The Development of Self-Regulation in Gifted Adolescents in The Educational Center "Sirius"

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Abstract. This article presents the results of studying and improving the self-regulation of gifted adolescents. The authors have developed a special program of psychological and pedagogical support for adolescents with literary talents in order to improve their self-regulation. This program was tested at the "Sirius" Educational center for gifted children created by the "Talent and Success" Educational Foundation in Sochi. The authors used V.I. Morosanova's concept of self-regulation for testing and forming the above-mentioned program. The study results demonstrate an increase in the self-regulation of gifted adolescents, whose main components are as follows: the ability to plan, model, evaluate and adjust mental states and actions to achieve certain goals.

1 Introduction

While working with gifted children, teachers often notice that their pupils have underdeveloped abilities to manage their personal resources, regulate their mental states and find the balance among external impacts, mental states and various forms of activity [1-10]. This situation is especially relevant for gifted adolescents who are characterized by high emotionality, inability to plan their activities and comply with a certain work and rest schedule. Their perfectionism can result in the inability to set the priorities of activity, which negatively affects the creative process and the development of personality.

To this day, there has been no unified opinion the nature and structure of self-regulation, its specifics and definite terms. Scholars still have not prepared enough scientific works on the self-regulation of gifted adolescents, factors and mechanisms of its formation [11].

Currently, there are contradictions between science and practice, namely:

– Between the specific development of the personality of gifted adolescents (i.e. their ability to self-regulation) and the consideration of its specific features in pedagogy;

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– Between the importance of developing the self-regulation of gifted adolescents and the sensitivity of age for the formation of self-awareness and the low competence of teachers and psychologists in using the relevant methods and forms of work.

The study objective is to develop a program of psychological and pedagogical support for gifted adolescents based on the structural components of self-regulation and empirically verify its effectiveness.

The study hypothesis is that the implementation of a targeted psychological and pedagogical program can improve the self-regulation of gifted adolescents, whose main components are as follows: the ability to plan, model, evaluate and adjust mental states and actions to achieve certain goals.

2 Methods

The main research method was formative assessment. The study was conducted from October 2019 to March 2020. In total, the study involved 40 adolescents from 14 to 17 years old attending the "Sirius" Educational center (Sochi) and 10 teachers, including senior counselors and educators. Adolescents were recognized as gifted based on their real academic achievements and participation in academic competitions in a certain field of activity.

We have developed and implemented a special program of psychological and pedagogical support for adolescents in order to develop their self-regulation. It is worth mentioning that the structure and content of this program are based on our understanding of self-regulation and its main components. We have selected the concept provided by V.I. Morosanova as the conceptual interpretation of this term. The scholar defines self-regulation as a conscious process of the person's internal mental activity in forming, maintaining and managing various types of voluntary activity that help to achieve certain goals [12]. The components of self-regulation are private regulatory processes, including:
– Setting goals;
– Modeling the key conditions to achieve the above-mentioned goals;
– Programming actions;
– Assessing;
– Adjusting the results.

The program of psychological and pedagogical support comprises classes, a complex of tasks and methods aimed at developing the components of self-regulation in adolescents. The program was carried out alongside specialized training.

The program objectives are as follows: to help gifted adolescents form ideas about psychological mechanisms of self-regulation; to teach them techniques and methods for the development of conscious self-regulation; to improve their volitional qualities (determination, initiativity, perseverance and discipline).

Our program is based on the regulatory processes determined by V.I. Morosanova and contains several blocks aimed at developing a specific component of personal self-regulation. The program can be represented in the form of the following system (Table 1).

Table 1. The main blocks of our psychological and pedagogical program aimed at developing the self-regulation of gifted adolescents

Program block	Objectives
Setting goals	To teach pupils how to set goals; to form skills of informed planning and abilities to draw up an activity plan
Modeling the key conditions	To help pupils adapt to changing conditions; to form the necessary skills to adjust the existing plan and/or program of action
Programming actions	To teach how to determine the sequence of their actions; to develop time management skills; to present time tracking applications

Assessing	To form adequate self-esteem and critical thinking
Adjusting the results (reflection)	To develop reflection on past events and positive thinking

During the so-called "Planning" classes, adolescents learned how to set goals, determine criteria for efficient activities and form the skills of informed planning using mind mapping techniques. Within the "Flexibility" section, we formed stress resistance, the ability to adjust actions and an adequate attitude to failures. This stage is especially important for adolescents with literary talents due to their high emotionality. The "Programming" section was concerned with time management technologies and time tracking applications. During the "Modeling" classes, adolescents learned to adapt to changing conditions and got acquainted with SWOT analysis. The stage of assessing the results aimed at developing critical thinking and reflection with the help of training exercises.

To assess the initial and final levels of self-regulation, we applied V.I. Morosanova's multi-scale questionnaire "The style of self-regulating one's behavior", established the degree of its development and compiled individual profiles of the respondents [12]. The experiment was conducted in two groups of adolescents with literary talents at the beginning and end of their educational program at the "Sirius" Educational center.

3 Results

Table 2 below presents the results of an empirical study of the self-regulation of gifted adolescents.

Table 2. The comparative analysis of different levels of self-regulation in the control and experimental groups at the control stage

The level of self-regulation	Summative assessment		Formative assessment	
	Number of children			
	Control group	Experimental group	Control group	Experimental group
High	9	8	11	13
Moderate	8	11	7	7
Low	3	4	2	0

Before the beginning of the formative assessment, we used the Student's t-test to determine possible differences between the experimental and control groups and it showed no significant differences between the levels of self-regulation in these two groups (Table 3, Figure 1).

Table 3. Calculating the Student's t-test

No.	Samplings		Deviation from the mean		Squared deviations	
	Control group	Experimental group	Control group	Experimental group	Control group	Experimental group
1	9	5	2.33	-1.67	5.4289	2.7889
2	8	11	1.33	4.33	1.7689	18.7489
3	3	4	-3.67	-2.67	13.4689	7.1289
Total:	20	20	-0.01	-0.01	20.6667	28.6667
Average:	6.67	6.67				

Result: $t_{emperical} = 0$
Critical value

$t_{critical}$	
$p \leq 0.05$	$p \leq 0.01$
2.78	4.6
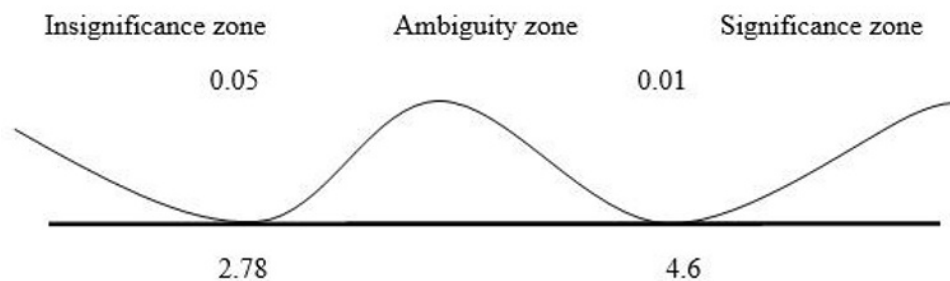
Fig. 1. The statistical comparison of differences between the control and experimental groups in accordance with the Student's t-test

Next, these two groups were engaged in different programs: the control group took a course on the formation of soft skills and the experimental group was taught in conformity with our program for the development of self-regulation.

During the repeated diagnosis of self-regulation, we marked an increase in the levels of self-regulation among adolescents. To assess the differences in the experimental data obtained under different conditions on the same sampling of respondents, we used the Wilcoxon signed-rank test (Table 4, Figure 2).

Table 4. Calculating the Wilcoxon signed-rank test

The critical value of t at n=20

n	$t_{critical}$	
20	0.01	0.05
	43	60

$t_{critical} = 25.5$
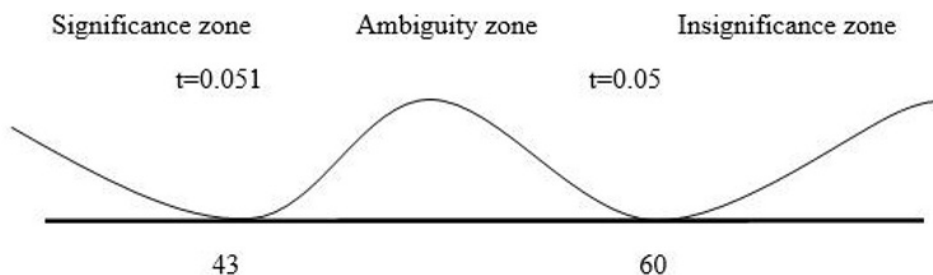
Fig. 2. The statistical comparison of differences between the control and experimental groups in accordance with the Wilcoxon signed-rank test

The obtained value of $t_{critical}$ (25.5) fell into significance zone, i.e. a shift in indicators after the formative assessment is not accidental. Thus, we can conclude that our psychological and pedagogical program contributed to the development of self-regulation among gifted adolescents.

4 Discussion

Since we have proved the hypothesis about developing the self-regulation of gifted adolescents, we support the scientific thesis that self-regulation is a psychological mechanism for adjusting human mental states (G.Sh. Gabdreeva, O.A. Konopkin, V.I. Morosanova) [12-14]. Therefore, it is necessary to teach children special techniques and self-action methods, develop an adequate view of life and form management activities at the personal level within the framework of psychological and pedagogical work [15, 16].

5 Conclusion

Based on the study results, we can draw the following conclusions:
-      It is necessary to implement targeted psychological and pedagogical programs to form the self-regulation of adolescents since the person's ability to adjust their mental states and regulate their behavior in different situations is an important indicator of maturity that determines one's successfulness;
-      The above-mentioned psychological and pedagogical program aimed at developing the self-regulation of gifted adolescents is effective as it is based on an integrated approach that considers all the components of self-regulation, namely: the ability to plan, model, evaluate and adjust mental states and actions to achieve certain goals;
-      It is necessary to further study the processes that develop abilities to control one's behavior in a modern dynamic world. In this regard, the most urgent issues are to determine and test effective forms and methods of developing self-regulation among children with different talents because there is a large number of personality traits connected with various talents.

References

1.   M.E. Augustine, C.A. Stifter, Journal of Applied Developmental Psychology **63**, 54-64 (2019)
2.   W. Briki, Personality and Individual Differences **120**, 112-117 (2018)
3.   B. Foroughi, M. Iranmanesh, D. Nikbin, S.S. Hyun,Telematics and Informatics **43**, (2019)
4.   L.D. Giunta, A.R. Iselin, J.E. Lansford, N. Eisenberg, M. Gerbino, Journal of Adolescence **64**, 124-135 (2018)
5.   A. Guez, H. Peyre, M. Le Cam, N. Gauvrit, F. Ramus, Intelligence **71**, 32-40 (2018)
6.   A. J. Mrazek, E. D. Ihm, D. C. Molden, M. D. Mrazek, J. W. Schooler, Journal of Experimental Social Psychology **79**, 164-180 (2018)
7.   T. Seufert, Educational Research Review **24**, 116-129 (2018)
8.   M. S. Thomas, Intelligence **69**, 200-212 (2018)
9.   S. L. White, L. J. Graham, S. Blaas, Educational Research Review **24**, 55-66 (2018)
10. L. Wirthwein, S. Bergold, F. Preckel, R. Steinmayr, Learning and Individual Differences **73**, 16-29 (2019)
11. A.I. Savenkov, Psychology of children's giftedness (Yurayt Publishing House, Moscow, 2018)
12. V.I. Morosanova, I.N. Bondarenko, Diagnostics of human self-regulation (Kogito-Center, Moscow, 2015)
13. G.Sh. Gabdreeva, Self-regulation of mental states: psychological technologies and diagnostics (Otechestvo, Kazan, 2013)

14. O.A. Konopkin, Psychological mechanisms of regulation of activity (Lenand, Moscow, 2010)

15. L.I. Larionova, **6**(6A), 59-66 (2017)

16. O.V. Tsaplina, *Psychological and pedagogical support of potentially gifted children. Psychology of giftedness and creativity*: Collection of scientific papers of participants of the I International Scientific and Practical Conference, 5-6 November, Moscow, Russia (2019)