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THE RELATIONSHIP OF GIFTEDNESS AND CONSCIOUS SELF-REGULATION IN YOUNG ADOLESCENTS

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Abstract

The conducted study responded to the posed problem of determining the role of conscious self-regulation in the structure of giftedness, intelligence, and academic success in young adolescents. Diagnostics was carried out using the “Creative Field” method, the “Progressive Matrices” test and the method «Style of Self-regulation of Children Behavior» SSCB-M1. Statistical analysis is represented by correlation analysis and the method glasso of constructing regularized networks of partial correlations using the R language. Giftedness is understood by us as the ability to develop activities on our own initiative. As a result of the study, an indirect relationship was revealed between the giftedness index and a cluster of conscious self-regulation variables through an intelligence index. The lack of a direct connection between giftedness and indicators of conscious self-regulation is explained by the influence of self-regulation only at the level of mastery of activity. Self-regulation allows the child to compensate for problem areas and ensure the implementation of a specific task. The development of activities on their own initiative is provided by a motivational component. These children are primarily distinguished by the dominance of a cognitive motive, which brings them to a higher level of cognition than simply solving the presented problems. The negative relationship between intelligence and the “planning” scale of self-regulation is explained by the characteristics of the studied age: the breadth of interests, the situation of choice and the criticality of children with a high level of intelligence, which leads to lower grades.

Keywords: Giftedness, intelligence, self-regulation, planning, academic performance, younger adolescence.

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1. Introduction

Giftedness is understood by us as the ability for creativity - the development of activities on our own initiative (Bogoyavlenskaya, 2019; Bogoyavlenskaya & Bogoyavlenskaya, 2018). The article discusses the role of the factor of conscious self-regulation in the structure of giftedness.

As part of the Russian psychological school, which is currently developing prof. Morosanova et al. (2019), conscious self-regulation is defined as an "integrative cognitive-personal construct" (p. 7). Along with the cognitive processes of information processing (planning goals, modeling significant conditions, programming actions, evaluating and adjusting the results), instrumental personality-regulatory properties are highlighted in this approach: flexibility, independence, reliability, responsibility. The literature emphasizes the relevance of studying the relationship of conscious regulation with the productive aspects of activity, as well as the study of the age formation of self-regulation (De Corte, 2019; Morosanova et al., 2018; Oppong et al., 2018). In recent years, it has also been defined as an important resource for children to feel psychological well-being, which is directly related to mental health (Fomina et al., 2020, Morosanova et al., 2019).

2. Problem Statement

The problem of this study was to determine the role of conscious self-regulation in the structure of giftedness. Since it is known that subjects with a high development of self-regulation often achieve high efficiency in their activities, it can be argued that this is also true for a gifted child. However, the uneven development of different aspects of the personality of a gifted child does not allow us to unambiguously determine the role of regulatory factors in the development of these children.

3. Research Questions

The main research question was the identification of the function of conscious self-regulation in the structure of adolescent giftedness. Which of its components are more associated with the manifestation of giftedness? Cognitive (goal planning, action programming, modelling of significant conditions, assessment of results) or personality-regulatory properties (flexibility, independence, responsibility), and, perhaps, both distinguish this group of children? The study of the components of conscious self-regulation in gifted and non-gifted children in children with different levels of intelligence and varying degrees of academic success should determine the direct or indirect influence of one or another regulatory characteristic on the listed types of activity.

4. Purpose of the Study

The aim of the study was to identify the characteristic regulatory components for indicators of giftedness, intelligence and academic success. This, in turn, was supposed to help to understand the compensating resource of self-regulation that gifted, intelligent and academically successful children aged 12 years possess. For this purpose, a correlation analysis of the data was to be carried out and regularized glasso partial correlation network was constructed using the qgraph package in R. Statistical analysis

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allowed us to determine the ratio of the studied parameters in adolescent children. Adolescence was interesting in terms of becoming independent and expanding ties with the world.

5. Research Methods

5.1. Diagnostics of giftedness

The diagnosis of giftedness in this study was carried out according to the "Sea Battle" technique, age-related modification of the "Creative Field" method to adolescence (Bogoyavlenskaya, 2019). The "Creative Field" method allows you to identify the level of cognition realized by the child. If the child's activity is manifested only in mastering the method of solving the tasks presented to him or her and then stops, we attribute him or her to the stimulus-productive level. Such a child is productive, but only when stimulated from the outside. He works at the unit level (according to Hegel).

When a child successfully masters the proposed activity and then begins, by virtue of his own interest, to explore the entire system of the tasks presented, he goes to discover new patterns that are further used by him as "his" methods. So, he goes into the second layer implicitly presented in the "Creative Field" method. This is the degree of action at the special level, and we attribute it to the heuristic level. This is the highest cognitive level for a given age. At the same time, heuristics are understood as the regularities discovered by the child himself, which may be of a general or private nature. Systematically discovering for itself what is not directly required of him, the child, in fact, shows the ability to develop activities on his own initiative, which we define as a manifestation of giftedness.

The third degree of cognition at the universal level, when the regulation found is subject to theoretical justification, at this age is extremely rare.

Assessment of giftedness in the "Creative Field" takes place according to the degree of generalization, which consists of the quality and quantity of open laws, the time of their appearance and stability (Bogoyavlenskaya & Bogoyavlenskaya, 2018). Giftedness is represented by the general index A, the scale of which varies from 1 to 20, where the 1 is taken as the highest level (Bogoyavlenskaya et al., 2018; Zhukova et al., 2019).

5.2. Diagnostics of intelligence, academic success, and conscious self-regulation

Intelligence was tested by J. Raven's test. The intellectual level is represented by the indicator Rn. The features of conscious self-regulation were investigated using the SSCB-M1 questionnaire (Moposanova & Bondarenko, 2015). The level of development of self-regulation is described by 7 scales of the SSCB-M1 questionnaire: "Planning", "Modeling", "Programming", "Assessment of results", "Flexibility", "Self-support", "Responsibility". The academic success of Vn was defined as the average annual score of children in all subjects. Statistical methods included Spearman correlation analysis and a method for constructing regularized glasso partial correlation networks using the R language (Artemenkov, 2017; Dunn et al., 2017; Epskamp & Fried, 2018).

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5.3. Features of data construction

Since the index variable A in the Creative Field method is constructed in such a way that lower digital values correspond to the best values of the indicator for the convenience of further analysis, all other indicators were linearly inverted and marked with a small letter “n” (table 1).

Table 1. The list of indicators of research data

The list of research indicators in grade 6	
Rn6	Test score by J. Raven
A6	General giftedness index
Sgn	Planning
Smn	Modelling
Spn	Programming
Srn	Assessment of results
Sfn	Flexibility
Ssn	Self-support
Sln	Responsibility
Vn	Average academic success

6. Findings

The article presents the results of the next stage of a longitudinal study on children of primary school and adolescence, which began in 2013 and continues to the present (Zhukova et al., 2019). The sample was 42 people.

6.1. Correlation analysis

The article presents the results of comparing the diagnostics of the giftedness of A6, intelligence Rn6, overall academic performance Vn with the peculiarities of self-regulation in young adolescents Sgn, Smn, Spn, Srn, Sfn, Ssn, Sln. The general results of the correlation analysis are presented in the table in figure 1.

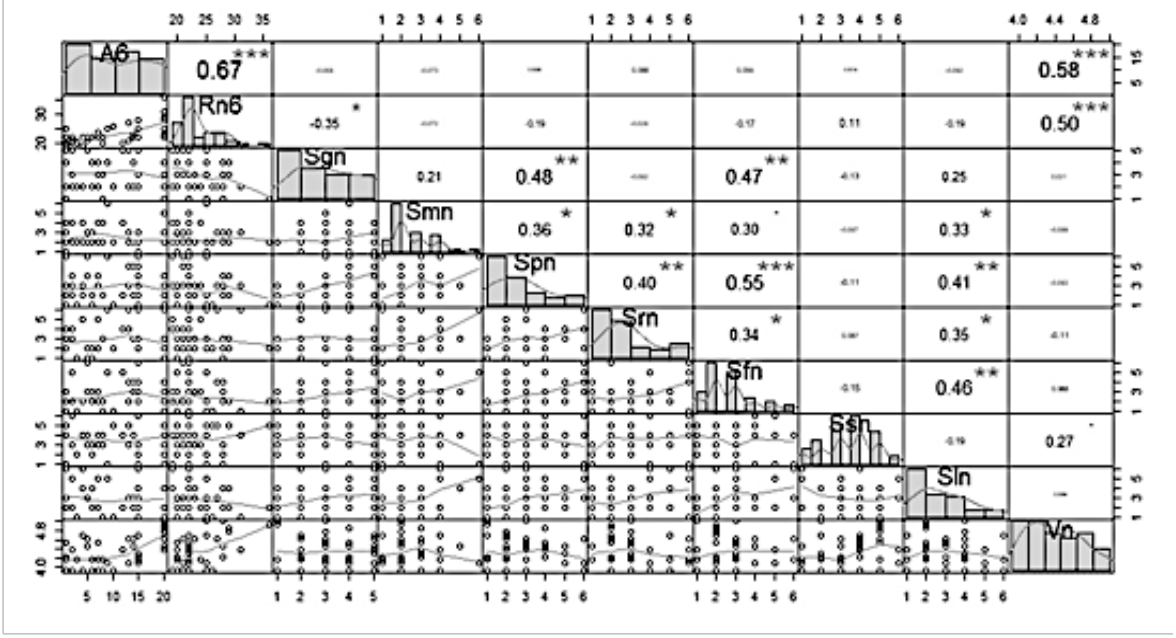

Figure 1. Spearman correlation analysis

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Spearman's correlation analysis shows the presence of general correlations between A6 and Rn6 (r = 0.67, p <0.001), between Rn6 and Vn (r = 0.50, p <0.001), between A6 and Vn (r = 0.58, p <0.001), and also multiple relationships between the scales of the questionnaire within the method. With a high level of significance, Sgn is associated with Spn (r = 0.48, p <0.01), Sgn and Spn is associated with Sfn (r = 0.47 p <0.01 and r = 0.55, p <0.001). This suggests that children who are aware of their own goals, think through their implementation method in detail, organize themselves well, distribute work over time, persevere in achieving the intended result, and at the same time easily adapt to new conditions. Spn correlates with Srn (r = 0.40 p <0.01), which confirms the connection between the ability to think through the methods of their actions and behavior, detailing them and evaluation the results. Moreover, the indicators of conscious self-regulation have no significant correlations with other indicators except for a small negative correlation of Sgn and Rn6 (r = - 0.35, at p <0.05).

6.2. Glasso regularized network analysis

The general view of the glasso regularized correlation network that defines significant partial correlations between the indicators of intelligence, academic success, giftedness and self-regulation of Rn6, A6, Sgn, Smn, Spn, Srn, Sfn, Ssn, Sln, Vn is presented below in Figure 2. Partial correlations make it possible to better determine the links between variables related to possible real causal relationships (Artemenkov, 2017).

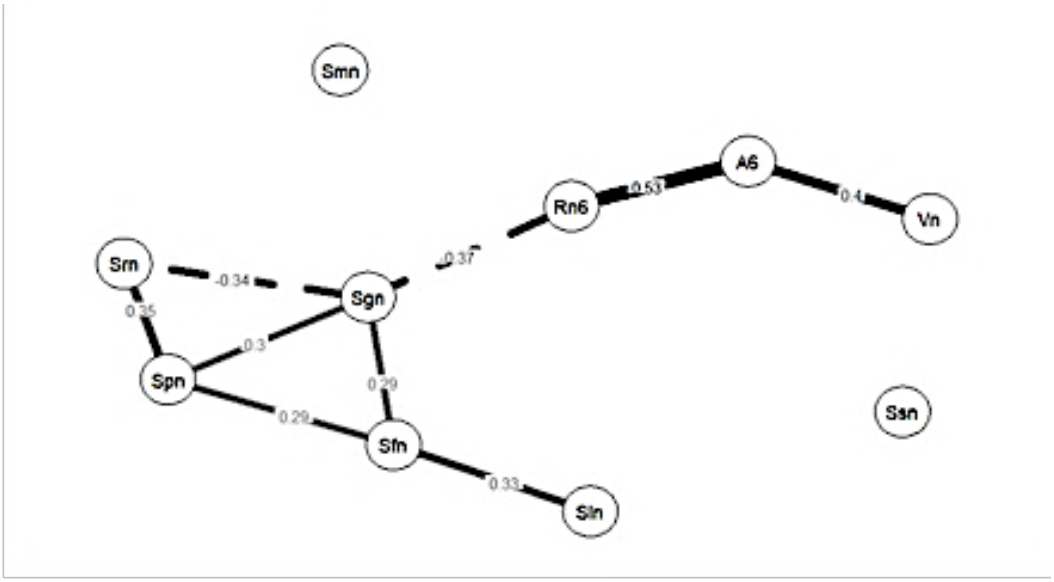

Figure 2. General view of the regularized glasso network, which determines significant partial correlations between intelligence indicator Rn6, performance Vn, giftedness A6 and self-regulation: Sgn, Smn, Spn, Srn, Sfn, Ssn, Sln, ($\lambda = 0.01$, $\gamma = 0.25$).

The glasso network in Figure 2 shows a positive relationship between the giftedness of A and intelligence Rn, the giftedness of A and average academic performance Vn, which suggests that children who demonstrate the ability to develop activities have high intelligence and often good academic performance. Most of the self-regulation scales in the network in Figure 1 are collected in a separate cluster, which reflects the internal validity of the individual self-regulation questionnaire scales. Private

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correlations in the glasso network confirm the connection between “planning” and “programming” and “flexibility” (r = 0.3, r = 0.29), which means that children who easily determine their goals and are able to gradually distribute their activity can often correct their mistakes in time. The relationship of flexibility with responsibility (r = 0.33) corresponds to the allocation of personality-regulatory properties in conscious self-regulation (Morosanova et al., 2018). A negative partial relationship between the assessment of results Srn and the planning Sgn (r = -0.34) was artificially formed (subject to matching on the overall effect Spn), which was proved in the study of the network only for indicators of self-regulation and Vn. “Self-support” and “modeling” of Smn and Ssn are separate and are not associated with any indicator, which, apparently, determines the special independent nature of these qualities, based on the presence of a leading adult in the activities of a child of this age.

In the glasso network, the self-regulation cluster is connected with other research indicators only through the “planning” indicator, which was described above in the correlation analysis. We find a not very high partial correlation (r = -0.35), reflecting the negative relationship of this indicator with the level of intelligence according to J. Raven. The higher the intelligence, the lower the children rate themselves in terms of planning Sgn. In other words, children who demonstrate high intelligence in young adolescents characterize themselves as having difficulty in setting goals and defining their future profession, it is difficult for them to understand what they want, their desires and dreams rarely come true (often unrealizable). And children with a low level of intelligence, on the contrary, often show high marks in terms of the “planning” indicator: they know who they want to become when they grow up, they understand what they want, they value their desires as doable.

6.3. Discussion of the results

The hypothesis of the presented study was the provision that the manifestations of giftedness, as well as a high level of intelligence and academic performance should be accompanied by a high level of conscious self-regulation, which is a necessary procedural characteristic. The ease of mastery and the success of any activity depends on its formation. The analysis showed that conscious self-regulation is associated with giftedness and performance only through the factor of intelligence. The lack of positive connections between the level of intelligence, the ability to develop activities and academic success with the level of conscious self-regulation in young adolescents may have different reasons. This may be due to the characteristics of this particular age. Our data are consistent with studies revealing a connection between self-regulation and academic success only from the 7th grade to the end of school, while the 6th grade has not yet found these connections (Morosanova et al., 2018). The authors explain this from the point of view of “the relevance and actualization of self-regulation as a resource for achieving educational goals” due to the complexity of educational activities in high school (Morosanova et al., 2018, p. 124).

The negative connection between intelligence and planning allows us to say that children who are more intellectually successful can give themselves scores lower than their less intelligent peers. An appeal to the statements with which the child must relate himself in the “planning” scale - “knows who he wants to become when he grows up, usually understands what he wants, his desires are feasible” (Moposanova & Bondarenko, 2015) - allows you to remove the paradox of this connection. It can be considered, on the one hand, as the breadth of interests and the depth of perception of the world of children with a high level

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of intelligence, which, perhaps, does not allow them to clearly define their life goals at this age. The difference between the thought and the possibility of its fulfillment, as well as the high level of criticality of children with a high level of intelligence leads to lower ratings. This fact can be an illustration of the current situation of children's development associated with uncertainty, information overload, and transitivity of modern society (Martsinkovskaya, 2015). On the other hand, the statements specified in the "planning" scale require a certain personality maturity. The negative relationship of this indicator with high intelligence may point at the immaturity of the personal component of the development of these children, which can occur due to artificial advancement of intellectual development.

6.4. The relationship of giftedness and conscious self-regulation

The lack of a direct connection between giftedness and indicators of conscious self-regulation is understandable, since we can only talk about the influence of self-regulation at the level of mastery of activity. Here, self-regulation allows the child to compensate for problem areas and ensure the fulfillment of a specific task. While the development of activities on their own initiative is provided by a motivational component. According to Konopkin (2005), the process of self-regulation in its generalized form is "the removal of uncertainty". Heurists and stimulus-productive children have different ideas about certainty in this activity. Representations of certainty are formed, inter alia, from the breadth of perception. Stimulus-productive children "remove uncertainty" in the first layer of the technique, while for heurists, "uncertainty" is much wider. These children are distinguished by the presence of the dominance of a cognitive motive that pushes the boundaries of uncertainty for them and brings them to the second layer of activity (Bogoyavlenskaya, 2019).

7. Conclusion

In this study, we compared phenomena, in substance, of a different order: a certain personality structure of a gifted child, intellectual and academic abilities, and his ideas about the ability to regulate his activities. The data obtained allow us to talk only about the indirect connection of giftedness and conscious self-regulation through the index of intelligence. Based on previous studies, we can say that the development of activities provides a motivational component that stimulates the actions of other factors (Bogoyavlenskaya, 2019; Zhukova et al., 2019). Developing the problem of conscious self-regulation, Morosanova writes about the individual style of each person, his compensating reserves. The identification of possible stylistic features of self-regulation in children with different levels of intelligence and academic success, the presence or absence of giftedness is possible when comparing the profiles of individual groups, which is the prospect of further work.

The revealed negative relationship between the "planning" indicator and intelligence suggests the following: the individual characteristics of a particular group and the uniqueness of the studied age; the possible manifestation in some children of a high level of reflection and criticality, while in others the lack of formation of the ability to adequate self-esteem.

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