally, the survey VARK revealed that Aural style has the highest percentage of average (6.08) opposite with the Visual style by an average of 4.06. Honey-Mumford questionnaire revealed that the Reflective, Theorist and Pragmatic style showed very low presence for Moderate preference, Strong preference and Very strong preference styles while Active style registered balanced presence in those scales.

Consequently, students often have a mix of learning styles. However, when understand their preferred learning style (s) they can choose types of learning that helps more. In addition, they are more aware of their opportunities to be active in the learning process. By offering multi-sensorial experiences, tutors can help students better remember concepts learned and thereby improve their learning (Kontinen & Moilanen, 2015).

REFERENCES

- Bencheva, N. (2010). *Learning Styles and E-Learning Face-to-Face to the Traditional Learning.*, 3.2, p. 5. Retrieved 02 16, 2016, from <http://conf.uni-ruse.bg/bg/docs/cp10/3.2/3.2-11.pdf>
- Bernat, S. (2003). *Tehnica învățării eficiente*. Cluj-Napoca: Presa Universitară Clujeană.
- Brown, E., Cristea, A., Cristea, C. & Brailsford, T. (2005). Patterns in authoring of adaptive educational hypermedia: A taxonomy of learning styles. *Educational Technology & Society*, 8(3), 77-90.
- Căpiță, C. (2011). *Stiluri de predare – stiluri de învățare*. București: Millenium Design Group.
- Coffield, F., Moseley, D., Hall, E. & Ecclestone, K. (2004). *Should we be using learning styles? What research has to say to practice*. London: Learning and Skills Research Centre.
- Diaz, D. P. & Cartnal, R. B. (1999). Students' Learning Styles in Two Classes Online Distance Learning and Equivalent On-Campus. *College Teaching*, 47(4), pg. 130-135.
- Dunn, R. (1989). Survey of Research on Learning Styles. *Educational Leadership*, 46(6), 50-58.
- Dunn, R., DeBello, T., Brennan, P., Krinsky, J. & Murrain, P. (1981). Learning Style Researchers Define Differences Differently. *Educational Leadership*, 38, 372-375.
- Élthes, Z. (2013). Condițiile eficienței e-learning în învățământul superior. *International Conference on Virtual Learning (ICVL) 2013*, pg. 76-80. http://c3.icvl.eu/disc/2013/cniv/documente/pdf/sestiuneaA/sestiuneaA_lucrarea10.pdf

- Fleming, N. (2012). *Teaching and learning styles vark strategies*. Neil D. Fleming; Charles Bonwell.
- Fleming, N. & Mills, C. (1992). Not Another Inventory, Rather a Catalyst for Reflection. *From To Improve the Academy*, 11, 137-155.
- Honey, P. & Mumford, A. (1982). *Manual of Learning Styles*. London: P Honey.
- <http://vark-learn.com/> (n.d.). *Chestionarul VACK. Cum învăț cel mai bine?* (<http://vark-learn.com/home-romanian/>) Retrieved 05 22, 2012, from <http://vark-learn.com/wp-content/uploads/2014/08/The-VARK-Questionnaire-Romanian.pdf>
- Kontinen, A., & Moilanen, N. (2015). Experiential Learning with Multisensory and Digital Elements. *Interdisciplinary Studies Journal*, 4(1), 28-40.
- Moayyeri, H. (2015). The Impact of Undergraduate Students' Learning Preferences (VARK Model) on Their Language Achievement. *Journal of Language Teaching and Research*, 6(1), 132-139.
- Mogonea, F. R. (2010). *Pedagogie pentru viitorii profesori*. Craiova: Editura Universitaria.
- Mumford, A. (1997). Putting learning styles to work. În *Action learning at work* (pg. 121–135). London: Gower Pub Co.
- Neacșu, I. (2015). *Metode si tehnici de invatare eficienta. Fundamente si practici de succes*. Iași: Polirom.
- Pasaniuc, J. (2014). Metode creative folosite în activitățile de tineret: suport de curs. *Revistă de biblioteconomie, științe ale informării și de cultură, editată de Biblioteca Municipală "B.P. Hasdeu" din Chișinău*, 55(5), 22-73.
- Prithishkumar, I., & Michael, S. (2014). Understanding your student: Using the VARK model. *Journal of Postgraduate Medicine*, 60(2), 183-186.
- Sadler-Smith, E. (1996). Learning styles: a holistic approach. *Human Resources Studies Group*, 20(7), 29-36.
- Scutelnic, O. (2010). Instrumente de măsurare a diferențelor individuale pentru organizarea învățământului diferențiat. *Studia Universitatis*, 9(39), 82-86.
- Silveira, R. M. (2015). Is a video used as a didactic content effective in the learning process? *122nd ASEE Annual Conference & Exposition*. Washington: American Society for Engineering Education.
- Simonds, T. A., & Brock, B. L. (2014). Relationship between age, experience, and student preference for types of learning activities in online courses. *Journal of Educators Online*, 11(1).



AN ATTEMPT OF OBJECTIFYING THE SHAMANIC WAY OF TRANSFORMATION BASED ON THROAT SINGING: A STATISTICAL APPROACH

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Abstract

The throat overtone singing is a cultural and healing tradition developed in Autonomic Republic of Tuva, Russian Federation. Because of absence of the medical equipment, the shamans had to move towards the development of the latent psychic abilities, and the throat singing became their instrument to immerse into trance state and broad consciousness, which serves both the personal growth and treatment. The purpose of the study was to explore the effects of the Shamanic Healing, using throat singing, upon physiological arousal which is often assessed by electrodermal activity, a peripheral measure of the sympathetic nervous system activity, of the energy reserve parameters, by determining the evoked electro-photonic potentials using Kirlian photography method. The test was carried out with 13 apparently healthy people with meditation background. During the first stage of the experiment, the subjects were measured before and after an intensive seminar Un-Hun and then again after six days. Most of the participants experienced increase in values of the measured specific parameters. With all of these parameters simultaneously improved, the participants reported a good benefit from these sessions. The session of the Shamanic Healing, had statistically significant positive influence on the psycho-emotional condition for the experimental group in six days after the influence.

Keywords: *khoomei-throat singing, overtones, psycho-emotional status*

1. INTRODUCTION

The throat overtone singing is a cultural and healing tradition developed in Autonomic Republic of Tuva, Russian Federation. It is situated in geographic center

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of Asia, in Southern Siberia, on the border with Mongolia. The way of Tuvan's life is animism, which means that they worship to nature and see the live spirit in every manifestation of nature. To learn the way of communication with spirits, they started to imitate the sounds of surrounding life. In this way, by copying the voices of animals and birds, sounds of wind and rivers, was created the unique art of khoomei-throat singing, when the performer is able to sing with two and more voices at the same time, producing the overtones.

Overtone, or harmonics, are the additional frequencies which appear simultaneously to basic sound and exceed its frequency on the number (value) of the basic sound. It is the overtones which creates the timbre of different sounds and enable us to discern the instruments and voices. In Tuvan, throat singing are particularly prominent overtones from 5th to 13n, which creates the effect of second voice, but in singing of famous performers can be heard even three and more voices (http://un-hun.com/un-hun_en.html).

1.1 THE SHAMANIC HEALING

For the centuries and up to beginning of last century shamans in Tuva were the only assistants for the bodies and minds of their countrymen. They accumulated a great experience of individual and group healing. Because of absence of the medical equipment, they had to move towards the development of the latent psychic abilities, and the throat singing became their instrument to immerse into trance state and broad consciousness, which serves both the personal growth and treatment.

The healing effect of overtones is based on their ability to affect on different levels of matter and energy. First of all it is physical influence based on the resonance effect. Each cell of the body has a membrane, which able to vibrate in response to sound similar to membrane of the drum, changing the cellular metabolism. The second aspect in effects of shamanic sounds is neuro-physiological. Under the influence of overtone singing and rhythm of drum the patient's consciences turns into so-called hypnogogic state, defined by presence of theta-waves (4–7 hertz) in brain electric activity. This state activates the recovery process in body. Another aspect is energetic. Sound vibration is form of energy, so it is able to influence the human energy field and energy centers. Using special exercises, shamans create the energy impulse in the base of the body and rise it up using a sound, activating step by step the energy centers.

This ancient tradition was used by Dr. Vladislav Matrenitsky and his teacher, Tuvan shaman and master of throat singing Nikolay Oorzhak, to create the modern system called Un-Hun (The Sound of Sun, in Tuvan language). It concentrates the best shamanic sound techniques in form of seminars, available for perception of Western students, and proved itself since 2005 as reliable tool for self-healing and development (http://un-hun.com/un-hun_en.html)

2. OBJECTIVES AND HYPOTHESES

2.1. OBJECTIVES

The purpose of the study was to explore the effects of the Shamanic Healing, using throat singing, upon physiological arousal which is often assessed by electrodermal activity, a peripheral measure of the sympathetic nervous system activity, of the energy reserve parameters.

2.2. HYPOTHESES

The Shamanic Healing session, using throat singing, has significant positive influence on the psycho-emotional condition for the experimental group, in six days after the influence.

3. METHOD

3.1. PARTICIPANTS

The subjects for the studies came from different areas of occupation, as well as citizens of Bucharest, Romania. There were six females and seven males, totalling 13 participants. All 13 study participants ranged from 35 to 61 years old, all had meditative experience. All participants were explained the terms of the experiment and they were measured in random order.

3.2. INSTRUMENTS

The following instruments have been used in the study:

1. GDV Camera Pro, instrument produced by KTI Co.
 2. Aura Video Station 5.1 produced by Inneractive Aura Video Systems, USA.
- Data were processed in “GDV SciLab”, SPSS 20 and “MS Excel” software.

3.2.1. EPI/GDV TECHNIQUE

Electro-diagnostic methods such as EEG and EKG are widely used in medical practices worldwide. A promising method based on the Kirlian effect, already utilized to great success, is bioelectrography. „The Kirlian effect occurs when an object is placed on a glass plate and stimulated with high voltage current; a visible glow occurs, the gas discharge. With EPI/GDV (electro-photon imaging through gaseous discharge visualization) bioelectrography cameras, the Kirlian effect is quantifiable and reproducible for scientific research purposes” (Manolea, 2012a). Images captured for each finger on each human subject, relieve detailed information regarding psychosomatic and physiological condition for each subject. Manolea (2011) stated that „the interpretation of the fractal and spatial distribution of quantum bio-electro-luminescence streamers as a manifestation of the emotional and psychosomatic parameters accompanying daily stress indicates that this electronographic information captures snapshots of the structure of the proximal

quantum human radiative field. These proximal quantum radiative fields are directly related to the human's mental, emotional and psychosomatic changes".

3.2.2. THE AURA VIDEO STATION

The Aura Video Station is a computer expert system built on the principle and studies of biofeedback, color psychology, human quantum field and mind-body-spirit knowledge. This expert system uses the hand biosensor to measure the electrical conductivity of the skin of the hand, the electro-dermal activity and its temperature. The data is analysed and is displayed as the energetic activity of the individual being correlated to specific emotional-energetic states. The Aura Video Station also measures the activity of the quantum vortexes and shows the percentage that each one is operating at. Basically, whenever a mental, emotional, or energetic change occurs within or around a person, the human quantum field will change.

3.3 PROCEDURE

Regarding the measurements GDV using the method, it can be said that we have measured and analyzed some patterns of the emitted light by electrical discharges around the ten fingers of the hands, under the action of a high-voltage electric field. These images are processed by specific software, which creates an energy field model (quantum field) around the body. This representation is consistent with an interpretation based on a model of association between different areas of discharge, recorded for each finger and parts of the human body (Mandel, 1986).

3.4 EXPERIMENTAL DESIGN

The experimental design used was one using repeated measures before and after the shamanic seminar. The independent variable was represented by the shamanic technique—throat singing.

The dependent variables corresponding to the psycho-emotional and somatic states of the subjects participating in the research:

- *quantum field area*- the number of pixels in the GDV image having brightness above the threshold; the bigger value are better;
- *normalized quantum field area*- the ratio of GDV area to the area of the inner oval – a fingerprint; it is reported in relative units. This parameter allows comparing people having fingers of different sizes. The bigger value are better;

- *average intensity* - average brightness of GDV image measured in number of gray levels, from 0 to 255, it is an evaluation of the intensity spectrum for the particular GDV image; the bigger value are better;
- *form coefficient* – it is a measure of the degree of the irregularity of the image contour; the small value are better;
- *average radius of isolines* – average radius of the curve displaying averaged brightness of the GDV image; the bigger value are better;
- *length of isoline*: - the length of envelope of the image contour.
- Size_Quantum_Field, BASE_Quantum_Vortex, NAVEL_Quantum_Vortex, SOLAR_PLEXUS_Quantum_Vortex, HEART_Quantum_Vortex, THROAT_Quantum_Vortex, THIRD_EYE_Quantum_Vortex, CROWN_Quantum_Vortex, MIND, BODY, SPIRIT, Energetic_Level and Color_Delta_Lambda, (Korotkov, 2002, 2010).

4. RESULTS

4.1 FIGURES AND TABLES

Every person was measured before, after and six days after the shamanic seminar with Aura Video Station and GDV Camera. We obtain a huge number of data which consist in 16 parameters from Aura Video Station and 43 parameters from GDV Camera. All data were analyzed using SPSS 20, Exell 2010 and GDV Scientific Laboratory. When the $p < 0.05$, the difference was considered statistically significant.

Table no. 1

Parameters	Mean Rank
THROAT_Quantum_Vortex_before	1,50
THROAT_Quantum_Vortex_immediate_after	1,96
THROAT_Quantum_Vortex_6days_after	2,54

Test Statistics^a

N	13
Chi-Square	9,150
df	2
Asymp. Sig.	,010

Table no. 2

Parameters	Mean Rank
CROWN_Quantum_Vortex_before	1,46
CROWN_Quantum_Vortex_immediate_after	1,92
CROWN_Quantum_Vortex_6days_after	2,62

Test Statistics^a

N	13
Chi-Square	12,32
df	2
Asymp. Sig.	,002

a. Friedman Test

Table no.1 and no.2 Friedman test's results

The statistical study, using Friedman test, of data achieved from Aura Video Station, show that only two parameters are statistically significant, the Troat and

Crown Quantum Vortex. The Friedman test compares the mean ranks between the related groups of data and indicates how they differed.

It was a statistically significant difference (see table no.1 and no. 2) in level of activity of the Throat Quantum Vortex $\chi^2(2)= 9.15, p=0.01$ and in level of activity of the Crown Quantum Vortex $\chi^2(2)= 12.324, p=0.002$, as a result of practicing shamanic technique.

There were no significant differences for the rest of 14 parameters registered with Aura Video System. The applied statistical test was Friedman Test, a non-parametrical one because the data are not normal distributed.

For GDV measurements were calculated differences between values of the 43 parameters for each psycho-somatic and physiological condition. For psycho-somatic condition those parameters who demonstrate statistically significant differences are as follows:

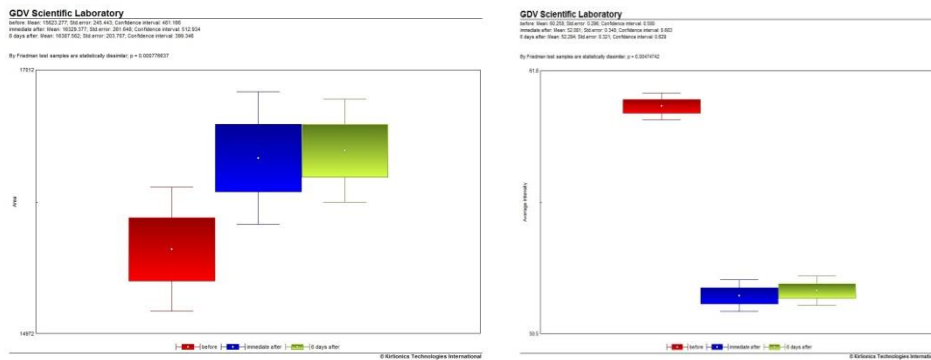


Figure no.1 Values distribution for human "quantum field area" and "average intensity" parameters, psycho-somatic condition, before, right after and 6 day after shamanic session

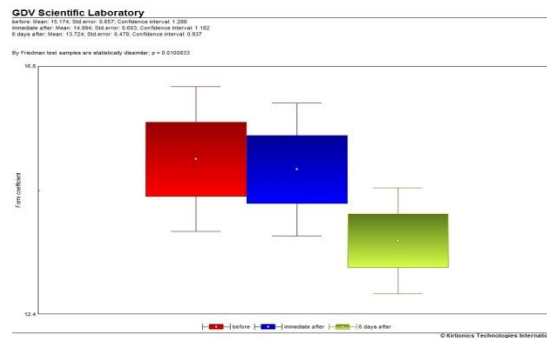


Figure no.2 Values distribution for "form coefficient" parameter, psycho-somatic condition, before, right after and 6 day after shamanic session

5. DISCUSSION

It can outline a possible mechanism of transformation of human quantum field during a shamanic healing intervention type. First, we observe that the activity of the Throat and Crown quantum vortexes significantly increased, that means that by using the throat singing we are working in the spiritual domain. In shamanic terminology, this activates the primordial power of human's Soul. „Using the special breathing exercises and practice of sound concentration, one will learn to control his or her internal power and listen the body, understand sense of diseases and manage with positive and negative emotions” (http://un-hun.com/un-hun_en.html). The Sound, being transformed into energy, broadens the space of consciousness and creates the preconditions for transpersonal experience (contact with Spirits of Heavenly Power, according to shamans).

On the other hand, parameters measured with GDV Camera immediately after seminar showed an increase in area and a decrease in average intensity (fig.1) of human quantum field. This variation of the parameters field shows that there is a flattening action by spatial redistributing and smoothing field strength. At the same time, the decrease of parameter form coefficient (fig.2 - low value means that the field is more evenly) confirms reducing spatial shape variations of the human quantum field. These evolutions of the parameter's values were also found in a study on the influence of psycho-quantum therapy (Deep Quantum Psychotherapy – QDP) (Manolea, 2012b) within a framework of doctoral thesis, QDP is still essentially a shamanic type technique. These changes prove positive effects of the shamanic healing on mechanism of ANS regulation, and on psycho-modulation (increasing the mental power and decreasing the stress manifestations). It look like, there is an effect on the immune system involving psycho-immune mechanisms. Connection brain-immune system was highlighted by Lambrecht, 2001, who have shown that T lymphocytes cells have receptors for neuropeptides (like methionine-enkephalin) generated by the brain, neuropeptides being mediators of brain immune systems interaction.

6. CONCLUSIONS

In summary, this study demonstrates that shamanic healing causes a positive change of ANS activity, which is detectable and long lasting. This effect on the ANS has been common for many subjects, confirming the stability of shamanic healing effects. Activation of altered state of consciousness is the direct result of the harmonization of the brain bio-potentials, mental state, and bioenergetics fields. This is due to changes in the psycho-energetic and psychosomatic self-regulation. This conclusion (Bundzen, 2002) is important to see what happens in systematic mental training. Application of shamanic healing decreases both sympathetic and parasympathetic activity of the ANS, as observed when a subject is aware of the flow

of energy, being in a state of emotional detachment that generates a state of inner peace.

Sound vibration is form of energy, that is why it able to influence the human energy centers and energy field. Using special exercises, a shaman create the energy impulse in the base of the body (Base chakra) and raise it up using a sound, activating step by step the energy centers. Finally it reach the brain and upper energy centers (see table 1 and table 2), enable shaman to enter in the altered state of consciousness. This, according to shaman's terminology, gives them access to the Power of Spirit, or universal field of information, according to modern views They became able to understand the reasons, which brought their patients to have personal problems, and find the best ways to help their. Thus this approach has proven to be appropriate to show the way in which the subtle energy is accessed when performing shamanic healing.

REFERENCES

- Bundzen, P.V., Korotkov, K.G., Unestahl, L.E. (2002). Altered States of Consciousness: Review of Experimental Data Obtained with a Multiple Techniques Approach. *J Altern Complement Med*, 8(2): 153-165.
- Korotkov, K.G. (2002). *Human Energy Field: Study with GDV Bioelectrography*. Fair Lawn, NJ: Backbone Publishing Co, pp.138-142.
- Korotkov, K.G., Matravers, P., Orlov, D.V., Williams, B.O. (2010). Application of Electrophotonic Capture (EPC) Analysis Based on Gas Discharge Visualization (GDV) Technique in Medicine: A Systematic Review. *J Altern Complement Med.*, 16(1): 13-25.
- Lambrecht, B. N. (2001). Immunologists getting nervous: neuropeptides, dendritic cells and T cell activation. *Respiratory Research*, 2, 133–138. <http://doi.org/10.1186/rr49>
- Mandel, P. (1986). *Energy Emission Analysis; New Application of Kirlian Photography for Holistic Medicine*, Germany, Synthesis Publishing Co.
- Manolea, A. (2011). Using Altered States of Consciousness to reduce the effects of daily stress, *Journal of Transpersonal Research*, Vol. 3, 39-54, ISSN:1989-6077.
- Manolea, A. (2012a). Highlighting the psycho-quantum mode of psycho-therapeutic action for improving the specific human quantum field parameters, *Romanian Journal of Experimental Applied Psychology*, e-ISSN: 2286-1831, Vol.3, Issue 4, pp. 33-41.
- Manolea, A. (2012b). *Psychosomatic conditioning. Psycho-diagnosis and psychotherapeutic intervention using altered states of consciousness*, Bucharest University, Doctoral School of Psychology and Education Sciences, Doctoral Thesis. http://un-hun.com/un-hun_en.html



STUDY ON OCCUPATIONAL INTERESTS IN TEENAGERS

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Abstract

This article presents the results of an experimental research of a study on development of occupational interests at teenagers using the Self-directed Search (SDS). The interests are manifesting through closeness behaviors to certain activities, and they are identifiable by certain qualitative and quantitative indicators. The interests emphasizes the correspondence between the subject's tendencies and a range of objects and actions, so that the subject is actively and by his own will focusing toward the named objects or actions, which are representing a major importance to him, by attracting him and giving him satisfaction. Hence, the interests gather needs, motives, tendencies, and goals, in a relatively stable manner to actively reporting to something, by certain utilitarian order criteria (Popescu-Neveanu, 1978).

Currently, the best-known and most widely used questionnaire of interest has its basis on Holland's theory. Holland believes that people show different interests for working with people or objects and preferences for working with ideas or facts (Holland, Fritzsche, Powell et.al, 2010).

Keywords: occupational interests, adolescence, teenager's behavior, study profiles

1. THEORETICAL FRAMEWORK

The emergence of the interests is not following the same path for all children nor even in the same child for all of the interests. For some interests it might be difficult to emerge, for others on the contrary, very easy; on certain the interest may arise very early and very late in others. By all of these peculiarities, seemingly contradictory, we could find some common grounds and certain characteristic indicators of all interests. Thus, the attraction-interest is the simplest form that usually appears under the influence of new impressions. Such interest is instable, and it can easily change. Through the educational process, the interests appear isolated, narrowed, and limited to one theme or another and which begin to stimulate the student's activity. A broad and generalized interest appears on a further step, when the student cherishes the educational subjects considered as a whole. Finally, the strong, specialized interest is the last step in its development. Now a central interest is emerging, around which all the others are grouping. The presence of

certain interests is not preventing others to emerge, but on the contrary. There are bounds and mutual influence between different interests, generally speaking (Chircev, Salade, 1976)

Currently, the best-known and most widely used questionnaire of interest has its basis on Holland's theory. Holland believes that people show different interests for working with people or objects, and preferences for working with ideas or facts. The six types of interests are: the Realistic interests (R); the Investigative interests (I); the Artistic interests (A); the Social interests (S); the Entrepreneurial interests (E); the Conventional interests (C) (Holland, Fritzsche, Powell et. al, 2010).

2. OBJECTIVES AND HYPOTHESES

2.1. OBJECTIVES

The Scope of this research consists in studying the teenager's occupational interests.

Some Objectives (a part of them) of the ascertaining research shown in this article are the following:

- Identifying the occupational interests for students of the three profiles under study: pedagogy, humanities and sciences;
- Determining the level of development of occupational interests, comparatively between the three profiles, as well as between the three age levels of each of the profiles.
- Studying the development of teenager's occupational interests by gender.

2.2. HYPOTHESES

H1: There are statistically significant differences between occupational interests for students of the three profiles under study: pedagogy, humanities and sciences;

H2: There are statistically significant differences between occupational interests for students by gender.

3. METHOD

3.1. PARTICIPANTS

The research sample consisted of 257 adolescents of whom 81 were male and 176 female, aged between 14 and 18 years.

3.2. INSTRUMENTS

John Holland's typological theory was developed and continuously enhanced in books published in 1966, 1973, 1985 and 1992. The professional decision theory has been successful from the beginning as the professionals in the field already had a conceptual framework easy to apply in practice, and the customers understood how

the personal and the environmental factors were interacting, this process facilitating their decision making. There are two known tools to support the application of the typological theory of Holland: The Vocational Preference Inventory – VPI (1985) and the Self-Directed Search – SDS (1994). Self-Directed Search (SDS) is a self-administered, self-scored and self-interpretable instrument for professional counseling.

3.3. PROCEDURE

Students were recruited through cluster sampling among every high school. All of the recruited students completed the questionnaires. The required time taken to complete research instruments was about 30 minutes. No time limitation was given; privacy and anonymity of participants were carefully protected. The students filled out the questionnaires during a class period. The questionnaires were handed out to the students by trained co-researchers in the presence of a teacher, or by a teacher who was instructed on how to handle clarifications asked for by subjects. Subjects' questions, if any, were answered. The purpose of the research and its importance for improving career guidance and counseling were explained to the students, to increase their motivation and attention in filling out the questionnaire.

3.4. EXPERIMENTAL DESIGN

The independent variable: gender, profiles

The dependent variable: occupational interests.

4. RESULTS

In this paper, we present the results of the ascertaining study obtained from applying the Self-Directed Search (SDS) questionnaire and the Interests Evaluation Questionnaire (IEC).

During early adolescence (age group 14-16), we found on the first position as dominant type for the pedagogical and humanist profiles, the same kind of interest: the Artistic type for the ninth grade, respectively the Social type for the tenth grade. For the second period of adolescence (age group 16-18), we found on the first position as dominant type for the pedagogical and humanist profiles, the same kind of interest: the Entrepreneurial type.

There were no statistically significant differences among the profiles for the types of interests of the first ranks (Artistic, Social, and Entrepreneurial). Analyzing the types of interests by study profiles for the dominant types, we have the following situation:

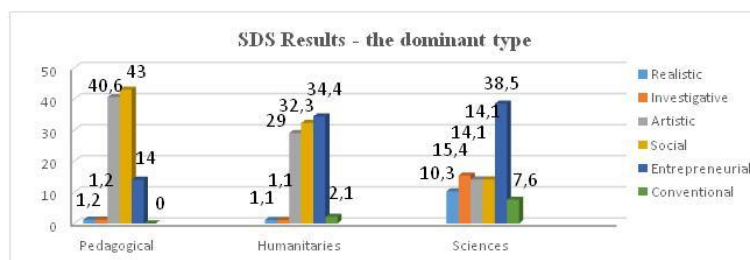


Figure 1. The dominant types of interests - SDS, by study profiles

For the pedagogical profile, the first position of the dominant type of interest is the Social type, with a percentage of 43% (37 students) from the number of the pedagogical profile students, followed by the Artistic type, with a percentage of 40.6% (35 students). The lowest percentage occurs in the conventional type.

For the humanities profiles, the first position of the dominant type of interests is the Entrepreneurial type, with a percentage of 34.4% (32 students) from the number of the humanities profile students, followed by the Social type with a percentage of 32.2% (30 students) and by the Artistic type with a percentage of 29% (27 students). There were observed small differences in percentage between the first three types of interests. The lowest percentage manifested in Realistic and Investigative types.

For the sciences profile, the first position of the dominant type of interests is the Entrepreneurial type, with a percentage of 38.5% (30 students) from the number of the sciences profile students. The difference between the Entrepreneurial type and the Investigative type (with a percentage of 15.4% - 12 students) which took the second place, was of 23.1%. For the other five interest types preferred by the students of this profile, we found small differences in percentage. The lowest percentage occurs in the Conventional type.

For the dominant types of interests, the pedagogical profile presents on the first position the Social type, while the humanities and sciences profiles presents on the first place the same type of occupational interests, the Entrepreneurial type.

We present the results of the secondary 1 type of interest, by study profiles:

For the pedagogical profile, the first position of the secondary 1 type of interest is the Social type, with a percentage of 39.5% (34 students) the dominant type being as well the Social type. The lowest percentage occurs in the Realistic type, with a percentage as low as 2.3% (2 students).

For the humanities profile, the first position of the secondary 1 type of interest is the Social type, with a percentage of 33.3% (31 students), the dominant type being the Entrepreneurial type. The lowest percentage occurs in the Realistic type, with a percentage as low as 4.3% (4 students).

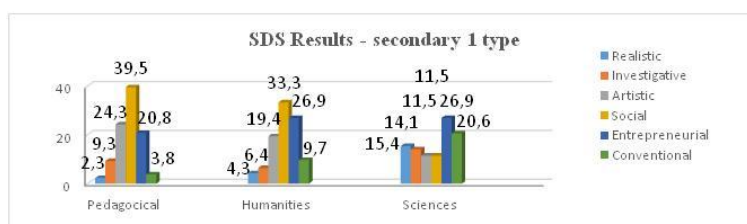


Figure 2. The secondary 1 type of interests – SDS results by profiles

For the sciences profile, the first position of the secondary 1 type of interest is the Entrepreneurial type, with a percentage of 26.9% (21 students), the dominant type being as well the Entrepreneurial type. The lowest percentage occurs in the Artistic and Social types, with percentages of 11.5% (9 students).

For the secondary 1 type of interests, the pedagogical and humanistic profiles are occupying on the first position the same type of occupational interest, namely the Social type, while the sciences profile presents on the first position the Entrepreneurial type.

We present the results of the secondary 2 type of interest, by study profiles:

For the pedagogical profile, the first position of the secondary 2 type of interest is the Investigative type, with a percentage of 32.5% (28 students) the dominant type being the Social type, and the secondary 1 type being as well the Social type. The lowest percentage occurs in the Realistic type, with a percentage as low as 1.2% (1 student).

For the humanities profile, the first position of the secondary 2 type of interest is the Entrepreneurial type, with a percentage of 25.8% (24 students), the dominant type being the Entrepreneurial type, and the secondary 1 type being the Social type. The lowest percentage occurs in the Realistic type, with a percentage as low as 5.4% (5 students).

For the secondary 2 type of interests, the pedagogical and humanistic profiles are occupying on the first position the same type of occupational interest, namely the Social type, while the sciences profile presents on the first position the Entrepreneurial type.

For the sciences profile, the first position of the secondary 2 type of interest is the Social type, with a percentage of 25.6% (20 students), the dominant type being the Entrepreneurial type, and the secondary 1 type being as well the Entrepreneurial type. The lowest percentage occurs in the Artistic and Entrepreneurial types, with percentages of 11.5% (9 students).

It must be underlined that the sub-types 1 and 2 are joining the dominant type, resulting in a wide variety of SDS codes for the tested students.

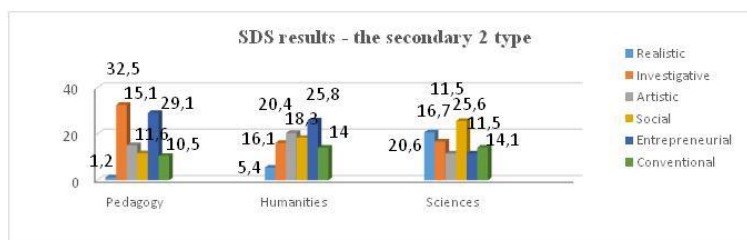


Figure 3. The secondary 2 type of interests – SDS by study profiles

The statistical examination allowed us to ascertain that, between the three profiles, statistically significant differences were found for all of the interest types, as presented in the Table 1.

Table 1. Study profiles comparison by occupational interests

Occupational interests	Kruskal-Wallis χ^2	Degrees of freedom	p
sdsReal	55,04	2	< 0.001
sdsInv	34,39	2	< 0.001
sdsArt	17,20	2	< 0.001
sdsSoc	26,17	2	< 0.001
sdsEnt	10,87	2	0,004
sdsConv	27,43	2	< 0.001

According to presented data, we can remark that the vocational branch (pedagogical profile) is acquiring high scores on the Social scale, while the theoretical branch (humanities and sciences) scores are higher on the entrepreneurial scale.

As a conclusion, for the students of pedagogical classes is prevailing the Social and the Artistic type; for the students of humanities classes is predominating the Social and the Entrepreneurial type; for the students of sciences profile we can speak of the domination of the Entrepreneurial type, the summative code presenting a wide variety for the children we have tested.

In order to verify the hypothesis that there are significant differences between occupational interests of teenagers by gender, we also processed the results considering this variable.

Analyzing Figure 4, we can state, for the dominant type of interests:

- Males indicates their preference to the Entrepreneurial type with a percentage of 40.7% (33 students), followed by the Artistic type with a percentage of 17.3% (14 students) and with a percentage difference of 23.4%. Except the Entrepreneurial type, the males' preferences are distributed to all five types of interest: Artistic, Investigative, Realistic, Conventional and Social (in this order of position), in percentages with small differences.

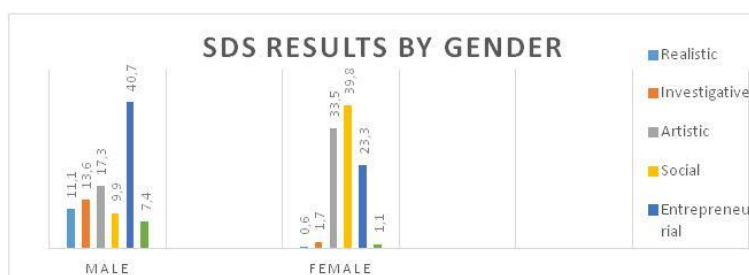


Figure 4. The dominant type of interests – SDS results by gender

- Females preferences are manifested for the Social type with a percentage of 39.8% (70 students), followed by the Artistic type with a percentage of 33.5% (59 students), then by the Entrepreneurial type with a percentage of 23.3% (41 students). Their preferences for the other types of interest distributes to the other three types of interest - Investigative, Realistic and Conventional in small percentages.

Table 2. The significance of differences between females and males – the “t” test

Occupational interests	Females		Males			t	p	
	Number	Percentage	Med	Number	Percentage			
sdsReal	1	0,6 %	10,35	9	11,1 %	21,52	-10,38	< 0,001
sdsInv	3	1,7 %	17,67	11	13,6 %	20,47	-2,36	0,020
sdsArt	59	33,5 %	25,79	14	17,3 %	19,86	4,47	< 0,001
sdsSoc	70	39,8 %	28,99	8	9,9 %	20,56	7,76	< 0,001
sdsEnt	41	23,3 %	24,39	33	40,7 %	27,48	-2,15	0,034
sdsConv	2	1,1 %	16,95	6	7,4 %	20,10	-2,34	0,021

We ascertain statistically significant differences between males and females for all types of interest (table 2). The girls scored high for the Social type, while the lowest score is for the realistic type. The boys have a high score on the Entrepreneurial type and the lowest score on the Conventional type.

5. CONCLUSIONS

The both hypothesis are confirmed. As a conclusion, for the students of pedagogical classes is prevailing the Social and the Artistic type; for the students of humanities classes is predominating the Social and the Entrepreneurial type; for the students of sciences profile we can speak of the domination of the Entrepreneurial type, the summative code presenting a wide variety for the children we have tested. There are statistically significant differences between males and females for all types of interest. The girls scored high for the Social type, while the lowest score is for the realistic type. The boys have the highest score on the Entrepreneurial type and the lowest score on the Conventional type.

REFERENCES

- Chircev, A., Salade, D. (1976). *Orientarea școlară și preorientare profesională – îndrumător pentru cadrele didactice*. E.D.P., București.
- Holland J.L. (1976). *The Self-Directed Search professional manual*. Palo Alto: Consulting Psychologists Press.
- Holland, J. L. (1985). *Vocational Preference Inventory (VPI) Manual*. Odessa: Psychological Assessment Resources.
- Holland J. L. (1992). *Making vocational choices: A theory of vocational personalities and work environments*. Odessa: Psychological Assessment Resources.
- Holland, J. L. (1997). *Making Vocational Choices. 3d ed.* Odessa: Psychological Assessment Resources.
- Holland, J. L., Fritzsche, B. A., Powell, A. B., Pitariu, H., Iliescu, D. & Vercellino, D. (2010). *Ghid profesional de utilizare a SDS (Self-Directed Search)* (adaptare după Holland, J. L., Powell, A. B., & Fritzsche, B. A.). București: OS România.
- Popescu-Neveanu, P. (1978). *Dicționar de psihologie*. București: Albatros.