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# Personality traits of deaf and hard of hearing students from regular and special schools in Slovenia

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In recent years, the majority of European countries have increasingly included children with special needs in regular schools (Avramidis, 2010; Meijer et al., 2004), a trend that also holds true for the population of students with difficulties in the area of hearing (Marschark et al., 2010). Deaf and hard of hearing (DHH) students “are a low-incidence population with diverse linguistic characteristics and levels of academic achievements” (Cawthon, 2011: 4). In childhood and adolescence, the proportion of students with hearing difficulties ranges around 3–5% (Košir, 1999).

In Slovenia, DHH students can, on the basis of a recommendation by an expert team including a physician, a psychologist and a special pedagogue, be integrated into regular primary and secondary schools. The sole condition for integration into a regular school is that, considering the nature and degree of their deficiency, impairment or disorder, students achieve an educational standard in accordance with the educational program of regular education. These students can obtain additional professional help (3–5 hours), and the implementation of the individualized educational program must be tailored to their needs (Placement of Children with Special Needs Act, 2000). DHH students included in regular schools do not have a sign language interpreter in the classroom, as they use only spoken language in interactions with their teacher and classmates. On the other hand, DHH students in Slovenia can be schooled in special primary and secondary schools that implement educational programs with educational standards equivalent to regular schools but with different methods of implementation that are adapted to the DHH student population, e.g., sign language interpreter, smaller groups, availability of professional help from a team of various specialists, and longer peri-

od of schooling. Thus DHH students can attend either a regular school with the majority of their hearing peers or a special school that nevertheless represents a segregated form of schooling intended exclusively for the DHH student population. In view of this fact, the question arises as to whether DHH students from different school settings (regular and special schools) have significantly different personality traits. If so, this may be the result of students with particular personality traits being directed to specific schools, while the type of pedagogical work undertaken in different contexts may also contribute to any differences detected.

The scientific literature on personality traits of DHH students in comparison with hearing adolescents is scarce. However, a review of the literature on the personality traits of hearing adolescents shows that in the last decade there has been a relatively large amount of research in this field, primarily following the model of the five robust personality traits (e.g., Chamorro-Premuzic and Furnham, 2003; Laidra et al., 2007; O'Connor and Paunonen, 2007; Poropat, 2009). The results of various studies of hearing children and adolescents indicate that robust personality traits are important predictors of social competence, problem behaviour and interpersonal relationships (Zupančič and Kavčič, 2009). Various studies of hearing adolescents indicate that personality traits explain a significant proportion of variance within their academic success (e.g., O'Connor and Paunonen, 2007; Poropat, 2009). We believe that an increased knowledge of personality traits has important implications for education, allowing educators to adjust their classroom work to the individual characteristics of students in order to compensate for their weaknesses and nurture their strengths.

### **Studying Personality Traits in the Adolescent Population**

Approximately 15 years ago, the majority of experts in the area of personality research reached a consensus that the Five-Factor Model (FFM) of personality represents the dominant conceptualization of personality structure in adults (e.g., Campi, 2000; Chamorro-Premuzic and Furnham, 2003; Laidra et al, 2007; O'Connor and Paunonen, 2007; Poropat, 2009). According to this model, the five factors residing at the highest level of the personality trait hierarchy are extraversion, agreeableness, conscientiousness, neuroticism and openness (McCrae and Costa, 1997). *Extraversion* includes characteristics such as sociability, activity, assertiveness and often positive emotionality. *Agreeableness* is characterized by kindness, amiability, cooperation, and pro-sociality. *Conscientiousness* represents characteristics such as being dutiful, self-disciplined, organized, systematic,

precise, persistent, responsible and achievement oriented. *Neuroticism* encompasses anxiety, irritability, moodiness and the frequent experiencing of insecurity. *Openness* (or *openness/intellect*) refers to curiosity, a tendency to explore new things, imagination and often subjectively perceived intelligence. The aforementioned model of robust personality traits can also be applied to children and adolescents, although the factor solution in childhood and adolescence is not completely stable across the informants providing personality data (e.g., self reports, peer reports, parent reports, teacher reports), samples (e.g., countries, ages), instruments and analyses (Knyazev et al., 2008). Nonetheless, the results of various researches show that a similar FFM structure emerges in adolescents' self-ratings (Halverson et al., 2003; Mervielde et al., 1995), becoming fully congruent with the adult structure in late adolescence (Allik et al., 2004).

### Postulated Personality Traits of DHH Students

Research findings show that, in the case of DHH individuals, development in various areas is conditioned primarily by the quality of communication with parents (caregivers) in the earliest developmental period (Marschark et al., 2002, in Pfifer, 2010), as well as by stress experienced by parents (Hintermair, 2006). Certain authors determine that "the method of communication (signs or speech) on its own is not a decisive factor in the development of language, cognition and social skills" (Knoors et al., 2003, as cited in Hintermair, 2006: 498). The cognitive, social and emotional development of DHH individuals can be influenced by difficulties that appear due to a sense of not being understood (Silvestre et al., 2007), or by a lack of understanding on the part of the collocutor (e.g., Antia and Kreimeyer, 2003; Calderon and Greenberg, 2003). The degree of hearing loss may affect access to communication and may have a more subtle long-term effect manifested in less developed cognitive skills, word knowledge and language fluency, but it can also be reflected in other areas of the individual's functioning (Marschark et al., 2010).

The results of a research project (Albertini et al., 2011) investigating personal factors that influence deaf college students' academic success (more than 400 participants entering the National Technical Institute of the Deaf) showed that approximately 60% of students achieved below average results relative to a normative group of peers in the areas of perseverance, motivation, self-discipline and hard work with regard to school work. On the basis of these findings, we presume that DHH students could express a lower level of *conscientiousness* than hearing students. DHH students are noted to be at risk of social maladaptation, with poor social relationships (Kent, 2003). Due to language obstacles, the understanding of

social situations can be worse amongst such students, who therefore acquire social experience at a slower rate and frequently respond inappropriately to social situations (Calderon and Greenberg, 2003; Silvestre et al., 2007). These characteristics can contribute to a less expressed personality trait of *agreeableness* in adolescence, characterised by antagonism and a strong will. DHH students express themselves more impulsivity, have poorer emotional regulation, and report greater fear and anxiety than their hearing peers (Calderon and Greenberg, 2003; Košir, 1999; Li and Prevatt, 2010), which can also be indicated in a higher level of *neuroticism*, encompassing characteristics such as insecurity and shyness. The available research indicates that DHH students interact less frequently with peers, spend less time in interaction, and engage in briefer interaction than hearing children (Antia and Kreimeyer, 2003; Kluwin et al., 2002; Kuhar, 1997). DHH students are frequently scored below norms for hearing students in various aspects of social behaviour (Antia et al., 2011). The reason for these recognised social behaviours is perhaps a less expressed personality trait of *extraversion*, a trait that, amongst other things, includes sociability and assertiveness. In the questionnaire used in the present research, *openness/intellect* is not considered as an independent robust personality trait, as the specific personality traits that most frequently constitute openness/intellect in adults are included in other robust personality traits in adolescents, e.g., the specific personality trait of openness to experience constitutes *extraversion*, the specific personality trait intellect constitutes *conscientiousness* (the reasons for this are presented in more detail below in the method, in the description of the questionnaire).

In the empirical section, we explore whether the determined differences between DHH students and the hearing population in social response, emotions, perseverance, etc. reflect underlying differences in personality traits.

### Goals of the Research

In the present research, we seek to determine the findings of the Inventory of Child/Adolescent Individual Differences for a sample of DHH students. While controlling the age, we explore whether levels of hearing loss, gender and school settings have an impact on students' self-assessment of personality traits. The findings regarding the personality traits of DHH students are also compared to a normative sample of hearing adolescents. The results obtained are further analysed on the individual level, as we are interested in the frequency of the deviation of the individual results of DHH students from the average established for a normative group of hearing peers.

## Method

### Participants

DHH students were eligible to participate in the study if they (a) had been identified on the basis of the Placement of Children with Special Needs Act (2000, 2006), (b) attended a general education program in regular or special primary and secondary schools, and (c) did not have additional disabilities.

We invited approximately 100 students from the total population of hearing impaired students who attended primary and secondary schools in the 2010/2011 school year (344 DHH students). In order to be included in the sample, the age of the participants had to fall within the period of adolescence (over 11 years). We therefore invited DHH students from grades 6 to 9 of primary school and grades 1 to 4 of secondary school. Our sample included 78 DHH students, all of whom consented to participate in the study. These students were drawn from 2 special primary schools, 16 regular primary schools, 1 special secondary school and 20 regular secondary schools.

Table 1: Characteristics of the DHH student sample regarding type of school.

Type of school		Special primary ( <i>n</i> = 13)		Regular primary ( <i>n</i> = 19)		Special secondary ( <i>n</i> = 21)		Regular secondary ( <i>n</i> = 25)		Total ( <i>N</i> = 78)	
Variable	Category	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender											
	Girls	4	30.8	8	42.1	6	28.6	9	36.0	27	34.6
	Boys	9	69.2	11	57.9	15	71.4	16	64.0	51	65.4
Age											
	11 to 14	5	38.5	18	94.7	0	0.0	0	0.0	23	29.5
	15 to 17	8	61.5	1	5.3	8	38.1	14	56.0	31	39.7
	18 to 24	0	0.0	0	0.0	13	61.9	11	44.0	24	30.8
Level of hearing loss											
	Mild	1	7.7	3	15.8	1	4.8	4	16.0	9	11.5
	Moderate	1	7.7	7	36.8	1	4.8	4	16.0	13	16.7
	Mod. Severe	1	7.7	3	15.8	4	19.0	6	24.0	14	17.9
	Severe	1	7.7	2	10.5	2	9.5	3	12.0	8	10.3
	Profound	0	0.0	1	5.3	3	14.3	3	12.0	7	8.9
	Complete	8	61.5	3	15.8	9	42.8	3	12.0	23	29.5
	Missing	1	7.7	0	0.0	1	4.8	2	8.0	4	5.2

Notes. Mod. Severe = Moderately severe.

The largest group of adolescents in our sample (Table 1) were from regular secondary schools, slightly fewer participants were from special secondary and regular primary schools, while the smallest group of adolescents were from special primary schools. This can be partly attributed to the fact that there are only three institutions specialized in the education of DHH students in Slovenia, and that all of these institutions have experienced a fall in enrolment since the Placement of Children with Special Needs Act (2000, 2006) came into force. The average age of the DHH students from regular primary schools was 13.10 years ( $SD = 1.07$ ), while the students from special primary schools were somewhat older (14.71 years,  $SD = 1.27$ ). The students from special secondary schools were also older (18.76 years,  $SD = 2.34$ ) than those from regular secondary schools (17.08 years,  $SD = 1.63$ ). Boys accounted for almost two thirds of the sample, reflecting the higher percentage of DHH boys in the general population (61.0%) (National Centre for Health Statistics, 1999).

For the purposes of further analyses, we divided the participants into three age groups on the basis of developmental psychology periods (Zupančič, 2004a): from 11 to 14 years (early adolescence), from 15 to 17 years (middle adolescence) and from 18 to 24 years (late adolescence). Nearly two fifths of the DHH students in our sample were in middle adolescence, while slightly less than a third were in early adolescence and a similar proportion were in late adolescence.

Slightly less than one third of the participating DHH students suffered complete hearing loss, just over one sixth suffered moderate hearing loss, slightly more than one tenth had mild or severe hearing loss, and just under one tenth had profound hearing loss. There was no data available on the level of hearing for four of the DHH students. The lowest percentages of deaf students in our sample were from regular primary and secondary schools, while the percentage of deaf students from special primary schools and special secondary schools was the same (36.0%). All of the deaf students in regular primary, regular secondary and special primary schools had a cochlear implant, while only two of the nine deaf students from special secondary schools had an implant.

### Measures

*Personality traits:* Participants completed an adapted and standardized Slovene version (Zupančič and Kavčič, 2009) of the Inventory of Child/Adolescent Individual Differences (ICID; Halverson et al., 2003), designed primarily for use with the normative (hearing) population of adolescents. This is a 108-item measure of 15 mid-level personality traits. The items capture representative parental free descriptions of their children/

adolescents collected across seven countries and rated on a seven-point Likert-type scale (from 1 = *much less than in average students*, through 4 = *same as in average students*, to 7 = *much more than in average students*). The 15 ICID mid-level scales form four correlated robust personality measures: *conscientiousness* (Achievement Oriented, Compliant, Intelligent, Organized and Distractible-reversed), *(dis)agreeableness* (Antagonism, Negative Affect, and Strong Will), *neuroticism* (Fearful/Insecure and Shy), and *extraversion* (Activity Level, Considerate, Open to Experience, Positive Emotion and Sociable).

The scoring key for the four robust personality scales is based on exploratory factor analyses of data on different age groups of Slovene children/adolescents, covering ratings by mothers, fathers and teachers, as well as adolescents' self-ratings. These factors explain 92% of the variance in personality traits across Slovene normative groups. They are strongly internally coherent, relatively stable across early childhood over a time period from one to three years, moderately stable across contexts and demonstrate good criterion validity against measures of social competence, problem behaviour and interpersonal relationships (Zupančič and Kavčič, 2009). Due to the fact that we relied on the scoring suggested by the Slovene ICID Manual, *openness* was not considered as an independent factor in the present study, as this factor showed itself to be less consistent in terms of content and/or was psychometrically weak.

In the present study, internal reliabilities (Cronbach  $\alpha$ s) for the robust scales of *extraversion*, *disagreeableness*, *conscientiousness* and *neuroticism* were .88, .57, .57 and .86 respectively (regular primary school students), .88, .54, .72 and .84 respectively (regular secondary school students), .93, .60, .88 and .50 respectively (special primary school students), and .87, .54, .78 and .88 respectively (special secondary school students). Low internal consistency (from .50 to .60) was evident in *disagreeableness* (in all four groups of DHH students regarding school setting), *conscientiousness* (in regular primary school students) and *neuroticism* (in special primary school students). Reasons for the low Cronbach  $\alpha$ s could be sought in limited literacy and the DHH students' difficulty in understanding certain items, but the result could also be attributed to variations in the students' self-assessment within the framework of the individual mid-level traits that comprise the specific robust trait. This should be taken into account in further analysis of the highlighted robust personality traits in the aforementioned groups of students.

### Procedure

We invited DHH students to participate in the research after having gained the permission of school principals. Requests to allow students to participate in the study were also sent to the parents of all eligible students. All of the 78 students who obtained permission to participate were included in the study. The DHH students responded to the questionnaire at school. In regular primary and secondary schools, the questionnaire was mainly completed individually under the supervision of research team members, while in special primary and secondary schools it was completed in groups of 5 to 10 students. The DHH students from regular schools, who use only spoken language at school, were given the questionnaire in written form. Students from special schools, who use spoken and sign language at school, were given the questionnaire in written form, and, if necessary, an interpreter was present to translate some of the items into sign language.

### Results

#### *Analysis of the results of personality traits for the entire group of DHH students*

In accordance with the first goal of the research, we tested whether levels of hearing loss have an impact on student self-assessment of robust and mid-level personality traits. One-way ANOVA results indicate that the assessed robust personality traits were not significantly different regarding the DHH students' degree of hearing loss (all  $p$ 's  $> 0.05$ ), while amongst mid-level personality traits we found only one statistically important difference in mid-level trait negative affect ( $F(5, 72) = 2.40, p < 0.05$ ). The Bonferroni post-hoc test indicated a significant difference only between the groups with moderate and severe hearing loss. The results show that DHH students with severe hearing loss ( $M = 4.08, SD = 1.33$ ) express a higher level of negative emotions than DHH students with moderate hearing loss ( $M = 2.81, SD = 0.62$ ).

With further analysis, we investigated statistically significant differences between self-assessments of the personality traits of DHH students and those of hearing adolescents (normative results). Due to the fact that the norms in the ICID Manual (Zupančič and Kavčič, 2009) are formed separately for girls and boys, the results will be presented and interpreted separately according to gender. Table 2 shows the average results of robust and mid-level personality traits, standard deviations, and the number of DHH girls and boys, as well as the results for the normative sample of the hearing population (Zupančič and Kavčič, 2009).



Table 2: Average values and standard deviations of robust and mid-level personality traits in DHH students and in a normative sample of the hearing population.

		DHH Students			Normative Sample of Students		
Personality traits	Gender	N	M	SD	N	M	SD
<i>Conscientiousness</i>	Girls	26	15.28	3.24	933	15.83	3.52
	Boys	49	15.47	3.68	723	15.51	3.37
Achievement Oriented	Girls	27	4.76	1.03	933	4.91	0.95
	Boys	51	4.90	0.88	723	4.85	0.96
Compliant	Girls	27	4.60	1.13	933	4.78	0.82
	Boys	50	4.68	0.87	723	4.69	0.81
Intelligent	Girls	27	4.72	0.90	933	4.80	0.81
	Boys	50	4.67	0.95	723	4.82	0.83
Organized	Girls	27	4.91	0.71	933	4.82	0.88
	Boys	51	4.85	0.90	723	4.68	0.88
Distractible-reversed	Girls	26	3.79	0.78	933	3.50	0.89
	Boys	51	3.66	0.98	723	3.52	0.91
<i>Disagreeableness</i>	Girls	26	9.97	1.79	933	10.38	2.22
	Boys	49	9.92	1.87	723	10.38	2.22
Antagonism	Girls	27	2.53	0.50	933	2.69	0.86
	Boys	50	2.95	0.76	723	2.90	0.84
Negative Affect	Girls	27	3.38	1.20	933	3.65	1.13
	Boys	50	3.17	0.86	723	3.46	1.03
Strong Will	Girls	26	4.05	0.70	933	4.02	0.82
	Boys	51	3.95	0.67	723	4.04	0.82
<i>Neuroticism</i>	Girls	27	6.50	1.99	933	6.39	1.69
	Boys	51	6.43	1.85	723	6.39	1.69
Fearful/Insecure	Girls	27	3.30	0.99	933	3.44	0.92
	Boys	51	3.29	0.93	723	3.21	0.84
Shy	Girls	27	3.20	1.17	933	3.00	1.00
	Boys	51	3.20	0.99	723	3.11	0.95
<i>Extraversion</i>	Girls	27	24.17	4.56	933	24.91	3.87
	Boys	48	24.41	3.98	723	24.45	3.73
Activity Level	Girls	27	4.78	1.13	933	4.70	1.09
	Boys	51	5.05	0.97	723	4.95	1.08
Sociable	Girls	27	4.80	1.09	933	4.90	0.94
	Boys	51	4.82	1.15	723	4.80	0.92
Open to Experience	Girls	27	4.84	1.08	933	5.01	0.82
	Boys	49	4.68	0.99	723	4.93	0.82
Positive Emotion	Girls	27	5.00	1.03	933	5.15	0.90
	Boys	51	5.13	0.85	723	4.94	0.89

		DHH Students			Normative Sample of Students		
Considerate	Girls	27	4.76	1.00	933	5.14	0.91
	Boys	50	4.66	0.89	723	4.83	0.94

For this purpose, we made a series of independent t-tests. The calculations, made separately for boys and girls, were undertaken “by hand”, as we obtained data about the average values and standard deviations for the hearing population from the ICID Manual. The results of the t-tests indicate only one statistically significant difference between DHH boys and the normative sample of hearing boys, i.e., in the mid-level personality trait negative affect ( $t(57) = 2.25, p = 0.03$ ). In comparison with the normative group of boys, DHH boys achieved lower results in the mid-level personality trait negative affect ( $M_{\text{DHH\_boys}} = 3.17, M_{\text{norm\_boys}} = 3.37$ ). In view of the fact that comparisons between the two groups of girls and the two groups of boys largely failed to show statistically significant differences, we can conclude that DHH girls and boys are similar to their hearing peers in the self-assessment of robust and mid-level personality traits.

In order to determine the influence of gender and educational setting (regular vs. special school), as well as the interaction of these two variables, on each of the 4 robust and 15 mid-level traits, we calculated Analyses of Covariance (ANCOVAs) while statistically controlling the effect of age (as a covariate). The results of the ANCOVAs indicate no significant main effect of gender, school setting and the interaction of both variables on robust personality traits. On the mid-level of personality traits, the ANCOVAs indicated only one significant main effect of the variable school setting on the mid-level trait considerate. It is evident from the average values that DHH students from regular schools ( $M = 4.98, SD = 0.87$ ) assessed themselves as more considerate than DHH students from special schools ( $M = 4.31, SD = 0.92$ ).

As a covariate, age groups had a significant influence on the robust trait *neuroticism* ( $F(1) = 8.32, p = 0.01$ ). Furthermore, the results of the one-way ANOVA and the Bonferroni post-hoc test for age groups on *neuroticism* showed that the youngest group of DHH adolescents ( $M = 5.88, SD = 1.46$ ) assessed themselves at a significantly lower level than the oldest group with regard to this robust trait ( $M = 7.26, SD = 2.08$ ).

Age groups as a covariate also had a significant influence on the mid-level trait fearful/insecure ( $F(1) = 13.91, p = 0.00$ ). Further calculation of the one-way ANOVA and the Bonferroni post-hoc test for the effect of age groups on the fearful/insecure mid-level scale showed that the oldest group of DHH adolescents ( $M = 3.80, SD = 0.97$ ) achieved a high-

er result than the youngest age group ( $M = 2.92$ ,  $SD = 0.76$ ) and the middle age group ( $M = 3.17$ ,  $SD = 0.90$ ).

*Individual deviations of the robust personality traits of DHH students with regard to the normative results of hearing adolescents*

In accordance with the last goal of the research, we also analysed the results obtained on an individual level, in order to determine for each DHH student whether the specific robust personality trait achieves an average, above average or below average result with regard to the normative results of hearing adolescents (the results from the ICID Manual, Zupančič and Kavčič, 2009). On the level of personality traits (see Table 3), this means that the results are evaluated as above average if the *T*-values of *conscientiousness* and *extraversion* are 60 or more and if the *T*-values of *disagreeableness* and *neuroticism* are 40 or less. Results are evaluated as below average if the *T*-values of *conscientiousness* and *extraversion* are 60 or more and if the *T*-values of *disagreeableness* and *neuroticism* are 40 or less. The results of all traits in which the *T*-values ranged between 41 in 59 were regarded as average (Zupančič and Kavčič, 2009). Due to the abundance of data (78 DHH students, 4 robust and 15 mid-level personality traits), this analysis, which provided a deeper insight into the results than was gained purely on the basis of the average values, was only undertaken on robust personality traits. We sought to investigate in more detail whether differences exist in the frequency of average, above average and below average results with regard to gender and school setting.

On the level of the entire group, the majority of DHH students self-assessed their robust personality traits within the range of *average* results (211 of 303 self-assessments of robust personality traits, or 69.7%), while there were a total of 41 *below average* results (13.5%) and 51 *above average* results (16.8%). More detailed analysis reveals that, on the individual level, 18 DHH students achieved below average results in one robust personality trait, 6 in two personality traits and 3 in three personality traits.

The DHH girls participating in the research ( $n = 27$ ) achieved *average* results in 70 self-assessments of robust personality traits, while DHH boys ( $n = 51$ ) achieved 141 *average* results. *Below average* results were achieved in 19 self-assessments amongst girls and 22 amongst boys, while *above average* results were achieved in 17 self-assessments by girls and 34 by boys. No statistically significant difference was found between boys and girls in the frequency of average, below average and above average results in their self-assessments of robust personality traits ( $\chi^2(2) = 2.69$ ,  $p = 0.26$ ).

The DHH students from regular primary schools ( $n = 19$ ) achieved *average* results in 55 self-assessments of robust personality traits, while 3 re-



scientiousness and Extraversion are below average and if the T-values of Disagreeableness and Neuroticism are above average (underlined font).

sults were *below average* and 17 were *above average*. The students from special primary schools ( $n = 13$ ) achieved *average* results in 38 self-assessments of robust personality traits, *below average* results in 8 self-assessments and *above average* results in 6 self-assessments. A comparison of the frequency of average, below average and above average results does not show any statistically significant difference between the two groups of DHH students from primary schools ( $\chi^2_{Yates}(2) = 4.91, p = 0.09$ ).

The DHH students from regular secondary schools ( $n = 25$ ) achieved *average* results in 62 self-assessments of robust personality traits, while 20 results were *below average* and 14 were *above average*. The students from special secondary schools ( $n = 21$ ) achieved *average* results in 56 self-assessments of robust personality traits, *below average* results in 10 self-assessments and *above average* results in 14 self-assessments. A comparison of the frequency of average, below average and above average results does not show any statistically significant difference between the two groups of DHH students from secondary schools ( $\chi^2(2) = 2.20, p = 0.33$ ).

Combining the results from both primary and secondary schools, the DHH students from regular schools ( $n = 44$ ) achieved *average* results in 117 self-assessments of robust personality traits, *below average* results in 33 self-assessments and *above average* results in 31 self-assessments. The students from special schools ( $n = 34$ ) achieved *average* results in 94 self-assessments of robust personality traits, *below average* results in 18 self-assessments and *above average* results in 20 self-assessments. A comparison of the frequency of average, below average and above average results does not show any statistically significant difference between the groups of DHH students from regular and special schools ( $\chi^2(2) = 1.66, p = 0.44$ ).

The analysis of all of the individual robust personality traits of the DHH students shows that the results deviate below the average in the case of 12 students (29.3%) for the robust personality trait *conscientiousness*, one (2.4%) for *disagreeableness*, 12 (29.3%) for *neuroticism* and 16 (39.0%) for *extraversion*. The results deviate above the average in the case of 11 students (22.0%) for the robust personality trait *conscientiousness*, 12 (24.0%) for *disagreeableness*, 14 (28.0%) for *neuroticism* and 13 (26.0%) for *extraversion*.

## Discussion

The present research investigates the personality traits of DHH students from Slovenia. The study demonstrates that the level of hearing loss does not have an impact on students' self-assessment of the robust personali-

ty traits *conscientiousness*, *disagreeableness*, *neuroticism* and *extraversion*. With regard to sub-traits, only one difference between the groups was found: the group with moderate hearing loss assessed itself with a lower level of negative emotions than the group with severe hearing loss. The results of the research of DHH students (e.g., Antia and Kreimeyer, 2003; Marschark et al., 2002, in Pfifer, 2010) not directly related to robust personality traits show that hearing loss could have unfavourable effects on students' cognitive, social and emotional development. Authors primarily emphasise linguistic obstacles in the earliest phase of development as the fundamental reason for the negative effects on specific aspects of development in cases where, due to hearing loss, individuals frequently failed to understand the communication of others and were unable to make themselves understood (Silvester et al., 2007). The fact that robust and sub-traits in our sample of DHH students were virtually not conditioned by the level of hearing loss (with only one difference between two groups of DHH students regarding the level of hearing loss) could indicate that the DHH students participating in our research were able to engage in sufficiently high quality communication with caregivers in the earliest developmental period (Marschark et al., 2002, in Pfifer, 2010).

On the level of the average values of the personality traits of DHH students in comparison with the results of the normative group of hearing adolescents, as well as on the basis of the analysis of individual results, we can conclude that the overall sample of DHH students does not differ from the majority hearing population of Slovene adolescents in any of the robust personality traits studied. These findings are contrary to our expectation that, in comparison to their hearing peers, DHH students would have a lower self-assessment of the robust personality traits *conscientiousness*, *agreeableness*, *extraversion* and *openness/intellect*, expectations that were based on the findings of certain other studies of DHH students (e.g., Albertini et al., 2011; Calderon and Greenberg, 2003; Kent, 2003). One of the many reasons for the incongruity between the findings of our research and that of other studies could be the fact that in our research, we determined broader and underlying personality traits on the basis of the self-assessment of DHH students. However, the results in other studies were determined only by the individual's narrower characteristics and behaviours, assessed/observed in various social contexts using a range of measurement tools (sociometric tests, questionnaires, etc.) as well as assessors. Nonetheless, it is also possible that the DHH adolescents in our study overestimated their personality traits, which could be a further reason for the discrepancy between the findings of the present research and that of other studies. Certain

studies demonstrate that the individual gravitates towards desirable characteristics in the process of self-assessment, resulting in undesirable personal characteristics frequently being underestimated and desirable characteristics being overestimated (Bratko et al., 2006; Smrtnik Vitulič and Zupančič, 2009).

Further analyses of the results of the DHH students' self-assessment on their own personality traits (ANCOVA) showed that differences in gender and school setting (regular vs. special schools) do not have any effect on individual robust traits, nor on the majority of sub-traits of DHH students. The only difference that emerged was with regard to sub-trait consideration, whereby students from regular schools assessed themselves as more considerate than DHH students from special schools, i.e., they are more caring towards other people, more prepared to help, more empathetic and more attentive towards others. One possible explanation of the observed difference could be that DHH students from regular schools have to adapt more to their (hearing) peers, they have to be more attentive and prepared to help than DHH students from special schools, whose peers also have hearing disabilities.

In our research, we did not identify gender differences in robust and sub-traits, whereas other authors have reported significant differences between genders with regard to personality traits (Berk, 1997; Zupančič in Kavčič, 2009). It is possible that differences between genders did not emerge in our study because the genders were not equally represented, as significantly more boys than girls participated in the research.

It was also found that younger DHH students (aged from 11 to 14 years) achieved lower results in the robust personality trait *neuroticism* than the older group of DHH students (aged from 19 to 24 years). Similarly, both younger groups of DHH students (aged from 11 to 14 years and 15 to 18 years) achieved lower results in the specific trait fearful/insecure (a constituent of *neuroticism*) than the older group (aged from 19 to 24 years). The results show that, in comparison to older students, younger adolescents assessed themselves with less *neuroticism* primarily due to the sub-trait fearful/insecure, which includes the (self)assessment of fear, anxiety, worry and agitation. Perhaps younger DHH students assess themselves as less fearful/insecure than older students due to the development of adolescent egocentrism, which facilitates a perception of being less vulnerable than older adolescents and more in control of external situations. Various authors who have researched egocentrism in hearing adolescents report a decline in egocentrism from early to late adolescence (Zupančič, 2004b). It is worth pointing out that with regard to the trait *neuroticism*, lower values of internal consistency were obtained in the group of DHH stu-

dents from special primary schools, which perhaps contributed to the results obtained.

It should be noted that in the ANCOVA we did not determine interactive effects of gender, school settings and age groups on robust and sub-traits. We can therefore conclude that in the majority of cases the factors studied and their interaction do not have any important influence on personality traits.

The most frequent robust personality trait to demonstrate significant below average deviation was *extraversion* (accounting for almost two fifths of all of the below average results), while the results for *neuroticism* and *conscientiousness* were also frequently below average (each accounting for just under one third of all of the below average results). It would therefore be worth encouraging individuals to develop a more desirable expression of the aforementioned personality traits. Individuals with a low level of *extraversion* should be encouraged to engage in more social contact and to take on new interests, thus stimulating their social skills, dynamism and initiative. At school, more emphasis needs to be placed on social interaction, and the social skills of DHH students should be developed more thoroughly. Research findings show that the possession of adequate social skills is necessary for maintaining social, psychological and occupational wellbeing (Sergin, 2000, in Antia et al., 2011; Hintermair, 2009). Students with an above average expression of *neuroticism* should be offered help in dealing with fears in interpersonal relationships and other life situations, as the ability to deal effectively with emotions is essential for the individual's psychosocial health and for high quality interpersonal relationships (e.g., Zupančič and Kavčič, 2009). In cases of the below average expression of the robust personality trait *conscientiousness*, attention could be focused primarily on the development of perseverance, self-discipline, organization and precision, as well as encouraging an orientation towards goal achievement. These characteristics make an essential contribution to academic success and to the effective execution of work (e.g., Smrtnik Vitulić and Zupančič, 2011). Particular attention should be directed towards individuals whose results demonstrate a significant below average deviation in more than one robust personality trait.

The proportion of the results showing significant above average deviation was distributed equally amongst all four robust personality traits, with approximately a quarter of the results being above average for each trait. An individual assessment of personality traits that is distinctly above average could reflect "real" above average personality traits, but it could also indicate a case where the individual's perception or assessment of his/her personality traits represents an overestimation. When working with



DHH students who overestimate their own personality traits, one should focus (as with the hearing population of adolescents) on encouraging a realistic self-assessment, enabling the student to embrace his/her strong areas and work on “weak” areas.

## Conclusions

The present research is amongst the first to focus on personality traits in the DHH student population. The results of the study indicate that the level of hearing loss has no impact on student self-assessment of *conscientiousness*, *disagreeableness*, *neuroticism* and *extraversion*. In terms of their personality traits, the sample of DHH students do not deviate significantly from their hearing peers. No differences in personality traits were indicated amongst DHH students with regard to gender. The only difference indicated with regard to school setting (regular vs. special) was the mid-level trait consideration, while in terms of age groups differences emerged in *neuroticism* and in one of its mid-level traits (fearful/insecure). On the individual level, however, the self-assessments of personality traits were in some cases significantly below or above average, indicating individual differences within the groups of DHH students.

The results of the present study could provide guidance in the placement of DHH students and in the development of their programs, taking into account their specific personality traits, as well as perhaps suggesting areas for future work with individual students. Above all, it is necessary to encourage teachers to optimize the personality development of each individual, i.e., to compensate for the individual’s identified weaknesses related to particular personality traits and to nurture his/her strengths. Although research shows that major changes in personality traits most frequently occur prior to the child’s entry into school, findings on the individual level do show that with targeted work it is possible to achieve changes in the area of the individual’s personality development, even within a relatively short time (McCrae et al., 2000; Robins et al., 2001; Zupančič and Kavčič, 2009).

Our study has several limitations. The sample size of DHH students was relatively small, and the students’ personality traits were determined only on the basis of self-evaluation. The objectivity of the assessments could be enhanced by employing other approaches in determining personality traits, such as reports by assessors who know the adolescents, direct assessment of behaviours in various contexts, and observations by assessors who do not know the adolescents (Smrtnik Vitulič in Zupančič, 2009). Future research of the personality traits of DHH students could involve the use of other psychological instruments, including those adapt-

ed to deaf individuals (translation into sign language), as well as employing a range of techniques (e.g., observation).

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## **Osebnostne poteze gluhih in naglušnih učencev in dijakov iz večinskih in specializiranih šol v Sloveniji**

V raziskavi smo se usmerili na preučevanje osebnostnih potez 78 gluhih in naglušnih (Gn) učencev/dijakov iz večinskih in specializiranih osnovnih in srednjih šol, starih med 11 in 24 let. O svojih osebnostnih značilnostih so z Vprašalnikom o medosebnih razlikah pri otrocih in mladostnikih VMR-OM poročali učenci/dijaki sami. Samoocene širših osebnostnih potez (vestnost, nesprijemljivost, nevroticizem in ekstravertnost) deklet in fantov niso bile odvisne od stopnje slišnosti in se v povprečju niso razlikovale od samoocen normativne skupine mladostnikov. V samoocenah Gn učencev/dijakov nismo izsledili (ANCOVA) glavnega učinka spola in vrste šolanja (specializirane in večinske šole) na posamezno širšo osebnostno potezo. Na ravni ožjih osebnostnih potez pa so se Gn učenci/dijaki iz večinskih šol samoocenili kot bolj obzirni v primerjavi z učenci/dijaki iz specializiranih šol. Pri širši osebnostni potezi nevroticizem in ožji osebnostni potezi boječnost se je najstarejša skupina Gn dijakov (starih med 19 in 24 let) pomembno višje samoocenila v primerjavi z najmlajšo skupino Gn učencev (starih med 11 in 14 let). Individualna raven analize je pokazala, da so Gn učenci/dijaki večino širših osebnostnih potez samoocenili znotraj povprečja, redkeje pa kot nadpovprečne in podpovprečne. Na podlagi analize osebnostnih lastnosti lahko zaključimo, da se Gn učenci/dijaki ne razlikujejo glede na spol, stopnjo slišnosti niti glede na vrsto šolanja in da so podobni normativni skupini mladostnikov.

*Ključne besede:* gluhi in naglušni učenci/dijaki, osebnostne poteze, primerjava s slišječimi, stopnja izgube sluha, vrsta šolanja.

## **Personality traits of deaf and hard of hearing students from regular and special schools in Slovenia**

The study focuses on the personality traits of 78 deaf and hard of hearing (DHH) students, aged between 11 and 24 years, from regular and special primary and secondary schools in Slovenia. Personality data was obtained through self-report using the Inventory of Child/Adolescent Individual Differences. The self-assessments of robust personality traits (*conscientiousness, disagreeableness, neuroticism* and *extraversion*) by DHH girls and boys did not demonstrate variance with regard to the level of hearing loss and did not differ on average from self-assessments by a normative sample of hearing adolescents. In the DHH students' responses regarding each of the robust personality traits, we did not find a significant main effect (ANCOVA) of gender and school setting (special and regu-

lar schools), or of the interaction of gender and school setting, while controlling the age of the students. In mid-level traits, however, DHH students from regular schools assessed themselves as more considerate than students from special schools. In the robust personality trait *neuroticism* and the specific trait fearful/insecure, the oldest group of DHH students (aged between 19 and 24 years) demonstrated a significantly higher self-assessment than younger DHH students. Individual analysis of robust personality traits showed that the majority of DHH students assessed their own robust personality traits as average and less frequently as above average or below average. Considering the overall results and the analyses, it can be concluded that the personality traits of DHH students do not differ with regard to gender, level of hearing loss or school settings, and that they are similar to the personality traits of the normative sample of adolescents.

*Key words:* deaf and hard of hearing students, personality traits, comparison with hearing students, level of hearing loss, school setting.

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## **Nadarjeni učenci v Sloveniji, Italiji, Angliji in na Danskem – primerjava zakonodajnih in programskih izhodišč**

V prispevku predstavljamo strateško dokumentacijo na področju vzgojno-izobraževalnega dela z nadarjenimi in talentiranimi učenci v Republiki Sloveniji, Veliki Britaniji – Angliji, Italiji in na Danskem. Namen komparativne raziskave je bil ugotoviti, v kolikšni meri in na kakšen način je slovenski, angleški, italijanski in danski izobraževalni prostor v programskih in zakonodajnih izhodiščih v osnovni šoli naklonjen nadarjenim in talentiranim učencem v smislu spodbujanja in razvijanja njihovih potencialov.<sup>1</sup>

Ugotovili smo, da: obstajajo večje terminološke vrzeli pri opredeljevanju pojmov, ki se nanašajo na nadarjene in talentirane učence; v slovenskem prostoru nimamo učnega modela za delo z nadarjenimi in talentiranimi učenci oz. alternativne različice le-tega; ni ustreznih empiričnih podatkov in raziskav s področja dela s tovrstnimi učenci;<sup>2</sup> obstajajo tehnične in strokovne pomanjkljivosti pri prepoznavanju in nadaljnji pedagoško-psihološki obravnavi nadarjenih učencev; nimamo ustreznih strateških izhodišč, ki bi interdisciplinarno zajela vsa področja odkrivanja in nadaljnje peda-

1 O odnosu do nadarjenih smo sklepali z vidika ustrezne zakonodaje in deklariranih programskih izhodišč.

2 Nekatere spremljevalne analize o stanju nadarjenih učencev v osnovni šoli so sicer bile opravljene, vendar je njihova veljavnost vprašljiva, tako v deskriptivnem kot tudi v kavzalnem oziru.