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Academic Achievement and Personality in University Students Who Are Visually Impaired

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Abstract: This study compared academic achievement by sighted versus visually impaired students at Polish universities and analyzed potential between-group differences on various personality traits and their impact on academic grades. Although there was no main effect of visual status on academic achievement, there were some significant differences between the personality traits of the visually impaired and sighted groups.

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In Poland, children who are visually impaired (that is, are blind or have low vision) receive an education that is comparable to their sighted peers. Although the majority of the children are taught in special schools, a growing proportion--including those who are blind--are being integrated into regular schools with the support of itinerant teachers of students with visual impairments. Furthermore, approximately 20% of all Polish students who are visually impaired manage to gain entrance to universities. It can be assumed that those who then go on to a university represent a highly selective group because they have managed to do so despite their impairment and greater difficulty in accessing written information.

There has been little empirical research on the situation of students with impairments on the university level. The only

exception is the study by Meister (1998), who interviewed students with motor, visual, or auditory impairments at 15 German universities with regard to acceptance of the impairment by their families, social integration, compensatory behavior, motivating or discouraging factors in the course of study, and social support from other students. The results showed that depending on the type and severity of the impairment, these students required two to five times as much time to learn the syllabus and to prepare and revise lectures than did their peers without impairments. Because of this extra effort, they also reported requiring more breaks and having less time for leisure activities.

Because empirical data on university students with visual impairments is still lacking, one goal of the study presented here was to obtain such information from a large group of such students. We compared the academic performance (mean end-of-term grades) of students with visual impairments with that of their sighted peers. We could not formulate a specific one-tailed hypothesis because two outcomes were conceivable: On the one hand, the potential selection effect within the group of visually impaired students could lead us to anticipate better grades than among members of the sighted control group. On the other hand, despite the selection effect, academic achievement could be comparable in both groups because of the more difficult study conditions that students with visual impairments face.

We formulated the following general hypothesis on extracurricular group differences:

Students who are blind or have low vision will differ significantly from sighted students in their personality traits. We postulated a positive correlation between the level of academic achievement among visually impaired students and high scores on the Openness to Experience, Conscientiousness, and Internal Locus of Control scales on the NEO-FFI Personality Inventory (Costa & McCrae, 1985). We also anticipated that these personality traits

would correlate more strongly with academic achievement within the visually impaired group than within the sighted control group. Finally, we tested whether these differences or correlations were comparable across both genders.

Method

PARTICIPANTS

The addresses of students with visual impairments were obtained from the Polish Association for the Blind (*Polski Zwiazek Niewidomych*). A total of 105 (87.5%) visually impaired students agreed to participate in the study. On the basis of the educational criterion of being a braille user or a print user, 37 were classified as blind and 68 were classified as having low vision. These two groups were further divided according to gender. This division resulted in four groups of students with visual impairments: Group 1, with 34 female students with low vision; Group 2, with 25 female students who were blind; Group 3, with 34 male students with low vision; and Group 4, with 12 male students who were blind. The students in Groups 2 and 4 used braille or modern electronic text-recording methods (such as specially adapted computers or dictating machines) exclusively, and none used his or her vision in any situation. The students in Groups 1 and 3 were able to use printed materials with greater or lesser difficulty and to prepare notes from university lectures and classes. The criterion for distinguishing between the students who were blind and those with low vision was the absence versus the presence of the ability to read print books and make handwritten notes that facilitates access to textbooks and the process of learning.

The legal definition of *low vision* is visual acuity of less than 20/70. Members of the low vision groups had between 5% and 20% of normal vision or a field of view limited to 20 degrees. The legal definition of *blindness* is visual acuity of less than 20/400; all members of the two groups of blind students met this

criterion. However, this study used the aforementioned educational criterion to distinguish between those who were blind and those with low vision.

For all four groups of students who were visually impaired, we recruited sighted students who were matched for age, gender, course of study, and year of study. Although there were more female students in total, the proportion of female to male students in the study corresponded to that in Polish humanities and education faculties. The students who were visually impaired ranged in age from 23.0 to 24.8 years (*SD* = 1.64–3.32 years), and those who were sighted ranged in age from 21.8 to 23.0 years (*SD* = 1.63–2.12 years).

MATERIALS AND PROCEDURE

The participants were selected on the basis of the psychoeducational criterion of successful graduation from a secondary school and completion of university entrance examinations. We did not assess intelligence in all 210 participants (the 105 visually impaired students and the 105 students in the sighted control group) because comprehensive individual testing would have been too time consuming.

We used two short personality questionnaires: the Polish version of the NEO-FFI Personality Inventory (Zawadzki, Strelau, Szczepaniak, & Sliwinska, 1998; American version, Costa & McCrae, 1985) and the Delta Questionnaire for Measuring Locus of Control (LOC), which also includes a Lie scale (Drwal, 1979). These questionnaires were selected because they are not only well known, but are reliable and valid instruments for measuring various dimensions of personality. Items are phrased in the first person singular and are formulated as short sentences in both instruments.

The NEO-FFI assesses five basic personality dimensions. It consists of 12 brief and concrete statements for each of five scales (McCrae at al., 2005). Factor analyses have shown that these

scales assess the following five dimensions:

1. *Neuroticism* covers individual differences in the inclination to construct, perceive, and feel reality as being problematic, threatening, and difficult and to feel negative emotions (such as fear, shame, and anger).

2. *Extraversion* reflects the quantity and intensity of relationships with one's environment (notably social) and refers to a tendency to seek contacts with the environment with energy, spirit, enthusiasm, and confidence and to live out experiences positively.

3. *Openness* describes cognitive and noncognitive openness to experience. It is manifest in a wide range of interests and an eagerness to seek and live new and unusual experiences without anxiety and even with pleasure. The acceptance of new experiences may be relevant to various domains and different spheres of behavior (ideas, beliefs, values, and actions).

4. *Agreeableness* deals with the nature of one's relationships with others. It differs from extraversion in that it refers more to the relational sphere and the tone of relationships with others (such as kindness, empathy, or hostility). Agreeableness deals with the quality of interpersonal relationships on a spectrum ranging from compassion to antagonism.

5. *Conscientiousness* focuses on issues like orientation, persistence (anticipation, success orientation, and task orientation), and control and inhibition elements of behavior (organization, perseverance, thoroughness, and respect for standards and procedures).

The internal consistency of the Polish NEO-FFI ranges from $r = .68$ to $r = .82$. Its validity has been well documented with other personality questionnaires and ranges from $r = .40$ to $r = .80$ (Zawadzki et al., 1998).

The LOC contains 14 items, and the Lie scale contains 10 items. LOC is a classic dimension of personality that taps self-

confidence and independence of behavior in the social environment. This scale correlates highly with the domains of self-confidence, self-acceptance, and striving for achievement (Rotter, Seeman, & Liverant, 1962). The Lie scale is designed to assess socially desirable responses and measures the tendency to deceive. If Lie scores are not located in the standard range, data from the entire questionnaire become questionable. The LOC has an internal consistency of r = .69, and the Lie scale has an internal consistency of r = .83. Test-retest reliabilities are r = .69 (LOC) and r = .83 (Lie scale).

The first author met each student personally. Research was conducted in an identical manner for all students to ensure the maximum standardization of procedures. Because both personality questionnaires permit the test items to be read personally, the experimenter read all questionnaire items out loud to all 210 participants. This procedure lasted about 1 hour per person.

Results

Quantitative data on the levels of academic achievement (M and SD) are reported in Table 1 for the two visually impaired groups and the two sighted control groups according to gender. All the groups had good grades. The mean across all the participants was M = 4.16 (SD = .42), that is, it lay between very good (5) and good (4). The low standard deviation confirmed the low variability in grades. The female students who were blind had the highest mean across all the groups (M = 4.34, SD = .37), and the male students who were blind had the lowest (M = 3.99, SD = .39).

A two-factor analysis of variance (ANOVA) across all the groups with the factors of gender and degree of visual impairment revealed a significant main effect of gender: The academic achievement of the female students was significantly higher than the academic achievement of the male students, $F(1, 204) = 7.62$,

$p < .01$. Neither degree of visual impairment nor the interaction attained significance. Since the courses of study were heterogeneous, we matched each participant who was blind or had low vision with a sighted student. Subsequent *t*-tests for paired samples revealed no significant differences in all four comparisons.

Table 2 (female students) and Table 3 (male students) report the raw scores on the personality measures of the four groups of visually impaired students and their matched sighted controls. The analyses were based on raw scores in all four groups because neither questionnaire reports norms for persons who are visually impaired. The results showed that the female students had higher mean scores than did the male students in each group.

Data on the female students revealed that those who were visually impaired had more positive personality scores than did those in their respective sighted control group, that is, lower Neuroticism scores but higher scores on the other four NEO-FFI scales. On the LOC scale, the female visually impaired students made stronger internal attributions than did the female sighted students in the control groups. Scores on the Lie scale were in the standard range, indicating no social desirability bias.

The data on the male students did not reveal such a consistent pattern. However, in most cases, the male students who were visually impaired also had more favorable scores on personality traits than did those in their respective sighted control groups. Scores on the Lie scale were also in the standard range, permitting an interpretation of the LOC scale.

For the six personality factors, we first computed two-factor ANOVAs before we tested each paired sample individually. The ANOVA for the Neuroticism scale revealed only one significant main effect of gender, $F(1, 204) = 24{,}56$, $p < .001$: The male students had significantly lower neuroticism scores than did the female students. The degree of visual impairment and the interaction did not attain significance.

The ANOVA for the Extraversion scale revealed a significant main effect of degree of visual impairment, $F(2, 204) = 3.55$, $p < .05$. Posthoc Bonferroni tests showed that the participants who were blind had significantly higher extraversion scores than did those who were sighted or had low vision.

The ANOVA for the Agreeableness scale revealed significant main effects: The female students gave agreeable responses significantly more frequently than did the male students, $F(1, 204) = 11,54$, $p < .001$. There was also a significant effect for degree of visual impairment, $F(2, 204) = 8.04$, $p < .001$. Posthoc Bonferroni tests revealed that both the students who were blind and those with low vision had higher scores on agreeableness than did the sighted students.

The ANOVA for the Conscientiousness scale revealed significant differences for both gender, $F(1, 204) = 4.45$, $p < .05$, and degree of visual impairment, $F(2, 204) = 5.62$, $p < .01$. That is, the female students had significantly higher scores on conscientiousness than did the male students. Because we were analyzing paired groups, we computed *t*-tests for paired samples on the six personality factor scores for all four matched groups. Significant differences were found for the following pairings (printed in bold in Table 2): The female students with low vision had significantly higher scores than did their sighted controls on the Conscientiousness scale, $t(33) = 3.31$, $p < .001$. The female students who were blind had significantly higher scores than did their sighted controls on the Extraversion scale, $t(24) = 3.15$, $p < .01$, and agreeableness, $t(24) = 3.07$, $p < .01$. Among the male students (see Table 3), the students with low vision had significantly higher scores than did their sighted controls on the Agreeableness scale, $t(33) = 2.52$, $p < .05$, and conscientiousness, $t(33) = 2.19$, $p < .05$ (printed in bold in Table 3).

We tried to determine whether and to what degree these personality factors correlated positively or negatively with the level of university achievement by the students who were visually

impaired. In addition to these correlations, we tested the significance of differences between correlations in the visually impaired versus the sighted groups. Table 4 reports the correlations between the scores on the personality factors and academic end-of-term grades. It shows that the correlations were low to moderate in all the groups. There was a statistically significant positive correlation between the level of academic achievement and the scores on the Openness scale in the group of female students who were blind ($p < .01$). The correlations between single personality factors and academic achievement tended to be higher for the students who were visually impaired--particularly those who were blind--than those who were sighted. Testing the absolute differences in the correlations between the paired groups revealed three statistically different correlations (printed in bold in Table 4).

The scores of the female students who were blind and their sighted female peers differed significantly. For the female students who were blind, there was a positive correlation between Extraversion and academic achievement, whereas this correlation was negative for the sighted female students (Fisher's $z = 1.98$, $p < .05$). A similar significant difference was found for the personality factor Openness: a positive correlation for the female students who were blind, but a negative correlation for the sighted female students (Fisher's $z = 3.45$, $p < .001$). There was also a significant difference between the female students with low vision and the sighted female students in the correlations for LOC. In the group of female students with low vision, higher scores on the LOC scale correlated positively with academic achievement, whereas the opposite relationship was found for the control group of female sighted students (Fisher's $z = 2.60$, $p < .01$).

Discussion

The general hypothesis on the relationship between the analyzed variables, that is, the connections between the dependent variable

(academic achievement) and the independent variables (selected personality traits), is based on assumptions from trait theory (Matthews & Deary, 1998). We adopted a classic definition of personality, in line with Eysenck (1970) and Allport (1961), who understood personality to be a dynamic and relatively permanent organization of psychophysical systems, character, intellect, and so forth that determines a person's specific adaptation to the environment (Hjelle & Ziegler, 1976).

Academic achievement did not prove to be higher in the group of students who were visually impaired, probably because the high levels in all the groups led to a "ceiling effect." The general hypothesis of marked correlations between personality traits and academic achievement was confirmed most strongly in the group of female students with visual impairments. Significant differences in the scores obtained on the Agreeableness scale in favor of the female students who were blind and the male students with low vision allowed us to characterize these students as trustful, kind, and sincere. The high scores of female students who were blind on the Extraversion scale showed them to be active, open to others, and thus able to get others to assist them in learning.

The hypothesis of a positive dependence between the level of academic achievement among visually impaired students and a high score on the Openness to Experience scale was not confirmed in two groups: the male and female students with low vision. However, the theoretical assumptions of the Big Five model, which propose that openness to experience is a good predictor of vocational interests and educational success (Costa & McCrae, 1985), were confirmed completely in the male and female students who were blind.

The hypothesis of a relationship between high scores on the Conscientiousness scale and academic achievement was not confirmed in any group. The hypothesis of a positive dependence between the level of academic achievement in the students who

were blind or had low vision and internal LOC was also not confirmed. Furthermore, no statistically significant correlation between the level of academic achievement and the LOC scale was found in any group. Nonetheless, there is a trend toward a higher level of internal LOC in all the students (male and female) with visual impairments (see Table 3). This finding may well indicate the greater social and emotional maturity of students who are visually impaired; that is, when they make various decisions, these students tend to be guided by their own beliefs. Moreover, statistically significant differences were found between the correlations for the female students with low vision and their sighted peers (see Table 4). In sum, the results lead us to conclude that the level of academic achievement of the students who were blind or had low vision show some relationship to personality factors.

Because of the nature of the data (the small number of participants in the groups and observed interactions between the independent variables of gender and the degree of visual impairment), which influence, to various extents, personality variables, there is a need for replication and further research. The results we obtained are thus exploratory in nature.

LIMITATIONS

The following methodological aspects limit interpretations of the findings. First, despite the relatively large sample of 105 visually impaired students from a total population of 267 registered students with visual impairments in Poland, we cannot completely rule out a selection effect. It may well be that all the visually impaired students who were willing to participate in the study had good academic grades and sufficient self-confidence to participate in a survey. Second, the unexpectedly low variance in the grades for academic achievement limits any interpretation of group differences and correlations. Third, this low variance also would make it meaningless to analyze the group of visually impaired students more closely in terms of the causes of visual

impairment. Finally, the assessment of personality traits is not completely standardized because it is performed individually in participants' homes. Despite these limitations, it should be noted that this was still one of the few studies on the academic achievement of students with visual impairments that drew on such a large sample.

IMPLICATIONS

The results of this study permit us to conclude that the level of academic achievement of the students who were blind and those who had low vision was connected, in various degrees, to the analyzed personality variables. However, it should also be noted that all the students who were visually impaired coped well with their studies and passed their examinations on time. They all viewed a university education and the acquisition of knowledge and vocational skills as forms of self-realization. The fact that they were able to study and pass their examinations is a sign of successful rehabilitation.

Psychological efforts in professional rehabilitation (Sekowski, 2001) should be directed toward shaping strong personalities among people who are visually impaired, focusing on such aspects as persistence, openness, feelings of self-worth, the ability to establish interpersonal relationships, and the ability to cope with high levels of stress and failure. These characteristics seem to help students who are blind or have low vision to enter and achieve academic success in universities.

We realize that the conclusions derived from this study were drawn from Polish students. However, the universality of the Big Five model (McCrae et al., 2005) allows us to assume that a high level of diligence and openness will prove to be a characteristic trait of students who are visually impaired throughout the world.

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