



7th International Conference on Intercultural Education “Education, Health and ICT for a Transcultural World”, EDUHEM 2016, 15y4-17 June 2016, Almeria, Spain

## Gender Characteristics of Intelligence and Academic Achievement of Younger Schoolchildren

Ekaterina G. Budrina\*

*The Institute of Psychology of Russian Academy of Sciences, 13/1 Yaroslavskaya street, Moscow 129366, Russian Federation*

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### Abstract

Our study aims to identify gender-specific characteristics of intelligence and academic achievement in early school age. In order to measure intelligence we used WISC and also evaluated academic achievement. It was shown that in early school age there were no gender differences in academic achievement and intellectual development. It was found that boys and girls have a different structure of intelligence. The results of factor analysis showed a lack of differentiation of mental functions, which testifies to a "chaotic" organization of girls and boys' mental experience in this age.

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Peer-review under responsibility of the organizing committee of EDUHEM 2016.

*Keywords:* gender; general intelligence; academic achievement; younger school age.

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### 1. Introduction

Gender differences are genetically set and continue to develop in socio - cultural environment. Modern pedagogy and psychology (scientific theories as well as practice) do not consider gender as one of child's most important characteristic. That is why, there is no differential approach to education of girls and boys. There are no ad hoc programs for boys and girls at current Russian schools. Although schools that are trying to take into account psychophysiological differences between different genders, have appeared.

The most important issue here is an initial phase of education. School requirements must correspond to the capabilities of girls and boys. Otherwise, that will not only affect academic achievement, but also the formation of

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\* Ekaterina G. Budrina. Tel.: +7-964-558-0962.  
E-mail address: [bydrina@yandex.ru](mailto:bydrina@yandex.ru)

schoolchild personality. By the beginning of the education process, girls and boys are characterized by a number of gender-dependent features. This fact should be taken into consideration in the educational process.

At the same time, most of the elements of the education system are the same for all children: all of them have to enter school at the same age, to study at the same shift, with one and the same teacher, both boys and girls are given the same rules and explanations and the same books. In addition, teachers attempt to achieve the same results from all the junior schoolchildren.

Psychologists and teachers noticed that girls are easier to learn than boys (at least, at the beginning phase of education). Girls tend to have almost similar yearly grades for all subjects (with a difference of no more than one point), whereas the variation in boys' achievement may be up to three points. Such a difference in the level of educational progress between different-gender children in primary school is connected with the peculiarities of boys/girls motivation and gender-specific interests and propensities.

The results, that were obtained in children (male and female subjects ranging from 2.5 to 25 years) showed a discrepancy between objective and subjective indicators of success. Among them there are:

- 1) objective indicators of academic achievement and discipline (that also affects academic performance);
- 2) conditionally objective indicators of academic performance and discipline (that are subjective indicators which are close to objective due to its reliability - data of qualified experts observations and semantic differential);
- 3) subjective indicators of achievement and discipline - educators and teachers' opinion about students' success, attention and interest in studies.

In the first two categories of indicators girls exceed boys in all the subjects (from 10 to 17 years), including mathematics (in 10 years). The same can be said about discipline: among students excluded from school there are more boys than girls (15-17 years). Girls are more interested in lessons in kindergarten and school.

Such a good performance of girls can be explained by their greater obedience to adults, that requires harder studying, as well as by the peculiarities of motivation of boys: they require special incentives - a competitive environment (struggle for supremacy in study or struggle for leadership), while girls and women are motivated to achieve without additional incentives.

By the third category, educators and teachers do not emit any differences between the sexes (2.5 years and 8 years old), or sometimes give preference to boys (almost all ages - from 5 to 25 years) [Maccoby, Jacklin in 1978]. Thus, throughout the school (and even at the beginning of high school), girls outperform boys, but teachers do not notice these successes. They give boys more attention and time, and in general treat them more positively than girls. Perhaps, this can be related to the fact that boys are more likely to violate discipline, and therefore they require more attention, also boys in comparison with girls tend to give more unusual answers and original solutions, that increases interest of teachers.

Thus, the question is: could differences in of boys and girls' academic achievement be associated with differences in general intelligence?

Maccoby and Jacklin described the results of their studies using a variety of techniques and age groups. The results led to the conclusion that there were no sex differences. This pattern is observed across all age groups (from infants to old people), in different cultures (USA, Canada, India, Nepal, Israel), in representatives of different races and economic conditions and in subjects with mental retardation.

One of the goals of gender studies of intelligence is to prove that boys and girls, men and women have equal intellectual level. Another goal is to establish gender identity, and to use this gender knowledge in education and in creation of evaluation criteria of academic success, etc.

There is plenty of results demonstrating the absence of sex differences in general intelligence. In spite of these findings, researches need to be continued with the emphasize on other aspects. For example, the study of intelligence on medical university professors showed that men had a clear-cut difference in the structure of intelligence (with a dominant non-verbal component), while female intelligence was poorly integrated. It was also shown that surgeons had the least developed intellectual structure and the lowest level of intelligence (Bukharina, Averin, 2002).

As a rule, factor analysis of intelligence measured by WICS showed the existence of three factors: 1) *Verbal comprehension*, 2) *Spatial organization* and 3) *Working memory / Attention*. The first factor is an indicator of crystallized intelligence (gC). It includes such Wechsler subtests as *Information*, *Comprehension*, *Similarities* and *Vocabulary*. The second factor is considered a measure of fluid intelligence (gF). This factor consists of such subtests

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