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# ANALYTIC, EMOTIONAL INTELLIGENCE AND NOETIC ORIENTATIONS OF STUDENTS FROM PHYSICS DEPARTMENTS WITH DIFFERENT LEVEL OF AUTISTIC TRAITS<sup>1</sup>

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## **Introduction.**

According to estimates from epidemiological studies, prevalence of autistic disorders has increased over recent decades. Traditionally autism has been considered as a distinct disorder, but recent studies show that autism spectrum disorders (ASD) are the extreme end of the continuum of autistic traits normally distributed in the population. In everyday university practice there are young people who are not diagnosed with ASD but have mild autistic traits, that don't not lead to severe disadaptation. In studies by Kitazoe et.al. 2015 the prevalence of undiagnosed autistic traits among university and college students from physics departments was revealed. Hayashi M. 2008 pointed out, that despite the lack of social skills and high rigidity, such young people may have specific intellectual advantages (superior analytic intelligence) over their peers and be successful in mathematics and physics. These students may experience difficulties in humanitarian disciplines, as well as in interaction with teachers and other students, according to White S.W. 2011. Such students were found to have lower satisfaction with the learning process and poor quality of life, increased anxiety and victimization. I conducted a study of differences in analytic and emotional intelligence, as well as noetic orientations between the students of physics departments with low and high level of autistic traits. The noetic sphere had been included in the study because of its huge role in psychological well-being of an individual. According to S.A. Bogomaz 2015, even if a person has lower intellectual abilities, a high degree of meaningfulness of life leads to higher well-being than having high intelligence, but low meaningfulness of life.

## **Hypothesis.**

Students of physical departments have higher level of autistic traits than students of natural sciences. Students with higher autistic traits have higher analytic intelligence as well as lower emotional intelligence and lower degree of life meaningfulness.

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### Participants.

Experimental group—92 students (50 female) of physics departments from Tomsk universities, mean age 19.76 (SD=1.4). Control group - 47 students (37 female) of natural sciences departments (mean age 20.7, SD=0.66).

### Methods.

Russian version of «Autism Spectrum Quotient» (AQ, Simon Baron-Cohen); «Emotional Intelligence Questionnaire» (EmIn, D.V. Lusin); «Noetic Orientations Test» (NOT, D.A. Leontiev); «Arithmetical counting» test.

Statistical analysis was performed with IBM SPSS Statistics 22.0 (descriptive statistics, the Kolmogorov–Smirnov test, Student's t-test). All scores were normally distributed.

### Results and discussion.

First of all, it should be noted, that 36 students (76.6%) with normal level of autistic traits, and 11 (23.4%) with high level were identified among students of natural sciences departments. As for physics faculties, the numbers were 64 students (70%) for normal autistic traits and 28 (30%) - for high level, most likely leading to maladaptation.

Student's t-test was used to study differences between the students from physics and natural sciences departments. Significant differences were found only for "Communication" scale of AQ. The difficulties in communication were higher in students of physics departments ( $M=4.21$ ;  $SD=2.12$ ), than for natural sciences ( $M=3.38$ ;  $SD=1.69$ );  $t(137)=2.31$ ,  $p=0.02$ .

To analyze the differences in analytic intelligence, emotional intelligence and noetic orientations between the students of physics departments with low and high autistic traits Student's t-test was used. The sample was divided into two groups: low level (from 0 to 26 points in AQ) and high level of autistic traits (from 26 points in AQ). Significant differences were observed in analytic intelligence (measured by efficacy parameter of "Arithmetical counting"), various aspects of emotional intelligence and noetic orientations. The results showed that students with higher autistic traits have significantly higher level of analytic intelligence ( $M=59.29$ ;  $SD=22.92$ ) than students with low level ( $M=48.59$ ;  $SD=20.77$ );  $t(90)=-2.07$ ;  $p=0.03$ . Students with higher autistic traits also have lower interpersonal emotional intelligence ( $M=33.29$ ,  $SD=10.47$ ) than students with lower autistic traits ( $M=40.41$ ,  $SD=10.32$ );  $t(90)=3.03$ ,  $p=0.00$ , as well as lower intrapersonal emotional intelligence ( $M=36.5$ ,  $SD=9.5$ ) than less autistic students ( $M=42.95$ ,  $SD=9.28$ );  $t(90)=3.05$ ,  $p=0.00$ . Also the students from high autistic group scored less in Noetic Orientations Test ( $M=84.14$ ;  $SD=20.72$ ) than students from low autistic subsample ( $M=99.09$ ,  $SD=19.36$ );  $t(90)=3.34$ ,  $p=0.00$ . They were less satisfied with the process of their life

( $M=24.54$ ,  $SD=7.96$  and  $M=29.70$ ,  $SD=6.71$ , respectively);  $t(90)=2.50$ ,  $p=0.01$  as well as with its results ( $M=19.64$ ,  $SD=5.13$  and  $M=24.38$ ,  $SD=6.00$ );  $t(90)=3.21$ ,  $p=0.01$ . They were also less purposeful ( $M=23.75$ ,  $SD=7.56$ ) than less autistic students ( $M=28.39$ ,  $SD=8.45$ );  $t(90)=2.50$ ,  $p=0.01$ . Also it was found that for students with lower level of autistic traits their life was under their control to a greater extent ( $M=30.27$ ,  $SD=6.54$ ) than for students with higher level ( $M=25.64$ ,  $SD=6.29$ );  $t(90)=2.37$ ,  $p=0.02$ .

Overall, it was found, that there are no significant differences in the level of autistic traits between the students of physics and natural sciences departments, except for communicational difficulties. Further research on larger samples is needed to confirm this result. However, the results supported our hypothesis on differences in analytic and emotional intelligence and noetic orientations between the students with low and high level of autistic traits. Students who scored more on AQ had significantly higher level of analytic intelligence, had more difficulties in understanding their and other people's emotions and manipulating them, and also were less satisfied with their life in the past, present and future.

### Summary.

The results demonstrate the importance of studying not only people with ASD, but also the students with subclinical autistic traits. These students may have psychological problems and difficulties in adaptation to university environment. Understanding the specificity of various aspects of analytic, emotional intelligence as well as noetic orientations of these students may become a basis for methods of psychological help and support.

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