Psychological Perspectives on Musical Experiences and Skills

Research in the Western Balkans and Western Europe

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14. The Personality of Music Students with Diverse Vocal and Instrumental Skills

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Introduction

Individual differences in personality are widely investigated, and since the development of the Big Five model (Goldberg, 1990) and the Five-Factor Model (Costa & McCrae, 1992), a framework with five broad personality factors (Extraversion, Agreeableness, Conscientiousness Neuroticism, Openness) has become dominant in personality psychology. Meta-analyses have indicated that those five personality traits are associated with diverse outcomes, such as job performance (Barrick & Mount, 1991), academic performance (Poropat, 2009), job satisfaction (Judge et al., 2002), relationship satisfaction (Malouff et al., 2010), subjective well-being (DeNeve & Cooper, 1998), and resilience (Oshio et al., 2018). A recent study investigated whether these associations between personality traits and different life outcomes were replicable. Soto (2019) conducted preregistered, high-powered replications of 78 previously published trait-outcome associations and found that 87% of the replication attempts were statistically significant in the expected direction. In addition, a subsequent study showed that most trait-outcome associations were generalised across gender, age, and ethnicity (Soto, 2021).

Individual differences in five personality factors have also been related to occupational choices. Two meta-analyses (Barrick et al., 2003; Hurtado Rúa et al., 2019) have examined the association between the Five-Factor Model of personality and Holland's (1997) occupational types, and found the highest association between Openness and the artistic

type. However, the results have also indicated that the measurement scale was a significant moderator of this association, suggesting that the obtained correlations might differ depending on the measures applied to assess personality traits. Using longitudinal data from Germany, John and Thomsen (2014) found that personality scores are linked with the probability of working in a specific occupational group. Similarly, Wells et al. (2016) found that personality significantly influenced the probability of an individual choice or of an individual being chosen for a particular occupation using a longitudinal data set from Australia.

Another interesting research question is whether personality differences in specialty selection in a specific occupation exist. Recently, Woods et al. (2016, p. 265) have given two possible propositions about the correlation between personality traits and occupational specialty. One proposal is that personality traits that lead to a gravitation towards specific occupations are not associated with job specialisation within those occupations. This is because people choosing a specific occupation are similar in their personality traits, and professional environments for different careers within the same occupation are similar as well. The other proposal is that personality traits are associated with specialty choice when traits are conceptually related to job activity variation across different job specialisations. If there are within-occupation career choices that vary in their appeal to people who are high or low on a specific trait (e.g., Agreeableness), then that trait (i.e., Agreeableness) will be associated with a particular choice of specialty. This issue was mainly investigated in the medical profession (e.g., Borges & Savickas, 2002; Mullola et al., 2018; Woods et al., 2016). In the UK, Woods et al. (2016) found that Agreeableness and Neuroticism were associated with selected specialties of doctors, while in Finland, Openness was associated with physicians' career choices (Mullola et al., 2018). These two competing hypotheses about the correlation between personality traits and occupational specialty are also examined in this study.

In music psychology, both the personality of musicians and their differences from people in other occupations or the general population, and personality differences related to specialty selection have been investigated. Studies have indicated differences in the personality of musicians compared to the personalities of those in other occupations and the general population. Vaag et al. (2018) compared Norwegian musicians to the general workforce. They found that musicians displayed higher degrees of Neuroticism and Openness to experience, and lower degrees

of Conscientiousness. Similarly, Swedish musicians, both professional and amateur, were compared with non-musicians from a sample from the Swedish Twin Registry (Kuckelkorn et al., 2021). Significant group differences were found in Openness, with professionals scoring higher than amateurs, who in turn scored higher than non-musicians, and with professionals showing higher Neuroticism, lower Agreeableness, and lower Conscientiousness than amateurs. Butković and Rančić Dopuđ (2017) compared Croatian male musicians who self-identified as classical or heavy-metal musicians to the general population norms and found the former had higher scores on Extraversion, Agreeableness, and, especially, Intellect. A comparison of vocalists, instrumentalists, and non-musicians across the US indicated that vocalists had higher scores on Extraversion and Openness/Intellect than non-musicians (Torrance, 2017). Mihajlovski (2016) compared musicians and a control sample of non-musicians from Macedonia. Significant differences were found in Neuroticism, Openness, and Conscientiousness, with musicians scoring higher. Sandgren (2019) compared vocalist and instrumentalist music students to a control group of psychology students and found no personality differences between them, while vocalists had higher scores than the control group on Extraversion, Agreeableness, and Openness. Gjermunds et al. (2020) compared samples of self-identified musicians and non-musicians recruited on the Internet and found that the musicians had significantly higher scores on Openness and lower scores on Conscientiousness. In sum, the review of the literature has indicated that the results were consistent only for musicians having a higher level of Openness, in line with two meta-analyses findings that Openness is the most essential personality trait for the artistic type (Barrick et al., 2003; Hurtado Rúa et al., 2019).

Next, findings about the association between personality traits and occupational specialty in musicians are reviewed with special reference to the personality scale applied in the study, since the measurement scale was found to be a moderator of the personality-occupational type association (Hurtado Rúa et al., 2019), and the generalisability of trait-outcome associations across personality measures has not yet been examined (Soto, 2021). The first group of studies applied personality measures of the Five-Factor Model (Costa & McCrae, 1992). Langendörfer (2008) examined the personality of professional orchestra members in Germany using NEO Five-Factor Inventory (NEO-FFI) and found that string players had higher Conscientiousness than the other

musicians. Bogunović (2012) compared pianists, string players, and wind instrument players together with solo singers and music theorists using NEO Personality Inventory Revised (NEO-PI-R) in a combined sample of pupils, students, and professional musicians, and found differences in Extraversion, Openness, and Agreeableness. Mihajlovski (2013) compared piano, strings, woodwind, and brass instrumentalists, using NEO-PI-R in a combined sample of Macedonian pupils, students, and professional musicians. The largest difference was found for Openness, with brass players having lower scores than the other groups.

The second group of studies applied personality scales based on the International Personality Item Pool (IPIP). Torrance (2017) compared personality traits in music students of different ensemble instrumental section groups using IPIP-50. Significant MANOVA results were found for Agreeableness and Neuroticism. Personality differences were not found using the same scale between classical and heavy-metal male musicians (Butković & Rančić Dopuđ, 2017). Torrance and Bugos (2017) examined personality differences using the Big Five IPIP scale amongst music students divided into vocalist and instrumentalist groups, and found that vocalists had higher Extraversion than instrumentalists. Similar differences were found in a study investigating popular music genre musicians, namely bassists, drummers, guitarists, and vocalists, and using Mini-IPIP to measure personality (Cameron et al., 2015). Singers showed higher Extraversion than bassists and drummers and had higher scores on the Intellect/Imagination dimension than drummers.

The third group of studies applied versions of the Big Five Inventory (BFI) measure, also used in this study. Vaag et al. (2018) examined differences in a sample of professional musicians. They found with BFI-20-N that vocalists scored higher on Openness to experience, while string players scored higher on Neuroticism (both bowed and plucked) and Introversion (only bowed). Two studies on music students examining differences between instrumental groups found no personality differences between musicians (Butković & Modrušan, 2021; Sandgren, 2019). Butković and Modrušan (2021) applied a short BFI-10 measure, which measures each of the five factors with only two items, to pianists, singers, string, woodwind, brass, and music pedagogy students; while Sandgren (2019) applied a longer BFI measure with 44 items to only vocalists and instrumentalists. Kuckelkorn et al. (2021) found with BFI-44 that singers were higher on Extraversion than instrumentalists amongst both professional and amateur groups of

musicians. They also found personality differences between instrumental players, but the patterns were inconsistent. Since most studies reviewed here indicated that Openness and Extraversion are personality traits which show personality differences among different musicians' specialisations, personality differences in this study are expected for those two traits.

In sum, findings on the relations between personality traits and occupational specialty in musicians are mixed. Studies have applied various personality measures, examined distinct instrumental groups, had different sample sizes and design, and obtained inconsistent results. Significant differences between instrumental groups concerning personality traits (Extraversion, Openness, Agreeableness, Conscientiousness) have mainly been found with measures of the Five-Factor Model. However, these findings were from studies using personality measures with the highest number of items, e.g., NEO-PI-R. Studies using IPIP measures indicated personality differences between vocalists and instrumentalists, especially in Extraversion. As for BFI, the largest studies, with Norwegian (Vaag et al., 2018) and Swedish (Kuckelkorn et al., 2021) musicians, found significant personality differences, while smaller studies (Butković & Modrušan, 2021; Sandgren, 2019) have not found them. Therefore, based on these previous findings, a measure of the Five-Factor Model with a larger number of items compared to the one previously used on the Croatian sample was used in this study. In addition, some studies included only professional musicians, some only music students, and some had combined samples that covered a wide age range, from music pupils to professional musicians. The age and gender composition of the sample might have influenced the results (e.g., Soto et al., 2011). Therefore, a gender-balanced sample of music students who were more homogeneous in age and professional experience was used in this study to examine personality differences.

Aims

This study aimed to examine personality differences in a sample of music students with diverse vocal and instrumental skills using a longer 44-item BFI measure. Music students as a group are relatively homogeneous in age, and in Croatia, they have already been through 10 years of music education before starting their studies, which pertains to the finding that 10 years or more are needed to become an expert in a field (Richman et al., 1996). Two

competing hypotheses are stated, based on Woods et al.'s (2016) propositions and prior results. The first is that personality traits are not associated with an occupational specialty in music, so there will be no personality differences among instrumental groups. The opposite hypothesis is that personality traits are conceptually related to job activity variation across instrumental groups, which means that personality differences between instrumental groups will be found. Job activation variation among musicians can stem from different technical demands of the instruments (how they are played, a physical difficulty for a player, practice time) or job positions (solo, chamber, orchestra). Based on the results from previous studies, personality differences are primarily expected in Openness and Extraversion, with vocalists having higher scores than instrumentalists.

Methods

Participants and procedure

Students of the Academy of Music in Zagreb participated in the study ($N = 370$, 58% female). They filled in the questionnaire during their psychology classes. They were asked about their study group. Students who did not specify their study programme ($n = 7$) and who only mentioned the department they were studying at ($n = 8$) were excluded from the sample, since they could not be allocated to any instrumental group/study programme. The remaining 355 students belonged to the following groups: theory and conducting ($n = 18$), musicology ($n = 28$), music pedagogy ($n = 63$), voice ($n = 25$), keyboard ($n = 66$), string ($n = 90$) and wind ($n = 65$) instruments.

Since the study aimed to examine personality differences among music students with diverse vocal and instrumental skills, only voice, keyboard, and string and wind instrument students ($N = 246$, 55% female) were included in further analysis. The participants were mainly (93%) in their first year of studies ($M = 19.31$, $SD = 1.98$, range 15–35 years). Additional analyses were run with a string group divided into bowed ($n = 44$) and plucked ($n = 12$) strings, and a wind group divided into woodwind ($n = 29$) and brass ($n = 15$) players. This was done since previous studies have indicated that personality differences are obtained for specific instrumentalist groups such as brass players (e.g., Mihajlovski, 2013) or bowed strings (e.g., Vaag et al., 2018). The number of participants is smaller compared to the number

included in the main analysis because students who did not specify their instrument were not included in this level of analysis.

The study was approved by the Department of Psychology's Ethics Committee.

Materials

All participants in the study filled in the Big Five Inventory (BFI; John et al., 1991, 2008) which has 44 items: eight measuring Extraversion and Neuroticism, nine measuring Agreeableness and Conscientiousness, and 10 measuring Openness. Participants indicated on a scale from 1 (disagree strongly) to 5 (agree strongly) the extent to which they agreed or disagreed with each item. Cronbach's alpha reliabilities for each dimension in this study are presented in Table 14.1.

Data analysis

For descriptive analyses means, standard deviations and reliability were calculated. To test for mean differences between the groups, ANOVA was run, followed by post-hoc analyses conducted using Tukey's HSD test. The eta squared (η^2) was calculated as an effect size measure. The data were analysed using IBM SPSS Statistics (Version 26) software.

Results

Descriptive statistics for personality traits in four instrumental groups and ANOVA results are presented in Table 14.1. Obtained mean values for personality traits were in line with previous findings in a student sample in Croatia (e.g., Tödtling, 2013). Bonferroni correction was calculated to adjust for multiple comparisons, and obtained value was $p < .008$. Applying this correction, no significant differences in personality between music student groups were found for Neuroticism, Extraversion, Agreeableness, or Conscientiousness. The ANOVA did show significant differences in Openness with medium large effect size, $F(3,242) = 8.73$, $p < .001$, $\eta^2 = .10$. A post-hoc Tukey procedure indicated that wind instrumentalists ($M = 3.81$, $SD = .59$) had lower Openness scores than keyboard instrumentalists ($M = 4.18$, $SD = .45$) and vocalists ($M = 4.29$, $SD = .47$).

Table 14.1 Descriptive statistics for four instrumental groups and results of ANOVA

Measure	α	Voice $n = 25$		Keyboard $n = 66$		String $n = 90$		Wind $n = 65$		ANOVA		
		M	SD	M	SD	M	SD	M	SD	F(3,242)	p	η^2
N	.82	2.37	.57	2.66	.73	2.74	.66	2.74	.90	1.81	.147	.02
E	.79	3.94	.49	3.49	.70	3.48	.63	3.62	.61	3.78	.011	.04
O	.79	4.29[1]	.47	4.18[1]	.45	4.03	.44	3.81[2]	.59	8.73	<.001***	.10
A	.64	3.89	.44	3.54	.45	3.59	.56	3.62	.62	2.62	.051	.03
C	.76	3.64	.54	3.51	.64	3.38	.57	3.54	.58	1.82	.145	.02

Note. α = Cronbach's alpha reliability; *n* = number of participants; *M* = mean; *SD* = standard deviation; *F* = F – ratio; *p* = *p* value; η^2 = eta squared; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness. Means with different superscripts differ at the *p* <.001 level with Tukey's HSD test. Different superscripts indicate between which groups post-hoc Tukey indicated statistically significant differences (1 differs from 2).

*p < .05; **p < .01; ***p < .001

A horizontal version of this table may be viewed online at https://hdl.handle.net/20.500.12434/23b8a5a1

Table 14.2 Descriptive statistics for six instrumental groups and results of ANOVA

Measure	Voice $n = 25$		Keyboard $n = 66$		Bow string $n = 44$		Pluck string $n = 12$		Woodwind $n = 29$		Brass $n = 15$		ANOVA		
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	$F_{(5,185)}$	p	η^2
N	2.37	.57	2.66	.73	2.66	.69	2.79	.78	2.77	.93	2.84	1.10	1.05	.389	.03
E	3.94	.49	3.49	.70	3.54	.67	3.42	.47	3.50	.56	3.60	.83	1.98	.084	.05
O	4.29[1]	.47	4.18[1]	.45	4.08	.45	3.98	.42	3.89	.61	3.56[2]	.51	5.90	< .001***	.14
A	3.89	.44	3.54	.45	3.70	.53	3.34	.61	3.65	.63	3.50	.72	2.55	.029	.06
C	3.64	.54	3.51	.64	3.34	.60	3.32	.61	3.54	.61	3.45	.51	1.08	.375	.03

Note. n = number of participants; M = mean; SD = standard deviation; $F = F$ − ratio; p = p value; η^2 = eta squared; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness. Means with different superscripts differ at the $p < .001$ level with Tukey's HSD test. Different superscripts indicate between which groups post-hoc Tukey indicated statistically significant differences (1 differs from 2).

*$p < .05$; **$p < .01$; ***$p < .001$

A horizontal version of this table may be viewed online at https://hdl.handle.net/20.500.12434/fac078d9

Analyses were repeated on subgroups to examine if additional personality differences would be revealed, and the results are presented in Table 14.2. Again, Bonferroni correction was calculated to adjust for multiple comparisons ($p < .003$). ANOVA showed significant differences in Openness with large effect size, $F(5,185) = 5.90$, $p < .001$, $\eta^2 = .14$. A post-hoc Tukey procedure indicated that brass players had lower Openness scores ($M = 3.56$, $SD = .51$) than keyboard instrumentalists ($M = 4.15$, $SD = .45$) and vocalists ($M = 4.28$, $SD = .50$).

Discussion

The aim of this study was to examine personality differences in a sample of music students with varying vocal and instrumental skills using a longer 44-item BFI measure. Music students in Croatia have already had 10 years of systematic music education which means they have a high level of expertise, and are studying to become professional musicians. In addition, they are more homogeneous in age than, for example, professional musicians working in orchestras, which can influence the personality differences. Results were not in line with the hypothesis that personality traits are not conceptually related to job activity variation across instrumental groups, since we found some personality differences. However, personality differences were not found in all personality traits or between all groups of musicians, which is partially in line with the hypothesis that there are personality differences between different job specialisations amongst musicians. In the primary analysis, significant differences between instrumental groups were found in Openness. In line with the hypothesis and previous studies (Bogunović, 2012; Cameron et al., 2015; Kuckelkorn et al., 2021; Mihajlovski, 2013; Vaag et al., 2018), significant differences in Openness were found between wind and keyboard instrumentalists, and between wind instrumentalists and vocalists. Contrary to expectations and some previous findings, differences were not found for other personality traits or between the other groups of musicians that were included. Analyses of subgroups confirmed the earlier results regarding Openness (Mihajlovski, 2013), with significant differences shown between brass players and keyboard instrumentalists, and brass players and vocalists.

Results of this study indicate that personality differences in Openness are important for distinguishing between musicians and other professions,

and between different job specialisations in the musical profession. Several studies, including this one, found that vocalists had the highest Openness score (Cameron et al., 2015; Kuckelkorn et al., 2021; Vaag et al., 2018), while Mihajlovski (2013) found, as in this study, that brass players had the lowest Openness score. These findings could mean that people higher in Openness are attracted to the musical profession, and that amongst people who decide to enter the musical profession those who are highest in Openness are attracted to being vocalists, while those with lower Openness scores are more attracted to wind instruments, especially brass. Of course, it is difficult to know without longitudinal data if going to the music school also contributes to the development of Openness, and not just *vice versa*.

The literature review has indicated that instrumental group samples and applied personality measures influence the personality differences of musicians playing different instruments. Personality measures with more items seem to be needed to detect variations in the Openness dimension between instrumental groups, since Butković and Modrušan (2021) found no personality differences when Openness was measured with only two items. Concerning the type of samples used in diverse studies, it is clear that they cover a variety of instrumentalists and vocal performers. This could mean that different findings in studies might be due to comparing different groups of musicians. Therefore, it might be worthwhile examining the specific demands of each music job specialisation to figure out between which groups the differences in Openness could be expected, and which groups of musicians should be included in the study.

Furthermore, a better understanding of personality differences between musicians could be obtained by examining the personality facets as well. So far, the study that applied NEO-PI-R with facet results indicated that brass players had the lowest scores on the Fantasy facet, followed by the Aesthetics facet (Mihajlovski, 2013). To the best of my knowledge, no study has so far examined facets of Openness in vocalists, so it is not known on which Openness facets vocalists score the highest. People scoring high on the Fantasy facet have an active fantasy life and are easily absorbed in different experiences. Panero et al. (2016) found that drama students score higher on Fantasy than music and non-arts students, while music students score higher than non-arts students on the Absorption scale. These authors concluded that actors are more able to focus their attention so that they can become

absorbed in their character, and that musicians and non-artists do not practise this skill. I believe that singers are more similar in this respect to actors than musicians, which may lead to their higher Openness scores. A study using Cattell's 16 Personality Factor (16PF) measure compared singers, keyboard, strings, woodwind, and brass players, and found that brass players scored lowest on imaginativeness while singers scored the highest (Buttsworth & Smith, 1995). It could be that the demands of the vocal profession, which include singers being able to immerse themselves in different characters and roles, attract people who are better in using their imagination and becoming absorbed, and these demands could also further influence the development of particular personality traits.

One of the tested hypotheses was that there would be personality differences in Extraversion. The finding that vocalists have higher Extraversion than other instrumental groups has been established in both classical music (Torrance & Bugos, 2017) and popular genre (Cameron et al., 2015) musicians. After Bonferroni correction was applied, ANOVA results for Extraversion, $F(3,242) = 3.78, p = 0.011$, were not significant and this hypothesis was not confirmed. However, there are some job activity variations related to singers' professions, which may lead to differences in Extraversion. Vocalists are musicians and actors; they have to interact with the audience during their performances and to enjoy being in the spotlight. Studies have shown that professional actors have higher Extraversion than the general population (Nettle, 2006). This should not come as a surprise, since it has been shown that a central feature of Extraversion is social attention, or a tendency to behave in certain ways to attract social attention (Ashton et al., 2002). Standing on the stage and singing seem to be good ways to attract social attention. Recently, there have been attempts to develop a general reward-processing theory of extraverted personality, which suggests that individual differences in Extraversion may be associated with differential processing of rewards (Smillie et al., 2019). This would suggest that extraverts are motivated to obtain rewarding stimuli, and therefore choose an occupation where their work can be rewarded, for example with applause, flowers, and celebrity status. Future studies should examine whether vocalists score higher only on some Extraversion facets, such as Assertiveness.

Personality differences of expert musicians with diverse instrumental skills have been examined in America with two studies in the US (Torrance,

2017; Torrance & Bugos, 2017) and one in Canada (Cameron et al., 2015); in Western Europe with two studies in Sweden (Kuckelkorn et al., 2021; Sandgren, 2019), one in Norway (Vaag et al., 2018), and one in Germany (Langendörfer, 2008); and in the Western Balkans with two studies in Croatia (Butković & Modrušan, 2021; Butković & Rančić Dopuđ, 2017), one in Serbia (Bogunović, 2012), and one in Macedonia (Mihajlovski, 2013). No specificities in the research on this topic have been observed related to the region. Kuckelkorn et al. (2021) suggested that personality differences were not primarily related to instrument choice *per se*, but that they are moderated by other factors such as musical genre and the social context of music-making. Therefore, only a more systematic approach that considered possible factors such as training characteristics in particular instrumental groups or typical job characteristics would provide more insight.

One of the limitations of this study was the relatively small number of participants in some subgroups (e.g., plucked strings and brass) and differences in the sizes of compared groups. These differences reflect the number of music students enrolled in specific study programmes, with the highest enrollment quotas being for keyboard and bowed string instrumentalists. BFI is not a short personality measure, which means that it has more items per personality factor, but it only gives information on the factor level, not the facet level. Future studies should examine personality differences in personality facets and personality aspects, the level of personality hierarchy suggested by DeYoung et al. (2007). It could be expected that differences between musicians would be found in the Openness aspect, but not in the Intellect aspect. Furthermore, all studies examining personality differences of instrumental groups, including this one, used self-reporting to gather personality data. Although self-perceptions are helpful and contain some truth about a person, they can also significantly deviate from a person's true personality (Vazire & Carlson, 2010). Future studies could examine whether similar personality differences are found using peer reports. Finally, longitudinal studies are needed to examine how these personality differences develop and what practical educational implications these findings could have.

Conclusion

This study confirmed the finding that there are differences in Openness between distinct groups of musicians, with vocalists having the highest Openness scores among musicians, and brass players having the lowest. The finding corresponds with the suggestion that specialties in music have specific job demand characteristics, which make them appealing to people with different Openness scores. It seems that longer personality measures are needed to capture these differences. In future studies, the measurement of personality aspects and facets could contribute to a better understanding of these personality differences, as well as the use of longitudinal designs.

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