Musical Temperament from a Developmental Perspective

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Abstract

An empirical differential study examining differences in personality traits and general intellectual ability among three different age-based groups of classical musicians (students attending a music high school, music university students and senior professionals with university degree in music) was conducted on Macedonian sample (288 respondents in total). Individual differences were tested employing four measuring instruments: 16PF, EPQ and NEO PI-R personality inventories, as well as the FRT (TRL) as an IQ test.

A differential (one-way ANOVA) approach based statistical data processing indicated several major differences in personality traits, but not in general intelligence among the groups. High school students proved to be more extroverted and more uncompromising, but also less conscientious and with lesser imagination than adults, while university students showed proneness to fantasy, unconventionality and appreciation of art and beauty more than others. Overall, the university students scored more or less somewhere between the high-school students and the adult musicians on a vast majority of measured traits, which suggests the existence of specific developmental line of the differential traits, alongside the age, experience and musicianship growth.

Key words: *age; individual differences; musicians; musicianship; personality traits.*

Introduction

Considering the concept of personality traits as the basic constituting element of the personality is the dominant approach to the structure of personality, and as such it is broadly accepted today in the modern psychology of personality. We are speaking of a broad system of similar tendencies of behavior, characteristic for the individual, i.e. permanent dispositions which explain the relative consistency of the temperament, the emotional and the social behavior. The traits are nothing else but internal factors

which directly determine the direction, the modality and the intensity of the reactions in given situations. To be more specific, an individual reacts relatively consistently in similar situations, more or less in the similar way, and this consistency determined by the personality traits allows the development of a relatively stable image of the individual.

Several questions arise from the acceptance of the trait as a relatively permanent entity in the organization of the personality, or a combination of cognitive, affective, dynamic and behavioral elements unique for each individual. The time stability of the traits, i.e. if they are resistant to changes, may be one of the most discussed questions (Hanna & MacKay, 2011; Löckenhoff, Terracciano, Patriciu, Eaton, & Costa, 2009; Roberts & Mroczek, 2008; Roberts, Wood, & Caspi, 2008; Specht, Egloff, & Schmukle, 2010). Researchers generally agree that personality traits are prone to change over the years and different life stages, and they are a reflection of the natural processes of maturation and the changes in personal, familial and social surroundings (McCrae & Costa, 1994; Roberts & Mroczek, 2008; Small, Hertzog, Hultsch, & Dixon, 2003; Soto, John, Gosling, & Potter, 2011; Tellegen, 1988). One of the most extensive research studies regarding this matter, a meta-analysis of 92 longitudinal studies in this field (Roberts, Walton, & Viechtbauer, 2006), has shown that clear changes were indicated in approximately 75% of the investigated traits in both mature and elder respondents.

Without doubt, the evolving quality of the personality traits is one of their attributes, in the sense that they are universal and omnipresent. This has been confirmed numerous times, using different research approaches (both longitudinal and transversal), as well as including respondents with different profiles or categories (age, culture, education, profession, etc.). The series of extensive empirical studies conducted at the British University in Reading by Dr. Anthony Kemp (1981a, 1981b, 1982b, 1996, 1997) are extremely important for the music population in terms of this issue. These seminal studies of the personality of musicians are definitely not the pioneering ones from a chronological point of view, but they are undoubtedly the first comprehensive, methodologically mature and consistent efforts to delve deeply into the internal structure of the personality of musicians, also dealing with the intergenerational differences in the personality traits of musicians (Bogunović, 2012; Buttsworth & Smith, 1995). Kemp's findings are the result of an extensive transversal research approach, with a theoretical starting point based on Cattell's theory of personality. In one of his first studies in this area, Kemp (1981a) tries to identify the main genuine traits of the musical temperament, with an emphasis on their developing context, using a transversal sketch based on three age groups of musicians: high school students of music, university students of music and adult professional musicians. The idea behind the age stratification, apart from identifying the traits, is to get an insight into the potential developmental characteristics during the three different stages of the musical development. The instruments include Cattell's inventories HSPQ and 16PF, while the sample is exceptionally broad: 496 high school students (ages 13 -

17), 688 university students (ages 18 - 24) and 202 professional symphony orchestra players. Subgroups of extra talented high school students (69) and university students (220) were statistically marked in the high school and university groups, based on the grounds of their academic achievements. High school and university students from non-musical schools and colleges constituted the control group. The necessary exclusions were made so that the members/participants of the control group were not actively involved in music in any form. The results of the sample of adults were compared to the global norms of the inventory 16PF. Due to the broad sample, Kemp (1996) was able to statistically control the relevant variables (gender, age, social and economic status, etc.) in an efficient way.

The results obtained by Kemp (1996) revealed many interesting relations in the structure of the musical temperament, not only in comparison to the non-musical control sample, but also in terms of internal differences in the music sample depending on age and experience, i.e. the level of musicianship. High school students, in comparison to the peers from the control group, turned out to be more intelligent (B+), submissive (E-), having a stronger super ego (G+), more sensitive (I+), with more individualized approach (J+), more independent (Q2+), and with better self-discipline, i.e. self-control (Q3+). At the level of the second-order factors, Kemp summarized their profile in four attributes: Introversion (J+, Q2+), Pathemia, i.e. Affectiveness (E-, I+), Intelligence (B+) and Good upbringing (E-, G+, Q3+). The university students differed from the control group in being more reserved (A-), brighter (B+), emotionally more fragile (C-), more serious (F-), with a stronger super ego (G+), more sensitive (I+), with greater imagination (M+), more prone to feeling guilt (O+), more independent (Q2+) and more tense, i.e. more frustrated (Q4+). At the level of the second-order factors, the university students were described by the following attributes: Introversion (A-, F-, Q2+), Anxiety (C-, O+, Q4+), Pathemia (I+, M+), Intelligence (B+) and Good upbringing (F-, G+). Regarding the adult musicians, the discrepancies from the norms of the 16PF inventory were as follows: introversion (A-), intelligence (B+), sensitivity (I+), imagination (M+), close-mindedness (N-) and self-sufficiency (Q2+), as characteristic for both genders; emotional fragility (C-), suspiciousness (L+), feeling of guilt (O+), radicalism (Q1+) and self-control (Q3+) only in males; dominance (E+) and tension (Q4+) only in females. At the level of the second-order factors Kemp emphasized the following attributes in the adult musicians: Introversion (A-, Q2+), Anxiety (C-, L+, O+, Q3+ in the males, Q4+ in the females), Pathemia (I+, M+), Independence (L+, M+) in the males, (E+, M+) in the females, Spontaneity (A-, N-), Subjectiveness (M+, Q1+) only in the males, and Intelligence (B+).

The results of the two sub-groups of talented high school and university students are also interesting. The talented high school students were mostly characterized as introverted (A-), irritable (D+), shy (H-), independent, i.e. with a more individualized approach (J+) and prone to feeling guilt (O+), in comparison to their less talented

peers. At the level of the second-order factors, Kemp emphasized the following attributes: Introversion (A-, J+, H-) and Anxiety (D+, H-, O+). The talented university students manifested introversion (A-), dominance (E+), weaker super ego (G-), imagination (M+), radicalism (Q1+) and self-sufficiency (Q2+), which at the level of second-order factors indicates Introversion (A-, Q2+), Independence (E+, M+), Subjectiveness (M+, Q1+) and Poor upbringing (E+, G-).

Method
Hypotheses and Variables

This study aims to detect the differential personality traits and general intelligence of the academic musicians (undergraduate or graduate) in the area of classical music, based on their age, i.e. the degree of music education and experience. The goal of the paper is to provide basic identification of the differential personality traits, including general intelligence, among the three different age categories of musicians. *The research hypothesis that differences exist in the expression of the personality traits among the academically educated musicians based on their age (music education and experience) will be tested.*

The research procedure in this paper is based on the research approach of the "ex post facto" design, which basically relativizes the traditional categorization of the variables into criterion and independent, i.e. behavioral and stimulus-based. In models like this one, the accurate positioning of the variables is basically irrelevant, but in this paper, the personality and the intelligence will nominally be used as criterion variables, while belonging of the respondent to one of the three age groups will be the independent variable.

Instruments

The measurements of individual differences in this research 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). Having been scrutinized countless times, homogeneity and reliability of this inventory prove particularly strong, among the best. Test-retest reliabilities average 0.80 over a two-week interval, ranging from 0.69 to 0.87, depending 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, obtained by Cronbach's alpha on 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 earlier versions of inventory, the P-scale in particular, were much better in later reports, 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 sufficiently 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, and 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) and 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's alpha, 79 respondents).

Daniels Figure Reasoning Test, widely known as FRT (Daniels, 1962), adapted to be used on the Yugoslav 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 widely known tests of general intelligence are very high, ranging from 0.71 to the Domino D-48, 0.86

to the Stanford-Binet, up to 0.93 to the Raven's Progressive Matrices. The authors of the Yugoslav edition report 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 288 subjects divided into three basic groups, according to the level of music education: (a) students of the 3rd and the 4th year of a secondary music school (N=69), with the average age of 18 years and 2 months; (b) students of first to fourth year at the Faculty of Music (N=104), with the average age of 22 years and 5 months, and (c) professional musicians with higher education degree in music (N=115), with the average age of 42 years and 8 months. The first two categories consisted of students at MBUC "Ilija Nikolovski - Luj" and students at the Faculty of Music, both in Skopje. Professional musicians were mostly permanent or part-time members of the Macedonian Philharmonic Orchestra (N=37) or the Macedonian Opera and Ballet Orchestra (N=33), together with some of the teachers and accompanying teachers (mostly pianists) at MBUC "Ilija Nikolovski - Luj" (N=9) or at the Faculty of Music (N=17) in Skopje, closing the list with freelance artists (N=19).

Table 1 presents the education and gender structure of the three groups.

Table 1

Sample: education and gender structure

		Level of education			
		high school students	university students	adults	total
Gender	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

Data Analysis

The data matrix is dominated by variables of scale type, represented by measurement results on scales of personality inventories and the test of general intelligence. Other levels of measurement are represented in minimal amount, or more precisely, in the form of nominal level of measurement, in terms of belonging to one of the three age/education-based groups of musicians. In this constellation of variable types, the one-way analysis of variance (ANOVA) comes as a natural choice for the basic procedure of statistical analysis. However, the usual descriptive statistics (measures of central value, variability, etc.) were used continuously as supporting tools of the broader analysis.

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

Results

Table 2 presents the basic descriptive indicators of results scored on the personality inventories (due to space constraints, only personality traits which proved to be statistically significant were selected) and the test of general intelligence. The performed series of unilateral ANOVA tests, as can be seen, reveal that a higher portion (23 out of 51) of the criterion variables list produce a statistically significant

Table 2

Descriptives (only statistically significant selected, plus FRT), ANOVA basic & Scheffe post-hoc: three age/education-based groups of musicians

	high school students (HsS) (n=69)		university students (US) (n=104)		adult musicians (AM) (n=115)				
	M	SD	M	SD	M	SD	F	Sig.	Scheffe
FRT	31.59	3.50	31.07	3.17	30.95	3.28	0.849	.429	/
A	13.62	2.05	11.65	2.41	10.83	2.08	34.551	.000**	HsS>US>AM
F	15.15	2.26	13.37	2.42	13.36	2.14	15.765	.000**	HsS>US,AM
G	12.34	2.43	12.91	2.40	13.19	2.01	3.060	.048*	AM>HsS
H	14.93	2.43	14.27	2.56	14.01	2.06	3.310	.038*	HsS>AM
L	10.44	2.02	11.49	2.53	11.64	2.46	5.853	.003**	AM,US>HsS
M	11.59	2.29	13.26	2.37	12.91	2.03	12.235	.000**	US,AM>HsS
N	10.38	2.11	11.72	2.20	11.47	2.03	8.705	.000**	US,AM>HsS
Q2	12.96	2.20	11.87	2.14	11.85	2.45	5.955	.003**	HsS>US,AM
Eepq	12.93	2.64	11.85	2.14	11.69	2.28	6.553	.002**	HsS>US,AM
Pepq	6.06	1.67	4.95	1.67	4.35	1.58	22.983	.000**	HsS>US>AM
E3	15.22	4.35	17.95	4.04	17.37	3.80	9.481	.000**	US,AM>HsS
E5	19.00	4.93	16.30	3.67	16.04	3.42	13.107	.000**	HsS>US,AM
E6	19.03	5.59	21.76	5.17	22.27	4.52	9.013	.000**	AM,US>HsS
O1	17.54	2.65	18.36	3.03	16.92	2.55	7.390	.001**	US>AM
O2	18.22	2.60	19.07	3.37	17.82	2.90	4.762	.009**	US>AM
O4	15.70	3.23	16.67	3.75	17.86	3.50	8.072	.000**	AM>US,HsS
A1	17.98	3.30	18.63	3.55	16.65	3.42	9.368	.000**	US,HsS>AM
A5	14.76	2.99	16.02	3.17	15.70	2.69	3.679	.026*	US>HsS
C1	19.30	3.55	21.06	3.47	21.54	3.17	9.253	.000**	AM,US>HsS
C3	18.27	4.05	21.27	3.68	21.39	3.96	15.284	.000**	AM,US>HsS
C4	18.52	4.26	21.76	3.05	21.73	3.19	21.814	.000**	US,AM>HsS
C5	18.63	4.79	22.59	3.31	23.15	2.53	38.179	.000**	AM,US>HsS

(*) level 0.05 of significance   (**) level 0.01 of significance

F-test, indicating statistically significant differences in scoring (arithmetic means) among the three age/education based groups. To be more specific, these are the traits A, F, G, H, L, M, N and Q2 from the 16PF, the dimensions Eepq and Pepq from the EPQ, including the aspects E3, E5, E6, O1, O2, O4, O5, A1, A5, C1, C3, C4 and C5 from the NEO PI-R inventory.

Subsequent post-hoc testing (Scheffe), as can be seen (Table 2), in most cases indicates that the group of high school students clearly stands out from the other two groups (university students of music and adult musicians), while differences between university students and adult musicians are less prominent.

Generally speaking, these results confirm the research hypothesis, i.e. that the academically educated musicians may differ among each other in personality traits depending on the degree of music education and experience.

The computed effect size (Partial eta, Table 3) of calculated statistical significance for criterion variables in this sample indicates, on average, *a moderate magnitude of its potential as an estimate of the trends in wider population.*

Table 3
ANOVA in-depth and effect size: three age/education-based groups of musicians

	Σ of Squares	df	Mean Square	F	Sig.	Partial eta²	Partial eta
TRL	18.433	2	9.217	0.849	.429	.006	.078
A	332.906	2	166.453	34.551	.000**	.200	.447
F	162.975	2	81.487	15.765	.000**	.102	.320
G	31.224	2	15.612	3.060	.048*	.022	.147
H	36.165	2	18.083	3.310	.038*	.023	.153
L	66.760	2	33.380	5.853	.003**	.041	.201
M	120.386	2	60.193	12.235	.000**	.081	.285
N	77.704	2	38.852	8.705	.000**	.059	.243
Q2	62.022	2	31.011	5.955	.003**	.041	.203
Eepq	70.516	2	35.258	6.553	.002**	.046	.213
Pepq	122.675	2	61.338	22.983	.000**	.144	.379
E3	305.708	2	152.854	9.481	.000**	.064	.252
E5	396.936	2	198.468	13.107	.000**	.086	.293
E6	453.256	2	226.628	9.013	.000**	.061	.246
O1	112.501	2	56.250	7.390	.001**	.050	.224
O2	87.062	2	43.531	4.762	.009**	.033	.182
O4	202.047	2	101.023	8.072	.000**	.055	.234
O5	118.707	2	59.354	4.002	.019*	.028	.170
A1	222.090	2	111.045	9.368	.000**	.063	.251
A5	63.754	2	31.877	3.679	.026*	.026	.160
C1	210.109	2	105.054	9.253	.000**	.062	.249
C3	459.979	2	229.990	15.284	.000**	.099	.314
C4	507.478	2	253.739	21.814	.000**	.135	.368
C5	899.409	2	449.704	38.179	.000**	.215	.464

(*) level 0.05 of significance   (**) level 0.01 of significance

Seeking a more elaborate picture of the range of the size of the measured effect, we systematized the results in a dedicated tabular image (Table 4). As can be seen, the effect size in most of the statistically significant criterion variables was small (13 out of 23 variables) or medium (8 out of 23) and only occasionally large (2 out of 23), according to the guidelines in the literature (Leech et al., 2005). In other words, *the indicated statistically significant differences among the three groups of musicians with a different level of music education and experience are expressed with relatively average or below-average intensity.*

Table 4

ANOVA: range of the effect size of significant differences among the three groups of musicians

Effect size in categories							
Small (η*≈0.14)		Medium (η*≈0.36)		Large (η*≈0.51)		Very large (η*≥0.70)	
				A	.447		
		F	.320				
G	.147						
H	.153						
L	.201						
		M	.285				
N	.243						
Q2	.203						
Eepq	.213						
		Pepq	.379				
		E3	.252				
		E5	.293				
E6	.246						
O1	.224						
O2	.182						
O4	.234						
O5	.170						
		A1	.251				
A5	.160						
C1	.249						
		C3	.314				
		C4	.368				
				C5	.464		

*η = eta (effect size)

A qualitative review throughout the tables above indicates that high school students are more prone to the following traits: open and warm (A+), carefree (F+), expedient (G-), adventurous (H+), naive (L-), practical (M-), simple (N-), self-reliant (Q2+), extrovert (Eepq+), rigid (Pepq+), kind (N2-), with lower capacity for leadership (E3-), stimulation seeking (E5+), with lower enthusiasm (E6-), cautious in taking actions (O4-), pragmatic (O5-), trust others (A1+), self-expressing (A5-), underestimate their own competence (C1-), less responsible for rules and obligations (C3-), with lower

ambition (C4-) and lower self-discipline (C5-). The variables A+, P+, C3-, C4- and C5- have the most prominent effect size, which means that *characteristics such as behavioral openness, rigidness and underdeveloped attitude towards the responsibilities appear as the main attributes distinguishing the high school students from the other two groups*
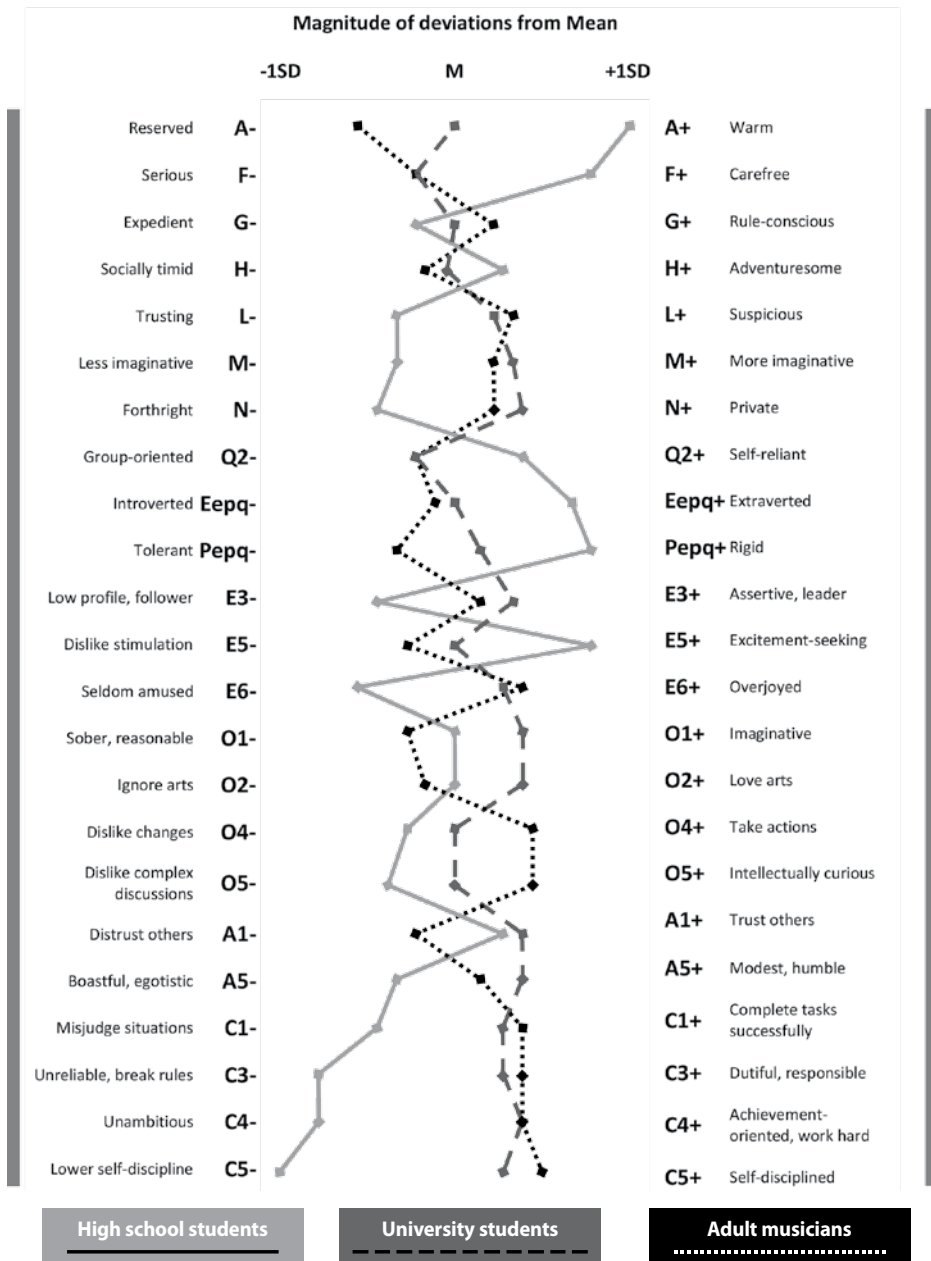

Figure 1. Three groups of musicians, dispersion around the arithmetic mean

of musicians. The university students emerge mostly prone to imagination (O1+), aesthetic interests (O2+), trust in others (A1+) and tender-mindedness (A6+). In a vast majority of the personality traits measured, adult musicians emerged situated on the opposite end in comparison to high school students, which means that the outline of their personality profile is determined via *traits such as behavioral distance, flexibility and tolerance, as well as well-developed attitude towards responsibilities.* No differences in general intellectual ability among three groups were shown.

Figure 1 vividly presents the directions and magnitude of differences, throughout the spectrum of the personality traits proven as distinguishing factors among the three groups.

Discussion

As a frame for the development of the level of music skills, knowledge and experience, i.e. musicianship, as well as an indicator of the general maturity of the personality, the level of music education in the previous research studies (nominally as the variable "age" – Kemp, 1996) has been confirmed as a relevant factor of individual differences in the music population numerous times. In this study, the music education is set as an ordinal measure in three successive degrees: *high school students, university students and professional musicians with university degree in music.*

The distribution of the differences among the three groups is shaped the way that in most of the cases (15 out of 23 personality traits) the scores of the university students are situated between the values of the high school students and the professional musicians. *Such a direction of the distinguishing traits not only implies that the most prominent differences are identified between the high school students and adult professional musicians, but also suggests existence of a logical developmental line in all these traits, which seems to follow the level of education and the music experience.* As compared to the other two groups, the university students emerged less divergent, being situated between the other two groups, but usually closer to the adult group. This line of distribution of the differences within the three groups suggests that the pace of the changes in the structure of the musical temperament, determined by education, is somewhat faster during the studies, which implies that late adolescence may be the crucial developmental period.

The analysis of the behavioral manifestations of the traits which distinguish the students from the academically trained musicians shows that they are mainly present in two areas: the *introversion-extraversion dimension and the approach, i.e. the degree of responsibility in terms of the obligations.* In this sense, the students are visibly (a) extraverted *(A+, F+, Eepq+, E5+)* and (b) manifest a notably lower degree of self-discipline and lesser responsibility for obligations *(G-, C1-, C3-, C4-, C5-).* The fact that exactly these two dimensions proved distinguishing should be logical and expected in the case of students, taking into consideration the temperament which is characteristic of their age, as well as the beginning of the development of the responsibility and the

work habits required for this profession. Analogously, the same could be said about the adult professional musicians, i.e. about their (a) introversion *(A-, F-, Eepq-, E5-)* and (b) self-discipline with highly developed responsibility and work habits *(G+, C1+, C3+, C4+, C5+)*. Judging from the effect size (mostly medium or large), the highlighted differences between these two age groups in this sample of musicians are visibly expressed, and as such, they should be eligible as valuable assessment of the trend in the wider music population. An earlier study conducted on the same sample (Mihajlovski, 2010) revealed that the factor structure of the introversion - extraversion dimension showed the absence (by a quite small margin, p<0.091) of an explicit statistical confirmation of the differences among the three categories of musicians in the case of Cattell's source trait threctia - parmia (shyness - adventure seeking, H), a constituting trait of the mentioned dimension in all three age groups. Also, the scores on the H-scale visibly decrease with the rise of the level of music education and experience.

In the context of these results, certain aberrant tendencies in the polarity of several differential traits are also interesting. To be more specific, our results suggest that the extraversion in the high school sample is accompanied by some traits, which logically, judging from experience as well as from a psychological point of view, should be more characteristic of the opposite, i.e. the introvert type of temperament. As such, we note Cattell's trait Q2, as well as the aspects E3 and E6 from the Enpr domain (NEO PI-R inventory). More precisely, *in Cattell's (1981) original integration extraversion is associated with group dependence (Q2-), whereas in our results in the group of high school students, extraversion is associated with the opposite end of the trait Q2, i.e. self-sufficiency (Q2+).* Brought down to behavioral traits, the extraverted musical high school students display independence and individuality in personal decisions (Q2+), contrary to Cattell's (1981) general extraverted type (general population), which depends on the opinions and affection of others (Q2-). It seems that certain social and cultural characteristics of Macedonian population, unlike mostly Anglo-Saxon population, based on which Cattell made the measurements, could play an important role in this inversion of the Q2 trait, apart from the characteristics of the temperament of the high school adolescent population, as an age-based category (Mihajlovski, 2010).

In the same way, there is an unusual polarity of the aspects E3 and E6 from the NEO PI-R. Apart from the usual behavioral traits of extraversion (being sociable, cordial, easy-going and spontaneous, open to cooperation and expression of emotions, optimistic, with an "everything is all right in this world" attitude, highly enthusiastic, open to new experiences, etc.), measured with the inventories 16PF and EPQ, the high school students simultaneously manifest certain indicators of contradictory traits, close to the "background" type of individual, who is unimposing, does not distinguish himself or herself in group situations, who is prone to accept what is imposed by the dominant individuals, and is characterized by being modest, unimposing and reserved (subscales E3 and E6 from NEO PI-R). Analogously, apart from the clear

changes of the temperament towards introversion, the academically trained adult professional musicians display traits of a profile whose descriptors, apart from being highly enthusiastic (E6+), also include dominance, social supremacy, leadership and charisma, typical of the aspect Assertiveness (E3+). Nevertheless, a precise answer concerning this contradiction in the indicators of the same patterns of behavior among the different personality inventories is beyond the scope of this study.

However, the previously highlighted unusual presence of the trait independence (Q2+) in the mostly extraverted profile of the future musicians from high school, combined with being relentless and rigid (Pepq+) plus narcissistically self-promoting (A5-), could indicate elements of relatively *problematic socialization of the youngest category of musicians.* The existence of this combination of traits in the profile of the high school students agrees with Garder's (1955, as cited in Kemp, 1981a) old thesis about somewhat lower social adjustment of this age category of musicians, based on the presence of traits like individualism (J+) and self-sufficiency (Q2+) in high school students. On the other hand, the traits which point to a more successful social adjustment in the adult musicians are respect and orientation towards the group attitude and interests (Q2-), combined with leniency, understanding and tolerance (Pepq-), including manifestation of trust in others and tolerance (A5+).

The university students display a notably lower number of differential traits in comparison to the other two groups. What we found interesting was the simultaneous elevation of the indicators in some subscales of the domain Openness (Onpr) from the NEO PI-R inventory plus Cattell's trait M, as well as a notably higher average score on the subscales in the domain of Agreeableness (Anpr) from the NEO PI-R. *The university students are characterized by above-average expressed behavioral traits such as proneness to fantasy, unconventional reasoning, creativity and idealism (M+, O1+), as well as aesthetic interests (O2+), which is a natural reflection of the choice of art of music as the future profession.* As a comparison, the indicators of these traits decrease in the academically trained musicians (lower scores in comparison to the high school students as well, in O1 and O2), which is not unexpected, taking into consideration maturity as a period of shaping the general professional and living environment, often giving a more important role to the existential instead of the artistic aspects when dealing with music professionally. The university students make an exception in this NEO PI-R domain in terms of *relatively lower degree of dynamics, initiative and proneness to action (O4-), plus a lower range of interests (O5-), in comparison to the adult musicians.* As noted above, the university students also differ from the other two groups in the domain of Agreeableness (Anpr), manifesting a higher level of expression of some traits in the area of the affective aspects of the relationship with others. To be more specific, they are *prone to trust others and to be generous, to forgive easily, to be peaceful, to have higher tolerance and understanding (A1+), as well as to be modest and tolerant (A5+).* The processes of emotional maturation and development of personality in the period of late adolescence form the natural frame for creation and

development of constructive social patterns, one of which is the mentioned one, so that its existence in the university students certainly contains a positive social dimension. *In this sense, we find less satisfactory the fact that the indicators of the described positive social pattern notably decline in the academically trained adult professional musicians.* This relation seems to be particularly explicit in the degree of trust in others, while it regresses towards the opposite end, i.e. perceiving others as untrustworthy, even dangerous, with no trust in their good intentions, manifesting behavioral traits such as suspicion, lack of trust, fragility, cynicism and pessimism (A1-).

Notably, no significant difference among the three groups was shown in the level of the general cognitive ability. Nevertheless, what could be noteworthy is a slight drop in the score as age increases (high school students on average scored highest, adult professionals scored lowest), which may be a confirmation of the assumed age-determined gradual decline of the mental processing speed, which is an essential feature of the fluid intelligence (Cattell, 1981) as mental ability, which the measuring tool we used (FRT test) is saturated with.

Conclusion

The distribution of the established differences among the musicians with a different degree of music education and experience is shaped in the way that, in most cases, the scoring of the university students is placed between the score of the high school students and that of the adults, which suggests that *there is a logical developmental line in all these traits, which follows the changes in the degree of education, i.e. the musical maturation and maturation in general.*

The distinction line between the high school students and the adult musicians is notably present in two categories: *the introversion-extraversion dimension and the approach to responsibility for obligations. The high school students are extraverted and display lesser self-discipline and underdeveloped responsibility for obligations.* The fact that these two traits were distinguished is logical and expected in students, taking into consideration their young age, i.e. the temperament characteristic of their age. *The university students are characterized with above-average expressed behavioral traits like proneness to imagination, unconventionality, creativity and idealism, as well as aesthetic interests,* which is an expected result of the choice of the art of music as the future profession. *Adult musicians, as the final stage of the evolution of the musical temperament, differ in terms of multiple traits of introversion and higher degree of self-discipline, reliance and responsibility.*

The researcher is aware of several potential weaknesses of this study. The transversal differential design, as an approach employed in this research, deals with numerous difficulties in terms of a need to deal with a range of possible relevant variables. In this sense, more categorical findings about the age and/education-based evolution of the personality traits could be discovered via research procedure with a longitudinal design. Another possible weakness of the study may be the non-existence of an internal distinction among the variables of musical maturation, musical experience

and music skill, which are all intertwined in this study and used almost as synonyms to the linear chronological age. In fact, all these variables are relatively independent of each other, so an ideal research design should be based on operatively independent measurements for each of them. Of course, the potential limitations of the paper also include the uniformity of the social and cultural environment where the results were derived from, which itself undoubtedly compromises the potential for generalization of the findings. In the context of the previously mentioned issues, the findings in this paper could objectively have a value of detection of possible tendencies, with no intentions of giving firm and final conclusions.

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Glazbeni temperament s razvojne točke gledišta

Sažetak

Empirijsko istraživanje razlika u crtama ličnosti i općoj intelektualnoj sposobnosti kod tri dobne skupine glazbenika klasične glazbe (učenika srednje glazbene škole, fakultetskih studenata glazbe i odraslih profesionalnih glazbenika s fakultetskom diplomom iz područja glazbe) provedeno je na uzorku od ukupno 288 ispitanika. Individualne razlike testirane su uporabom četiri mjerna instrumenta: inventara ličnosti 16PF, EPQ i NEO PI-R, kao i FRT (TRL) kao testa opće intelektualne sposobnosti.

Diferencijalnim pristupom (ANOVA) u statističkoj obradi podataka pokazano je nekoliko uočljivih razlika u crtama ličnosti, ali ne i u općoj inteligenciji između tri skupine. Učenici su se pokazali ekstrovertiranijima i rigidnijima, ali i manje savjesnijima, zatim niže imaginacije u usporedbi s odraslim profesionalcima, a studenti glazbe pokazali su iznadprosječnu sklonost imaginaciji, nekonvencionalnosti i zanimanju za umjetničko i estetsko u odnosu na ostale. U cjelini, studenti su na najvećem dijelu testiranih crta ličnosti ostvarili pokazatelje u prostoru između učenika i odraslih profesionalnih glazbenika, što bi moglo sugerirati postojanje osobite razvojne linije diferencijalnih crta ličnosti, slijedeći dob, iskustvo i napredovanje u glazbenoj izvrsnosti.

Ključne riječi: *crte ličnosti; dob; glazbena izvrsnost; glazbenici; individualne razlike.*