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Musician as a Distinctive Personality Structure – Yes or No?

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Abstract

An empirical study examining differences in personality traits between musicians and non-musicians employing the differential approach was conducted on Macedonian sample. The sample itself consisted of 629 respondents in total, including 288 musicians with ongoing (music high-school or university music students) or completed (university degree in music) musical education, and the control sample of 341 non-musicians with mirrored age structure (non-music high-school or university students, as well as non-music university degree holders from different fields). Individual differences were tested employing four measuring tools: 16PF (by R. Cattell, revised version, 1993), EPQ (by H. Eysenck, 1975) and NEO PI-R (by Costa & McCrae, 1990) personality inventories, as well as FRT i.e. Figure reasoning test (by J. Daniels, 1962, Yugoslavian revised version known as TRL, 1983) as a measure of general intellectual ability.

Multivariate analysis of variance (MANOVA) based statistical data processing indicates results in synergy with referent findings regarding a musician's personality by the distinguished British music psychologist Anthony Kemp. Several second-order factors emerged as differential between musicians and non-musicians: Introversion – Extraversion, Anxiety – Assurance, Affectivity – Rationality, Higher intelligence – Lower intelligence, and Good upbringing – Bad upbringing. Our findings confirm the existence of four out of five attributive dimensions of the musical temperament, according to Kemp: Introversion, Affectivity, Anxiety and Intelligence. Existence of Independence was not confirmed. Overall, the results achieved give an exceptionally explicit confirmation of the distinctiveness of musicians' personality structure, i.e. the existence of a unique "musical temperament", in terms of specific combination of personality traits inherent to people from the classical music environment.

Key words: *intelligence; musical temperament; musicians; non-musicians; personality traits.*

Introduction

In a psychological profile, a highly talented and highly specialized individual has always been perceived and characterized as distinctive, especially in terms of conventional attributes that characterize the personality structure for the majority of the general population. A prominent position within the group of talented individuals, in this context, historically belongs to artists (Abuhamdeh & Csikszentmihalyi, 2004). A kind of aura of unconventionality (bordering extravagance) and of above-averageness (bordering extraordinariness), as a widely established model, is a historical constant with which the environment, as a rule, measures an artistically exceptional individual (Coffman, 2007) in general. This is, as a kind of stereotype, naturally reflected in the perception of the personality of artists in the field of music: composers, directors, performers and music educators, i.e. a group of people who, to a great extent, shaped their own life path pursuing the art of music. The personality of the artist in general, and especially the musician, has always been a fascinating subject of extensive studies, essays, analysis and debates (Barron, 1972; Gedo, 1983; Myers, 1993). It appears, however, that most of that abundance, with its pronounced philosophical, psycho-biographical, and literary discourse, navigates towards an area that only partially intersects with the exact requirements and criteria of modern scientific psychology (Sloboda, 1985).

Self-determination towards lifelong involvement in music is certainly not just a reflection and expression of the personality, but of a much wider range of external factors, and as such would have a significant impact on the individuality, the self-perception and the wider scope of a musician's personal identity. That is a reason enough, according to the leading music psychologist Anthony Kemp, to focus attention of scientific psychology of music in the direction of his/her personality (Kemp, 1996). Serious professional devotion to music, especially classical music, along with the necessary amount of talent, i.e. required level of musical abilities (musicality), undoubtedly requires very specific "artistic" personality traits and attributes, sometimes conditioned by extremely high standards for achieving personal artistic "perfection". This kind of choice, of course, "would not depend solely on the personal factor itself, but would be determined by an amalgam of motives, needs and cognitive constructs, with the inevitable socio-cultural influences and circumstances beyond the power of prediction or control of the individual" (Woody, 1978, p. 54). The long-lasting path to musical excellence involves a lifestyle of very strict standards of work and self-discipline, self-control and perseverance, challenges and sacrifices, a path not easy to follow consistently to the very fulfilment. That means, as a rule, years and years of hard, gruelling, lonesome hours of daily practice, a heavy investment of today, the results of which are harvested not until distant tomorrow, only after a very long-term of accumulated efforts and trials, as well as complex processes of personal and professional maturation (Kemp, 1997).

The position of undeniable reference in the field of personality psychology of musicians for more than three decades is held by the findings coming from a series

of extensive empirical studies from British University in Reading, and whose author, inspirer and mentor was Dr. Anthony E. Kemp. His classical studies from the 80s (Kemp, 1981a; 1981b; 1982) are certainly not the pioneer in the field, as much as they are pivotal in terms of their position as the first mature, systematic, comprehensive and methodologically consistent attempt of penetration into the internal structure of the personality of musicians, aiming to identify the attributive personality traits of this specific sort of artists. Starting from a theoretical platform based on R. Cattell's (1981) theory of personality and the associated measuring instrument (16PF Personality Inventory), Kemp employed the factor analysis to conclude the classical set of personality attributes in musicians, in fact, the basic dimensions of the "musical temperament" (Kemp, 1996, 1997): Introversion, Independence, Sensitivity, and Anxiety. In earlier works (Kemp, 1981a; 1981b), as an attribute of musical temperament, the (higher) Intelligence was mentioned as well. Introversion in musicians, as it is seen by Kemp, is less referred to the social stereotype of distancing, while leaning much more to the orientation of "living within oneself" i.e. reflects the "inner treasure of internalized categories of tonality, melody, rhythm and other aspects of musical expression, and above all, comprehensive, rich and imaginative internal symbolization" (Kemp, 1996, p. 44). Independence is related to the typical artistic unconventionality, non-conformity and individualism, which sometimes reaches the borders of eccentricity. Sensitivity is, in contrast to the sober rationality, a reflection of the reflective and deliberative, somewhat relaxed, more sensitive, even bohemian understanding of life, i.e. insight into the inner side of things at the expense of their factual, i.e. material existence. Intelligence, as the name suggests, is concerned mainly with above-average general intellectual abilities. Finally, anxiety in musicians emerges in synergy with a wider stereotype of a sensitive, restless, easily arousing/impulsive personality, constantly challenged by internal concerns, dilemmas and self-examinations.

By using age stratification of the sample into three groups (496 pupils of a secondary music school, aged 13-17; 688 music students, aged 18-24; 202 professional musicians), along with the identification of the basic attributes of musical temperament, Kemp (1981a; 1981b; 1982; 1996) tried to detect their developmental momentum. The dimensions of Introversion, Sensitivity and (higher) Intelligence proved to be trans-generationally stable, i.e. present in all three groups. Anxiety, however, did not appear in pupils, but only in students and in adult professional musicians, being proportionally more pronounced as levels of musical knowledge (musicianship) and experience (age) increased. In terms of individual source-traits, pronounced Individualism (J+) and Self-sufficiency (Q2+) in pupils suggest somewhat weaker social adjustment of the youngest generation of musicians. Kemp's findings confirmed some of the previous results of other researchers (Martin, 1976, as cited in Kemp, 1981a), primarily dimensions of Sensitivity, Intelligence and Good upbringing, however differences occur in cases of other dimensions (Introversion and Anxiety in Kemp, versus

Extroversion and Adaptiveness in Martin), which Kemp explains pointing towards differences in sampling (mainly vocalists of unspecified level of musicianship in Martin's sample). Very different findings, even opposite in comparison to Kemp, have been presented by other researchers. Bell and Cresswell (1984), for example, report an established Rationality at the level of second-order factors, as opposed to the fundamental dimension of Sensitivity in Kemp's results, along with numerous variations in the source-traits. The likely reason behind contradictory findings should be tracked also in the sampling, given the very small number of subjects (N=58) in the Belland Cresswell (1984) study. A similar problem may provide an explanation of dissonant findings taken from an Australian study (Buttsworth & Smith, 1995), since a (highly unrepresentative per se) sample of psychology students had been utilized as the control group of non-musicians, as well as taken from some research based on the same measuring instrument more recently (Coffman, 2007). Kemp's findings have been, to a certain extent, confirmed by Bogunović (1995, 2010, 2012) on a sample of musicians from Serbia, yet with some very significant differences (determined Extraversion, versus Introversion with Kemp), explained by the author pointing to the influence of socio-cultural factors. In recent years, the knowledge on the personality traits' influences on pursuing music have been significantly enriched with a series of research studies oriented towards the social psychology of music. Personality traits were found significant as a determination factor of how people experience music (Chamorro-Premuzic & Furnham, 2007; Dobrota & Reić-Ercegovac, 2014, 2015; Rentfrow & Gosling, 2003; Rentfrow & McDonald, 2009). Conversely, individuals may use their music preferences to communicate information about their own personalities to observers, and observers can use such information to form impressions of others (Rentfrow & Gosling, 2006), while music preferences themselves emerged structured as a five-factor model (Rentfrow, Goldberg, & Levitin, 2011; Rentfrow et al., 2012).

Method

Hypothesis and Variables

The fundamental research problem examined in this paper is operationalized as detection of distinctive personality traits and general intelligence pattern in musicians with academic (ongoing or completed) music education in the field of classical music, compared to non-musicians of the same age and educational level. The aim of this paper is to identify the differential personality traits, including general intelligence, between academic musicians and non-musicians. Therefore, the research hypothesis that *academic musicians differ in personality traits, including the level of general intelligence, in relation to non-musicians* will be tested.

A research draft of the "ex post facto" type on which the research procedure in this paper is based, in fact relativizes the traditional dualism of variables as criterion and independent (behavioural and stimuli), hence it is not possible to categorically say whether the variables of personality traits and intelligence are causal (preceding) or

consequential (following) to the choice of music education and profession. In this paper, personality and intelligence possess the nominal position of criteria, while being a musician or a non-musician holds the position of the independent variable.

Instruments

In this study, the measurements of individual differences have been realized using four measuring instruments. As measures of personality traits the results of the following three personality inventories (R. Cattell's 16PF, revised version from 1993; H. Eysenck's EPQ, 1975; and Costa & McCrae's NEO PI-R, 1990) have been used.

The 16PF inventory (R. Cattell, 1981; H. Cattell, 1989) reflects R. Cattell's view of the structure of personality, via system of sixteen functionally independent and psychologically comprehensively elaborated bipolar factors of personality. The listed 187 items, in total, measure sixteen different "source" personality traits (first-order factors): A (Warmth), B (Reasoning), C (Emotional Stability), E (Dominance), F (Liveliness), G (Rule-consciousness), H (Social Boldness), I (Sensitivity), L (Vigilance), M (Abstractedness), N (Privateness), O (Apprehension), Q1 (Openness to Change), Q2 (Self-Reliance), Q3 (Perfectionism), and Q4 (Tension). Many times scrutinized, homogeneity and reliability of this inventory proved particularly strong, among the best. Test-retest reliabilities average 0.80 over a two-week interval, ranging 0.69-0.87depending on the scale, while internal consistency ranged between 0.68 and 0.87 depending on the scale (Cattell & Schuerger, 2003). Our own preliminary checks of reliability confirmed a very satisfactory level of internal consistency (ranging from 0.61 to 0.90 depending on the scale, Cronbach Alpha, 86 respondents).

H. Eysenck's EPQ inventory (Eysenck & Eysenck, 1975; Lojk, 1979) is an updated version of the earlier EPI (Eysenck & Eysenck, 1964), covering three dimensions of personality: Extraversion, Neuroticism, and Psychoticism, plus a lie-scale, all represented via 90 items in total. Despite some shortcomings in internal consistency, estimations concerning the inventory's earlier versions, the P-scale in particular, later reports emerged much better, ranging between 0.68 (P-scale, British female sample, split-half), and 0.91 (P-scale, Slovenian male sample, split-half), according to Lojk (1979). We have performed the usual preliminary checks which confirmed a pretty good level of internal consistency (ranging 0.71-0.93 depending on the scale, Spearman-Brown split-half, 72 respondents).

The NEO PI-R inventory (Knežević, Džamonja-Ignjatović, & Đurić-Jočić, 2004; Lord, 2007) is the latest out of the three, reflecting the Big Five factor model of personality, in which a number of correlated and more specific primary factors (facets) are claimed beneath each proposed major factor (domain), all in 240 items in total. The five NEO PI-R domains are: Neuroticism (faceted into N1 Anxiety, N2 Angry Hostility, N3 Depression, N4 Self-Consciousness, N5 Impulsiveness, N6 Vulnerability), Extraversion (faceted into E1 Warmth, E2 Gregariousness, E3 Assertiveness, E4 Activity, E5 Excitement-Seeking, E6 Positive Emotions), Openness

to Experience (faceted into O1 Openness to Fantasy, O2 Openness to Aesthetics, O3 Openness to Feelings, O4 Openness to Actions, O5 Openness to Ideas, O6 Openness to Values), Agreeableness (faceted into A1 Trust, A2 Straightforwardness, A3 Altruism, A4 Compliance, A5 Modesty, A6 Tender-Mindedness) and Conscientiousness (faceted into C1 Competence, C2 Order, C3 Dutifulness, C4 Achievement Striving, C5 Self-Discipline, C6 Deliberation). Numerous studies confirm this inventory's highly satisfactory homogeneity and reliability. In terms of domains, the internal consistency ranges between 0.86 (Agreeableness scale) up to 0.92 (Neuroticism scale), while facets emerged less reliable due to a very short list of items (8 each), ranging 0.56-0.82 (Knežević et al., 2004). Our own checks revealed a satisfactory level of the facets' internal consistency (0.59-0.75 depending on the facet, Cronbach Alpha, 79 respondents).

The J. C. Daniels' Figure Reasoning Test, widely known as FRT (Daniels, 1962), adapted to be used on the Yugoslavian population as TRL (Dolinar & Bele-Potočnik, 1983) was used to measure the general intellectual ability, consisting of 45 items in total, all figural (similar to Raven's Progressive Matrices). In terms of R. Cattell's concept of two general factors of intelligence (Cattell, 1981), FRT measures the fluid intelligence (considering the figural material relations as one of its major structural elements), with estimated saturation of about 80%. Correlations with other wide-known tests of general intelligence are very high, ranging from 0.71 to the DominoD-48, 0.86 to the Stanford-Binet, up to 0.93 to the Raven's Progressive Matrices. The authors of the Yugoslavian edition report on very strong reliability measures, up to 0.93 (Dolinar & Bele-Potočnik, 1983). Our own check of internal consistency resulted in strong 0.91 (Spearman-Brown split-half, 104 respondents).

Sample

The sample included a total of 629 subjects divided into two basic groups: a musical and a non-musical (control) one. Both groups were stratified into three age subgroups: pupils, students and adults.

Within the group of musicians, according to the level of music education, the participants were: (a) pupils in the 3rd and 4th year at a secondary music school (69), with the average age of 18 years and 2 months, then (b) students of I-IV year at the Faculty of Music (104), with the average age of 22 years and 5 months, and (c) professional musicians with a higher education degree in music (115), with the average age of 42 years and 8 months. The first two categories consisted of pupils at MBUC "Ilija Nikolovski-Luj" and students at the Faculty of Music, both in Skopje, while professional musicians were mostly full-time or part-time members of the Macedonian Philharmonic Orchestra (37) or the Macedonian Opera and Ballet Orchestra (33), with a number of teachers and accompanying teachers (mostly piano performers) at MBUC "Ilija Nikolovski - Luj" (9) or at the Faculty of Music (17) in Skopje, closing the list with free-lance artists (19).

Within the group of non-musicians there were 341 respondents selected, and subdivided into three age groups: pupils in the 3rd or 4th year in high schools not affiliated to music (total of 72 pupils: 55 pupils in general secondary schools plus 17 pupils in vocational technical schools), with the average age of 18 years and 5 months, then students (119 in total) at faculties not affiliated with music, ranging I-IV year of study (Primary school teacher studies=54, Construction=22, Economics=24, and Forestry=19), with the average age of 21 years and 8 months, closing the list with highly educated professionals (total of 150) of various fields other than music (19 classroom teachers, 12 philologists, 15 physicians, 9 dentists, 3 pharmacists, 5 pedagogues, 4 psychologists, 3 historians, 3 agronomists, 23 economists, 18 lawyers, 6 technologists, 4 mathematicians, 10 graduates in information technology, 7 mechanical engineers, and 9 electric engineers) with the average age of 44 years and nine months. Table 1 shows the educational and gender structure of both groups.

Table 1

Sample of musicians: educational and gender structure

		Level of education			
		pupils	students	adults	total
Musicians	females	33 (11.5%)	56 (19.4%)	54 (18.8%)	143 (49.7%)
	males	36 (12.5%)	48 (16.7%)	61 (21.1%)	145 (50.3%)
	total	69 (24.0%)	104 (36.1%)	115 (39.9%)	288
Non-musicians	females	36 (10.6%)	53 (15.5%)	81 (23.8%)	170 (49.9%)
	males	36 (10.6%)	66 (19.3%)	69 (20.2%)	171 (50.1%)
	total	72 (21.2%)	119 (34.8%)	150 (44.0%)	341

Data Analysis

The data matrix is dominated by variables of scale type, represented by measurement results on scales of personality inventories and the IQ test. Other levels of measurement are represented in minimal amount, i.e. being musician or non-musicians the independent variable is a nominal level of measurement.

Given the supposed inter-correlativity of the measured personality traits as an integral group of criterion variables, the natural choice of statistical procedure to process such data is the Multivariate analysis of variance (MANOVA). Taking part as elements of the broader analysis, some usual procedures of descriptive statistics (measures of central value and variability)were used continuously. As an extra procedure, the t-test for independent samples was employed as well.

Data processing was carried out in the statistical package IBM SPSS 20.0 (Statistical Package for the Social Sciences).

Results

A routine to-begin-with in the MANOVA procedure is a preliminary insight into the amount of inter-correlation among the involved variables, in order to exclude the possible occurrence of excessive correlations. In our case, only three cases above .40 were found, which can be considered quite acceptable with respect to the further implementation of the planned MANOVA protocols, given the much higher limit (.60) of inadmissibility claimed in literature (Leech, Barrett, & Morgan, 2005). An appearance of larger than .60 correlation in the inter-correlation matrix would require reconfiguration of the matrix itself or even elimination of (at least) one of the variables. The results of four simultaneous alternative tests (default in SPSS MANOVA) of the null hypothesis *all proved statistically significant (F=10.796, df1=26.01, df2=453, p<.01),* which, according to the main research hypothesis, *suggests a significant difference between musicians and non-musicians on a linear combination of the criterion variables.*

However, the outcome of Box's Test of Equality of Covariance Matrices in the context of our data emerged unfavourable *(p<.01),* i.e. indicates an undesirable level of inhomogeneity within the matrix. In such a case, experts (Leech et al., 2005, p. 167) suggest the Pillai's Trace test as the best choice of reference tool to test the null hypothesis, however only in case of approximately equal numbers of groups at all levels of the independent variable. In our sample, the size of two groups is pretty closely matched (288 musicians to 341 non-musicians, as the ratio between two groups fits clearly into "safe zone", within given boundaries of 1:1.5). As a statistical constellation, this ratio significantly reduces the adverse impact of the problematic Box's test outcome. As previously mentioned, the calculated MANOVA multivariate test in Pillai's Trace form has been confirmed statistically significant, indicating significance of the calculated mutual difference between the two groups in the achievement of the measured personality traits. In other words, *the hypothesis that the academic musicians differ from non-musicians in personality traits was confirmed*.

A statistical confirmation of the hypothesis itself, of course, is not sufficient *per se* as an indication of the magnitude i.e. the "effect-size" of the statistical significance calculated *on a given sample* as a potential assessment of trends *throughout the population*. The effect-size in SPSS MANOVA protocol is expressed by the index *"Partial eta^2",* but in order to facilitate comparability with other data (via partial linear correlations) it is recommended to use its square root (via manual conversion, since SPSS does not offer this option in the menu), called the "*Partial eta*" (Leech et al., 2005, p. 55). In line with the general interpretation, the value calculated as *Partial eta (.619)* in the data obtained for this sample is very explicit, reaching the ranks of large effect-size. *This is another confirmation of the high magnitude of the calculated difference between the two groups, which significantly reduces the side effects of higher level of inhomogeneity within the matrix indicated by the Box's test.*

The confirmed statistical significance calculated via Pillai's Trace test, however, does not accurately identify the individual criterion variables, within the linear

combination taken as the criterion, which contribute the most to the calculated statistical significance. In other words, it is necessary to answer the question which individual criterion variables saturate the most the common vector in relation to which the levels of the independent variables differ. Using the language of the proposed research hypothesis, identification must be made of the individual traits on which the differences between musicians and non-musicians are most pronounced, as well as for the other ones, where there are essentially no differences. This set of calculations is presented in Table 2.

The traditional way of assessing the contribution of each individual criterion variable is by obtaining insight into the level of statistical significance of the appropriate partial ANOVA test. As shown in Table 2, our calculations reveal that a higher proportion, i.e. 18 out of the 26 individual criterion variables significantly influence the collective outcome obtained by Pillai's Trace test. These are: some 16PF source-traits, such as Warmth, Verbal Intelligence, Emotional Stability, Liveliness, Rule-Awareness, Social Boldness, Sensitivity, Abstractedness, Apprehension, Self-reliance, Perfectionism and Tension, all three EPQ dimensions, i.e. Neuroticism, Psychoticism and Extraversion, plus three out of five NEO PI-R domains: Neuroticism, Openness to Experience and Conscientiousness. The corresponding index for the most part of these variables (16 out of 18) is in the range of low effect-size, while it occurs much less frequently in a moderate effect-size (1 of 18) and a high effect-size (also 1 of 18). The differences in personality traits in musicians opposite non-musicians are *most explicitly visible (large effect-size) in the domain of Emotional Stability, and somewhat less prominent (moderate effect-size) in case of the domain of Conscientiousness, both from the NEO PI-R inventory*. All the remaining differences appear relatively subdued (low effect-size): along with R. Cattell's source-traits of Liveliness (F), Awareness of Rules (G), Warmth (A), Abstractedness (M), Self-Reliance (Q2), Tension (Q4), Verbal Intelligence (B), Emotional Stability (C), Perfectionism (Q3), Social boldness (H), Sensitivity (I) and Apprehension (O), there are Eysenck's dimensions emerged, as the Emotional Stability - Emotional Instability (Nepq), Introversion - Extraversion (Eepq), and Tolerance - Rigidity (Pepq), as well as the Openness to Experience domain (Onpr) from the NEO PI-R inventory.

The MANOVA protocol calculation outcome is of superior clarity in terms of accuracy of the established relations of independent variables with the linear combination of criterion variables, but suffers a somewhat weaker level of vividness when the goal is to provide the reader with an easy-to-understand tabular or graphical overview of mentioned relations in terms of individual variables. This is why we are going to present all these calculations via standard framework of individual t-test (actually a series of them) for independent samples, based on a common set of descriptive data (arithmetic mean and standard deviation). Providing an additional illustration, an alternative indicator of the effect-size of differences between the two groups (musicians and non-musicians) is calculated, in the form of *Cohen's d*

index. Theoretically, what might be expected are a slightly increased effect-size values represented by *Cohen's d* index, compared to the primary indicator, the *Partial eta*. The supposed reason is of pure mathematical-statistical nature, based on the fact that the direct calculation of *Cohen's d* via descriptive parameters of the partial criterion variables does not take into account their inter-correlations.

Table 2

MANOVA: internal partial ANOVA tests, descriptive data (M &SD) & effect-size

	F	df	Sig.	Partial eta^2	Partial eta	Musicians		Non-musicians		Cohen's d
						M	SD	M	SD	
Figural Intelligence TRL	0.00	1	.98	.00	.00	31.15	3.29	30.92	3.70	0.07
Warmth 16PF	28.51	1	<.01**	.06	.24	11.80	2.45	13.06	2.43	0.50
Verbal Intelligence 16PF	14.52	1	<.01**	.03	.17	6.41	1.46	5.99	1.31	0.30
Emotional Stability 16PF	9.89	1	<.01**	.02	.14	14.11	3.25	14.73	2.90	0.20
Dominance 16PF	1.26	1	.26	.00	.06	13.42	2.78	13.68	2.57	0.10
Liveliness 16PF	34.15	1	<.01**	.07	.26	13.80	2.39	14.96	2.54	0.46
Rule-Awareness 16PF	29.46	1	<.01**	.06	.24	12.89	2.28	11.58	2.60	0.52
Social Boldness 16PF	7.19	1	<.01**	.02	.12	14.32	2.36	14.91	2.69	0.23
Sensitivity 16PF	7.45	1	<.01**	.02	.12	12.26	1.95	11.73	2.18	0.25
Vigilance 16PF	0.12	1	.73	.00	.00	11.30	2.43	11.39	2.74	0.04
Abstractedness16PF	26.79	1	<.01**	.05	.23	12.71	2.31	11.59	2.34	0.47
Privateness16PF	0.02	1	.88	.00	.00	11.29	2.17	11.39	2.26	0.05
Apprehension 16PF	4.56	1	<.05*	.01	.10	12.04	2.36	11.66	2.46	0.16
Openness to Change 16PF	1.11	1	.29	.00	.05	10.97	2.06	11.38	2.64	0.17
Self-Reliance 16PF	26.25	1	<.01**	.05	.23	12.12	2.32	11.11	2.34	0.42
Perfectionism 16PF	9.26	1	<.01**	.02	.14	11.96	2.06	11.42	2.16	0.25
Tension 16PF	18.82	1	<.01**	.04	.20	12.94	2.54	12.11	2.68	0.31
Neuroticism EPQ	10.18	1	<.01**	.02	.15	12.96	2.65	12.39	2.68	0.21
Extraversion EPQ	10.91	1	<.01**	.02	.15	12.05	2.37	12.88	2.82	0.31
Psychoticism EPQ	11.33	1	<.01**	.02	.15	4.99	1.76	5.49	1.92	0.27
Lie-Scale EPQ	2.03	1	.16	.00	.06	11.54	2.87	11.83	2.56	0.11
Neuroticism NEOPI-R	129.55	1	<.01**	.21	.46	78.47	11.81	68.29	9.74	0.86
Extraversion NEOPI-R	1.00	1	.32	.00	.05	112.94	17.74	115.14	12.71	0.21
Openness NEOPI-R	13.48	1	<.01**	.03	.16	106.62	9.56	103.37	9.10	0.34
Agreeableness NEOPI-R	0.37	1	.54	.00	.03	99.42	9.60	99.70	9.49	0.03
Conscientiousness NEOPI-R	81.25	1	<.01**	.15	.38	119.17	15.35	107.46	11.20	0.81

As can be seen from Table 2, the effect-size *(Cohen's d index)* values are really markedly increased compared to the primarily displayed effect-size indicator *Partial-eta*. The two differences (NEOPI-R domains of Neuroticism and Conscientiousness), in contrast, are with an extremely high effect-size (above .80), and five others are in the range of high effect-size (R. Cattell's source-traits Warmth, Liveliness, Rule-Awareness, Abstractedness and Self-Reliance). However, it should be pointed out that these very traits were the location of the values of highest effect-size *(Partial-eta)* in the MANOVA calculation, and that the rank of the individual tested traits emerged almost identical in either *Partial-eta* or *Cohen's d* series. We did not calculate the

value and significance of the individual t-tests, considering such a calculation after MANOVA test as simply unnecessary (with problematic precision with respect to the aforementioned inter-correlation of the criterion variables not being taken into account).

The degree of effect-size *(Partial-eta index, MANOVA test)* of each of these variables, i.e. the magnitude of the calculated statistical significance as a potential estimate of population trends, is visually systemized in Figure 1.

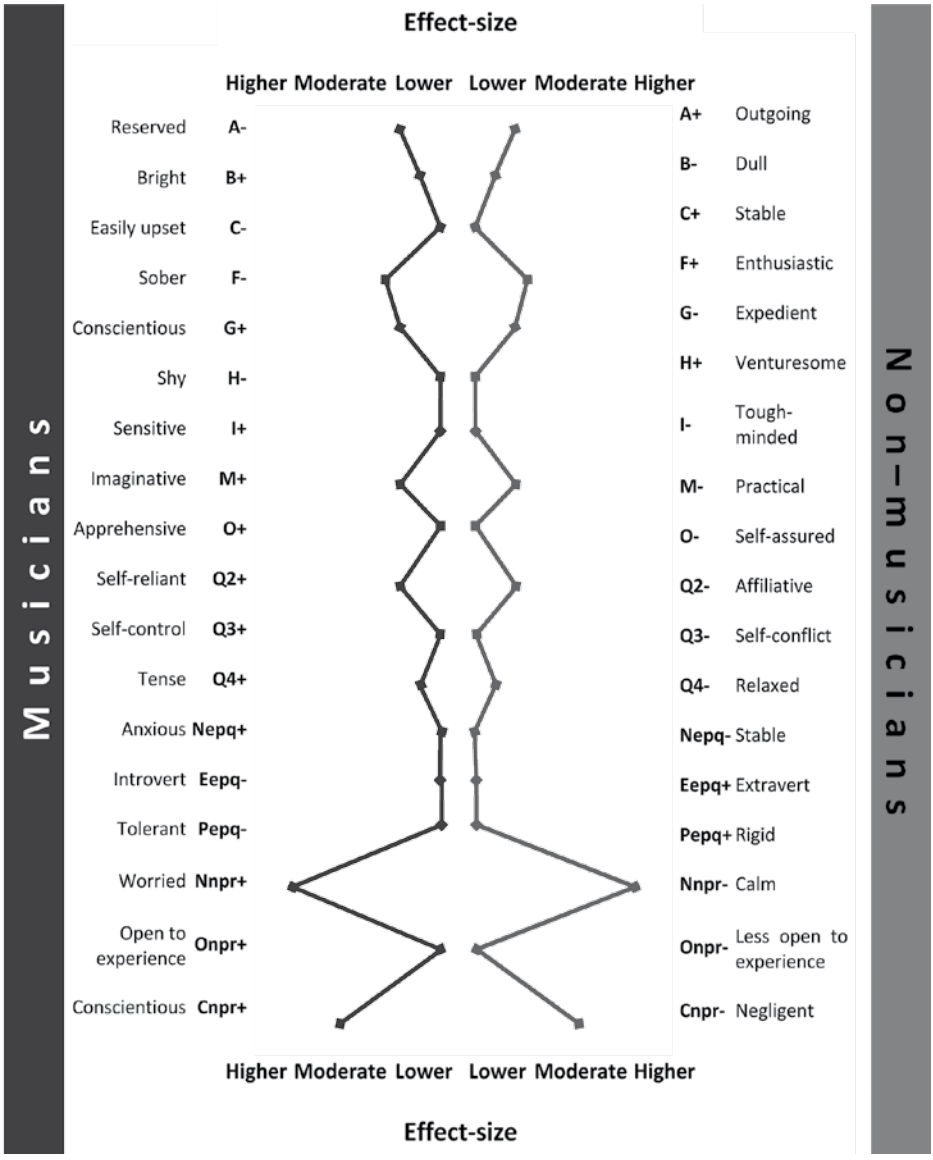

Figure 1. Musicians vs non-musicians: effect-size of established differences

Discussion

In his papers, Kemp (1981a, 1996) has repeatedly emphasized the crucial position of introversion in musicians, less as a model of temperament in the background of a basic social approach, but much more as an indicator of personal internal hierarchy of priorities. Introversion in musicians, as seen by Kemp, indicates predominance of contents located in the inner world and experience, at the expense of the objective realities of things from the outside. While our findings proved in very close accordance with the classic elements of R. Cattell's introversion (Cattell, 1981), Kemp's understanding of this construct is somewhat different. The absence, for instance, of traits of Shyness (H-) in the structure of introversion in Kemp's sample, means that their general orientation towards themselves and the inner selves cannot be a reflection of a timid and insecure personality. In our findings, however, the trait H- is shown to be one of the differential personality traits of musicians opposed to non-musicians, and as such has a position into the structure of the "musical" introversion. At the behavioural level, it would seem that by their lower self-confidence, timidity and insecurity (H-), our musicians are introverted in a way closer to the introversion of the general population, explained by R. Cattell (1981) as Invia, rather than to the musicians' introversion explained by Kemp (1996). Similar is the position of the trait Seriousness (F-). Namely, this fundamental characteristic of introversion (by R. Cattell) did not prove to be characteristic in case of musicians from the Kemp's sample, yet it appeared as a differential trait of musicians in our sample (with a pretty respectable effect-size). On the other hand, the identified traits of Aloofness (A-) and Independence (Q2+) in our musician sample are in full synergy with Kemp's findings (1996), therefore confirming elements of orientation towards oneself and internal mental contents, as well as of individualism and self-sufficiency. Given this, our findings only partially confirm Kemp's view of the unique "musical" introversion. With a focus towards the inner personality and its control, introversion in musicians in our sample also includes a discrete indication towards conventional introverted insecurity (H-), and somewhat more explicit indication of seriousness and lack of enthusiasm (F-).

Above-average anxiety in musicians is almost a regular finding in most of the studies in the field. When it comes to psychological background, anxiety in general can be shown not only in the form of an endogenous dispositional personality trait, but also as a transitory state of exogenous nature (Hofer, 2010). Through either of the two forms, the anxiety in musicians is situated within two actually divergent, but functionally closely related areas: motivation and self-concept (Kemp, 1996; Abuhamdeh & Csikszentmihalyi, 2004). In terms of motivation, a moderate anxiety would probably influence in constructive, stimulating and mitigating (facilitating) way, while either very low or very pronounced would be aggravating (debilitating). Deep intrinsic motivation in musicians is itself a structural template on which their self-concept is based to a large extent, so that the perception of one's own identity can

hardly be separated from the perception of personal value as a musician (Kemp, 1996). Our measurements clearly confirm a systematically increased anxiety in musicians (C-, H-, O+, Q4+, Nepq+, and particularly Nnpr+). It is, therefore, the affective pattern based on behavioural elements of fragility, instability and impulsivity (C-), general insecurity, passivity and timidity (H-), carrying a sense of duty and guilt-proneness (O+), plus dissatisfaction and inner tension (Q4+). The profile is concluded with strong evidence (the highest effect-size) of frequent bad moods and sometimes sub-depressive personal ambience, along with the renowned fearfulness that things could go wrong (Nepq+), plus a very strong – as measured in this sample – disposition for powerful destabilizing emotions, inappropriate stress coping and problematic adaptability (Nnpr+). On the other hand, a very interesting counterpoint to the general picture of diffuse anxiety is given by the somewhat, in such a context, paradoxical presence of components of will power, accuracy and self-discipline (Q3+), a finding that is in synergy with Kemp's results (1996), while completely opposite to R. Cattell's (1981) concept of anxiety. In musicians, this particular trait might play a stability role, i.e. counterbalance to diffusely present anxiety, which is a motive undoubtedly close to psychoanalytical interpretations of creative activities in artists as a unique exile into an "ontological security of one's own interior" (Storr, 1976, p. 72). A stronger ego is the artist's defence against stress, according to Storr (1976), so that exactly the ability of an internal organization and integration of opposites keeps him/her in a functionally good condition, despite the pressures and the obstructions (Storr, 1988).

Interpreting the *affectivity* as an essential attribute of the musical temperament, Kemp primarily sees it as a cognitive style based on an emotional decoding of the reality and an intuitive decision-making, as opposed to cerebral, rational style of reception and decision-making. This cognitive style belongs to the ones with a deeper insight and with a more subtle way of experiencing, as well as with a unique sense for different meanings, relations and possibilities. This sort of an individual, according to Kemp (1996), would have a tendency towards the theoretical and the abstract, expressing very unconventional, sometimes visionary views and ideas, bohemianism and so on. Our results indicate the presence of affectivity (traits I+, M+) in musicians, as opposed to rationality (I-, M-) in non-musicians, confirming the dominance of emotion and intuition as the dominant mental orientation opposite to logic and facts, as well as orientation guided primarily by inner states and ideas. In accordance to Kemp's results, there is also a presence of aloofness (A-) in our sample of musicians, as opposed to the warm openness (A+) as a component of R. Cattell's (1981) factor of affectivity (Pathemia) in the general population. The explicitness of the A- trait, according to Kemp (1996, 1997), increases with age, i.e. with the level of musicianship, which is clearly confirmed in our earlier works (Mihajlovski, 2010). There seems to be enough room for the thesis that the main element of affectivity, that peculiar affective-intuitive cognitive style which results in imagination and sensitivity, is largely "internalized, directed inwards and largely personal, at the expense of the rational

orientation toward the outside" (Kemp, 1996, p. 80). We would only add that the codes of external assessment and action in musicians are probably largely "resistant" to described intuition and imagination, and that these artists, despite apparently very specific internal vision, are by no means so naive or impractical kind of people in the external daily communication, as the prevalent stereotype might suggest. Finally, the two key scales from R. Cattell's 16PF inventory which indicate social naiveness (L and N) do not indicate differences to non-musicians.

Regarding the level of *intelligence*, i.e. the general mental ability, as a differentiating trait versus the non-musical part of the population, the results in most of the research (Bell & Cresswell, 1984; Bogunović, 1995; Kemp, 1996; Schellenberg, 2004; Coffman, 2007; Gibson, Folley & Park, 2009; Mihajlovski, 2010) stably confirm a higher level of general intelligence in musicians, as well as other aspects of cognitive functioning, such as cognitive preservation and fitness (Hassler, Birbaumer, & Feil, 1985; Gasser & Schlaug, 2003; Hanna-Pladdy & MacKay, 2011). However, some different and even conflicting findings should be mentioned, the majority of which are older studies (Seashore, 1938; Wing, 1948; Edmunds, 1960; Bentley, 1966, according to Kemp, 1981a). In our sample there is a clear difference in favour of the musicians on the Cattell's trait of (verbal) Reasoning (B), but not so on the test of general intelligence of figural type (FRT). Given the large impact of socio-economic factors (education and culture) and family on the development and the achieved extent of reasoning (crystallized intelligence, in Cattell's vocabulary), the causes of better performance of musicians in verbal intelligence may come from this direction. The tradition is, in fact, that more often than others, children from wealthier families are sent to music school, i.e. urban environment, better socio-economic status and more sophisticated socio-cultural and educational family "portfolio". These parameters were also a kind of framework for a prototype of intellectually stimulating family environment, very important for the development of a wider general culture and awareness, a powerful achievement motivation, sophisticated cultural needs, and creative or even interactive models to satisfy all of them (Schellenberg, 2006). These individuals, formed according to the described profile of family atmosphere, are "understandably" favoured by the type of questions contained in the B-scale of R. Cattell's 16PF inventory. The aforementioned lack of differences between the figural test FRT (fluid intelligence) supports the thesis that the origin of the choice of the music profession is essentially not a matter of structural levels (neuro-physiological) intelligence, but it is much more a cultural choice.

Conclusion

Aiming at the identification of differences in the personalities of musicians opposed to those of non-musicians, i.e. at the detection of the potential "musical temperament", this study proves not only that such differences exist, but it also shows that they are very prominent in covering the characteristics through which they are manifested.

Findings from the referent researcher in the field (A. E. Kemp, 1981a, 1981b, 1982, 1996, 1997) are confirmed to a great extent, with a distance of thirty years apart, as well as in a different cultural environment, to which we attributed some differences in the results.

In short, the existence of a range of very prominent differences in the personalities of musicians compared to non-musicians of a corresponding gender, uniform age and educational characteristics, has been confirmed. The established differences are visible at the level of several factors of second order, where the individual differential traits in musicians are focused towards some aspects of Introversion, Anxiety, Sensitivity, and Higher (verbal) intelligence. These results are in synergy with the findings of the leading author in this field, A. E. Kemp, confirming four out of five attributive dimensions of "musical temperament". The factor of *Independence* has not been confirmed. In terms of the dimension of *Introversion*, expressed through the traits of lower confidence, timidity and insecurity, our musicians are introverts in a way that is structurally closer to R. Cattell's (1981) general population than to Kemp's (1981a, 1982b, 1996, 1997) sample of musicians. The presence of the trait of *Seriousness* supplements the impression of more conventional introversion in musicians from this sample, as opposed to the very specifically profiled one in the British sample. Our musicians also manifested a differential set of behavioural traits, such as affective fragility, instability, impulsivity, timidity, guilt-proneness and general tension, all of which indicate the dimension of *Anxiety*. This dimension, however, as a difference between musicians and non-musicians is expressed somewhat more subdued, i.e. the effect-size is of a lower magnitude, with the exception of the traits of powerful destabilizing emotions, inappropriate stress coping and problematic adaptability (unified into the C-domain of the NEO PI-R), which is actually the most prominent difference to non-musicians in this sample. Furthermore, a clear presence of lifestyle traits based on feelings and intuition as the dominant mental landmarks, intuition, daydreaming, preferences to escapism from reality (of a mild extent), subjectivity, impracticality and bohemianism, suggests a common dimension of *Affectivity*. Finally, the musicians in this sample expressed considerably higher levels of reasoning, i.e. *Verbal Intelligence*, which, however, is not confirmed by the results of fluid, i.e. innate intelligence on a test of figural material. Considering the crucial importance of socio-economic factors from the environment and the family (education and culture) in the development and achieved levels of the crystallized intelligence, it seems that the factors of higher success of musicians on this trait should be tracked in this direction.

We are aware of at least two limitations in relation to this research. One refers to sampling within a single environment. Most probably it compromises the potential for a broader generalization of the findings to the wider population of musicians outside the boundaries of the socio-cultural matrix where the research had been conducted. The other restriction could be related to the sampling as well, but not in terms of usage of the control "non-musical" group of subjects, which was taken as a reference

for differential analysis. Such a group could be of problematic representativeness as a non-musical population, in terms of the selection of types and their contribution, as well as the internal numerical ratio among the included non-musical professions.

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Glazbenik kao distinktivni sklop osobnosti – da ili ne?

Sažetak

U empirijskom istraživanju na uzorku ispitanika u Makedoniji diferencijalnim su pristupom ispitane razlike u osobinama osobe, uključujući i opću intelektualnu sposobnost, kod skupine glazbenika u odnosu na kontrolnu skupinu neglazbenika. Uzorak obuhvaća ukupno 629 ispitanika, od kojih je 288 glazbenika iz područja klasične glazbe triju dobnih skupina (učenici srednje glazbene škole, studenti fakulteta glazbene umjetnosti i profesionalni glazbenici s visokom glazbenom naobrazbom). Uzorak je obuhvaćao 341 neglazbenika odgovarajuće dobne strukture (učenici neglazbenih srednjih škola, studenti više neglazbenih fakulteta i ispitanici sa završenim fakultetom iz neglazbenih područja). Individualne razlike testirane su s pomoću četiri mjerna instrumenta: inventarima osobnosti 16PF R. Cattella (revidirana verzija, 1993), EPQ H. Eysencka (1975) i NEO PI-R Coste i McCraea (1990), kao i J. Danielsovim Testom rezoniranja osoba TRL (FRT, 1962, jugoslavenska revizija, 1983) kao mjerom opće intelektualne sposobnosti.

Multivarijantna analiza varijance (MANOVA) indicira rezultate koji su općenito u sinergiji s referentnim spoznajama o sklopu osobnosti glazbenika iz klasičnih radova britanskoga glazbenog psihologa Anthonyja Kempa. Identificirane su razlike između glazbenika i neglazbenika u području nekoliko faktora drugoga reda: introverzija – ekstraverzija, anksioznost – prilagođenost, afektivnost – racionalnost, viša (verbalna) inteligencija – niža (verbalna) inteligencija, dobar odgoj – loš odgoj. Naši su podatci, u tom kontekstu, potvrdili postojanje čak četiriju od pet atributivnih dimenzija glazbenoga temperamenta prema Kempu: introverzije, afektivnosti, anksioznosti i inteligencije. Nije, međutim, potvrđeno postojanje atributivne dimenzije neovisnosti. Na elementarnijoj je razini, u vezi s razlikama prema neglazbenicima po pojedinačnim dimenzijama i crtama osobnosti, nađeno statistički značajno odstupanje na čak 18 od 26 testiranih osobina osobe. Najizraženije jezgre distinkcije glazbenika prema neglazbenicima (najveća vrijednost snage efekta) utvrđene su na dimenzijama neuroticizma i savjesnosti iz inventara NEOPI-R Coste i McCraea i na izvornoj crti F (surgencija – desurgencija) iz Cattelova inventara 16PF. Dobiveni su rezultati iznimno eksplicitno potvrdili distinktivnost sklopa osobnosti glazbenika klasične glazbene naobrazbe, tj. egzistenciju osebujnoga "glazbenog temperamenta", što se očituje u specifičnoj kombinaciji osobina osobe inherentnoj ljudima iz miljea klasične glazbe.

Ključne riječi: *glazbeni temperament; glazbenici; inteligencija; neglazbenici; osobine osobe.*