

Adolescents' Self-Regulation Development Via the Sensory Room System

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The urgency of the issue stated in this article is caused by the need for mastering skills and patterns of self-regulation when being an adolescent since this time is sensitive for developing processes of personal understanding and evolution. Thus, mastering skills and patterns of self-regulation as a necessary part of the whole ability of personality formation as well as mastering reflection as the main age-dependent formation is an important stage of adolescents' individual development. The purpose of the present article is to solve the problem of adolescents' self-regulation development via the sensory room system. The leading method of study of this problem is the method of pedagogical experiment during which the program "Find yourself" was developed and tested. The content of the program is described in the present article. The article presents potential of self-regulation development as a way to control personal psycho-emotional state which can be managed by external effects, in particular by the system of sensory room. It was proved that it's possible to develop behavior self-regulation of adolescents by self-influence of the person using affirmation, visualization and psycho-physiological regulation; upgrading communication skills and subjective control. Materials of the article present utility for psychologists, social and supervising teachers working with adolescents.

Keywords: self-regulation development, self-regulation of adolescents, using the sensory room system.

INTRODUCTION

The relevance of the study

Studying personal self-regulation is one of the main problems of psychology. Self-regulation is regarded as an attribute of the global materia, it presents mechanisms of systems functioning and records their stability moments. The term "self-regulation" reflects biological (natural) characteristic of a person as an individuum,

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while the term “self-regulating” presents social characteristic of a human being as a personality. Personal self-regulation (from Latin - obeying certain rules) is a way to manage your own physical and psychological state and actions. It is a way to lower your fatigability, tension and agitation, to change motives of your actions, to improve your stress-resistance, to overcome your hesitation, fears, etc. Self-regulation is a willing change of certain actions, thoughts, motives, feelings and emotions. It can be studied through self-control, self-analysis, self-evaluation, self-hypnosis, self-determination and self-discipline (Bezrukova, 2000; Kamalova & Zakirova, 2015). Psychological and pedagogical practice presents opportunities for developing self-regulation of adolescents. The sensory room is one of the innovational tools. For our study we used the system of sensory room to develop self-regulation of adolescents since psychological and pedagogical researches fail to pay enough attention to this system. There are no scientific works or publications by modern researchers devoted to this issue. Works on using the system of sensory room are presented only in teaching aids and articles by teachers and practicing psychologists working for educational institutions equipped with sensory rooms.

The essence of the problem

Having analyzed the scientific works on the problem of adolescents' self-regulation development, we can state that the term of self-regulation is interpreted in different ways by representatives of different approaches and schools. It is not strictly psychological and mostly used in terms of the systems theory, physiology, etc. Self-regulation is a process when a person controls his/her own psychological and physiological state and actions (Concise Psychological Dictionary, 1985). Psychological self-regulation is one of the levels controlling activity of these systems which represent specific character of its mental tools for reflecting and modeling reality, including reflection. It is being performed by the unity of its energetic, dynamic, conceptual and meaningful aspects (Davydov, 1983). O. A. Konopkin (1995) determines the conscious self-regulation as a systematically organized process of internal mental activity of a person involved in initiating, building, supporting and managing different kinds of voluntary activity which directly effects achievement of goals set by a person. We use the term introduced by A. O. Prokhorov (2005) since it gives the better characteristic of self-regulation as management of psycho-emotional state of a person which can be controlled by external impacts, in particular by using the system of sensory room. Self-regulation is a capacity to control your psycho-emotional state which is achieved by self-influence through the power of words (affirmation), visual images (visualization), control over your muscle tonus and breathing.

Components of adolescents' self-regulation development

D. B. Elkonin (1967) believes that the children's community builds a new pattern of social development during the period of adolescence. Communication with peers is the leading activity of adolescents. Relations with peers are the subject for adolescents' peculiar thoughts which determine their self-esteem, level of aspiration (Bozhovich, 1979; Ribakova et al, 2015) thought adolescents' self-comprehension was the central point of the crisis. Self-comprehension formation is based on reflection which inspires necessity for the adolescent to understand him/herself and meet the level of his/her own requirements. Studying self-regulation reflects objective situation of the adolescents' personal growth having the following components of highest priority: internal self-determination (ability for personal growth, improvement and self-realization displayed in various aspects of life) and external facilitating factors which promote personal growth (Tagunova et al, 2016).

Various psychological and pedagogical researches show that adolescents can avoid psycho-pathological disorders and solve many personal problems if they develop self-regulation of mental processes and states. This fact proves the need for developing self-regulation skills in the process of interaction between psychologists, teachers and adolescents using the system of sensory room (Valeeva & Khakimova, 2015). For the purposes of the present study, adolescents' self-regulation development can be promoted by means of the sensory room which is both an environment for efficient social interaction and communication skills and a system of mental and personal self-determination which forms skills of personal self-regulation by self-influence of a person through the power of words (affirmation), visual images (visualization), control over your muscle tonus and breathing.

Methods of adolescents' self-regulation development

Analysis of psychological and pedagogical researches let us determine peculiarities of adolescents' self-regulation development which we believe are as follows: developing skills of self-regulation when being an adolescent is more efficient than at any other age since this period of time is sensitive for the process under review; adolescence is the start for reflexive behavior building which is its typical formation; adolescents' self-regulation development gives better results for the groups of classmates since the peers create a reference environment for them. Timely self-regulation is a kind of psycho-hygienic tool for adolescents. It prevents accumulation of overstrain cases, promotes restitution, regulates emotional scene of the activity and helps to gain control over emotions as well as stimulates body resources mobilization. There are 3 main effects coming as a result of self-regulation:

- calming effect (eliminating emotional tension);
- refreshing effect (lowering symptoms of tiredness);
- activating effect (promoting psycho-physiological responsiveness).

A. Y. Chebykin (1988) points out several methods of mental self-regulation which can be realized with the help of the sensory room system:

1. Methods of self-regulation based on breathing control. Breathing control is an effective way to influence muscle tonus and brain emotional centers. Slow and deep breathing lowers nerve centers affectability, promotes muscle relaxation. Fast breathing, on contrary, provides high body activity, supports nerve and mental tension.

2. Methods of self-regulation based on managing muscle tonus and movements. Mental work load brings about muscular forceps and tension. The ability to relax them helps to get rid of nerve and mental tension and refresh quickly.

3. Methods of self-regulation based on the word influence. Verbal impact influences conscious mechanism of self-hypnosis and psycho-physiological functions of the body. Language of self-hypnosis is built with simple and short statements having positive connotation.

MATERIALS AND METHODS

Methods of study

The research was carried out with the help of the complex of mutually reinforcing methods:

- theoretical: theoretical analysis and synthesis of pedagogical, psychological and teaching aids on the issue under review, generalization, comparison, classification;

- empirical: pedagogical experiment (ascertaining, formative, control stages); tests, studying and summarizing psychological and pedagogical experience, quality and quantity analysis of the experiment results, methods of mathematical statistics.

The experimental base of the study

The experiment was conducted in 2014-2015 academic years, 50 pupils from the 7th grades took part in the experimental work, pupils of the Municipal Educational Autonomous Institution Gymnasium named after Aleksander Grin, Kirov.

RESULTS

At the ascertaining stage of experimental work we screened the level of adolescents' self-regulation development using methodology "The level of subjective control" and the check-list by V. I. Morosanova (2000) "Behavior self-regulation style". The level of subjective control was checked on the basis of several criteria: internality in respect of achievements, failures, family relationships, working relationships, interpersonal relationships and in respect of health and illnesses. The level of behavior self-regulation development was checked on the basis of the following criteria: planning, modeling, programming, results evaluation, flexibility and independence. By summarizing ratings of each criterion we received the total value according to which the general level of self-regulation development was established. Experimental and control groups were formed on the basis of results received. Table 1 presents the level of self-regulation development.

On the basis of the diagnostics made, we concluded that subjective control of adolescents is closely connected with a style of behavior self-regulation: High rates depict pupils to be examined as independent people who consciously control their lives and are ready to bear responsibility for what they do, while low rates show us that adolescents depend on opinion of other people and think that events of their life are not connected with them and their actions.

On the basis of theoretical analysis of psychological and pedagogical researches and results of the ascertaining stage of our experiment, the program "Find yourself" was built and implemented as a part of formative stage of our experiment. This program is aimed at developing adolescents' self-regulation through the system of sensory room. Lessons were chosen depending on the diagnostics results. The program had the following purposes:

1. Teaching adolescents skills of behavior self-regulation.
2. Teaching adolescents how to relax.
3. Developing skills of cooperation and communication among adolescents.
4. Creating emotional environment for psychological comfort of adolescents.

Table 1. Level of adolescents' self-regulation development for experimental and control groups at the ascertaining stage of experiment

	Experimental group			Control group		
	Low level, %	Medium level, %	High level, %	Low level, %	Medium level, %	High level, %
Level of subjective control methodology	30%	70%	0%	30%	70%	0%
Check-list "Behavior self-regulation style"	30%	70%	0%	30%	70%	0%

We used various facilities of the sensory room to hold classes: transforming armchairs; musical beanbag chairs; The Milky way arras; a net with controlled bulbs; bubble columns; audio system with a set of relaxation records; spiky and sticky balls, giant balls. The program included 8 lessons. When performing the program, we noticed that at the first lesson called "Stars" many adolescents were embarrassed and not willingly expressed themselves when doing the task "My name and the way I treat it". The teacher's aim was to let everyone express his/her opinion and make children listen and not interrupt.

At the beginning of every lesson adolescent talked about themselves handing over massage balls which had a good impact on children's tactile sense. For example, the second lesson called "Abandoned garden" included exercises "My summer was" and "I can". The exercise was offered to make children closer to each other, discover common interests, etc. Lesson 6 called "Walking in the forest" included exercises "I'm glad when..." and "I'm upset when..." aimed at mastering their skill of talking about themselves and upgrading their self-evaluation. Every exercise was made to build trustful relationship within a group which had a positive effect for self-regulation development since peers create a reference environment for adolescents. High importance of the first stage was emphasized by using affirmation when working with pupils.

Some exercises were aimed at relaxation, the teacher offered to look at the sky full of stars at the first lesson, to determine how bright they were shining, to watch they move and change their color. Each adolescent found his own guiding star which helped him/her in his/her life. The teacher asked children to remember the colors they liked and then gave characteristic for each of them. Afterwards, children took comfortable positions in their transforming armchairs, closed their eyes and visualized while listening to the teacher. This stage is of high importance because self-regulation develops due to breathing control exercises.

The next stage of lessons was activation including interaction exercises. Their purpose was to overcome psycho-emotional tension, pull the group together, increase trust between members of the group and master skills of joining a partner. For example, at Lesson 7 "The Sea" we used a game "Siamese twins". It was interesting for children to cooperate and they willingly joined that activity. After the exercise we talked about results: why adolescents succeeded or failed, they shared their opinion. High importance of this stage was emphasized by using methods of self-regulation based on control over muscle tonus and movements. Gradually adolescents started to speak more willingly and joined new activities with higher enthusiasm.

At the end of each lesson reflection was implemented which is of high significance since it is a new formation for adolescents. The purpose of reflection was to analyze their feelings and emotions, to talk about what they liked and disliked. Each adolescent was offered to speak, step by step analysis of children present in class got more thorough and precise. One of the parts of the lessons was talking about desires for the following week. At that stage we used affirmation as a tool of self-regulation development. During the final lesson called "Clouds" we used the following exercises: "When having a class in a sensory room, I feel..." due to which children could perform self-analysis and realize their strong sides; "My portrait in sunrays" aimed at self-revelation and self-understanding and finding out their strong sides; "For the future I wish" due to which children could set aims for the future and plan their life.

At the control stage of our experiment we checked the level of adolescents' self-regulation development in control and experimental groups. To perform diagnostics we used the same methods as for the ascertaining stage. We determined certain difference in experimental group from the results of control diagnostics based on the level of subjective control. The number of adolescents with a low level of

subjective control reduced up to 0%, with medium level - increased up to 90%, 10% of adolescents got a high level of subjective control as compared with previous check. Changes were connected with different diagnostics criteria mostly with interpersonal and working relations.

According to the check-list by V. I. Morosanova, 100% of adolescents from experimental group show medium level of behavior self-regulation. The changes were connected with the following criteria: independence, modeling and estimating results which brought about changes of the general level of behavior self-regulation. There were no significant changes determined for the control group. Results changed in respect of quantity but within the level specified during the ascertaining stage of experiment. Table 2 and Figure 1 present comparison results.

To check whether the changes are trustworthy, we use methods of mathematical statistics, in particular - ϕ Fisher-test. We use F-test to compare distribution of quantitative indicators.

The main calculation formula for F-test:

$$\phi \text{ emp.} = (\phi_1 - \phi_2) *$$

ϕ emp. – index due to which significance levels are determined;

ϕ_1 – value taken from the table and corresponding to the higher percentage;

ϕ_2 – value taken from the table and corresponding to the lower percentage;

n_1 – number of observations in sample 1;

n_2 – number of observations in sample 2.

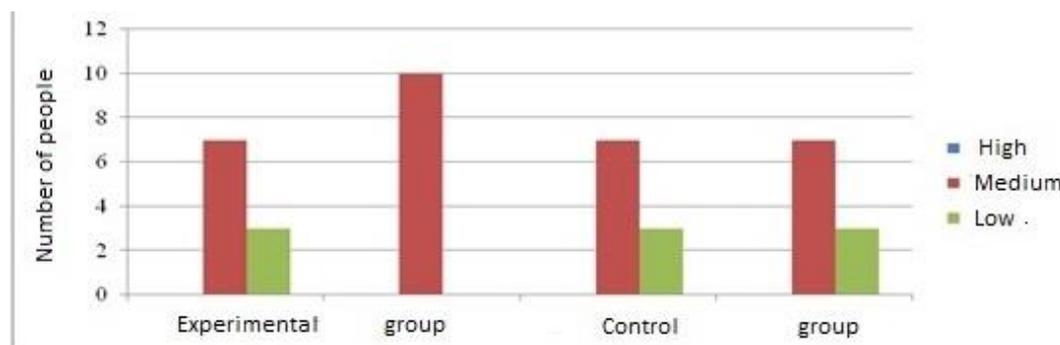


Figure 1. Level of adolescents' behavior self-regulation development in experimental and control groups at the control stage of experiment

Table 2. Comparison results concerning the level of adolescents' self-regulation development in experimental and control groups at the control stage of experiment

Experiment stage	Method	Experimental group			Control group		
		Low level, %	Medium level, %	High level, %	Low level, %	Medium level, %	High level, %
Ascertaining	Level of subjective control	30%	70%	0%	30%	70%	0%
	Check-list "Style of behavior self-regulation"	30%	70%	0%	30%	70%	0%
Control	Level of subjective control	0%	90%	10%	30%	70%	0%
	Check-list "Style of behavior self-regulation"	0%	100%	0%	30%	70%	0%

In order to check whether changes under every method are trustworthy we applied mathematical statistics by using F-test. Critical values for this test are as follows:

$$\varphi \text{ crit.} = \begin{cases} 1.64 & \text{if } P \leq 0.05 \\ 2.28 & \text{if } P \leq 0.01 \end{cases}$$

According to results shown in Table 3, we can see that φ value of 2.59 for low level calculated for experimental group is higher than corresponding critical value for level of 1% which means that differences between groups are significant at the 1% level. In other words the criterion under review is expressed significantly better in experimental group at the ascertaining stage of our experiment than at the control stage thereof. φ value of medium level is 1.22 and 1.44 of high level, both of these results are lower than critical point which shows non-significant nature of these changes.

Results given in Table 4 prove that $\varphi = 2.59$ at the low and medium levels of experimental group is higher than corresponding value at the level of 1% which means that differences between the groups are significant at the level of 1%. In other words the criterion under review is expressed significantly better in experimental group at the ascertaining stage of our experiment than at the control stage thereof. Mathematical calculations didn't show significant difference between indicators of the groups after constructive experiment but we think that results would be more distinguishing if this work is done systematically during longer period of time. Quantitative indicators have certain alterations even at the present stage of our experiment.

We noticed qualitative changes based on the results of constructive experiment. For example, adolescents learnt to use the following methods of self-regulation of their mental processes and states: affirmation, visualization and psycho-physiological regulation; mastered their communication skills which have an impact on the level of their subjective control; knowledge they got concerning psycho-physiological regulation has a direct influence on behavior self-regulation.

Table 3. Results of experimental and control groups under the level of subjective control method

Experimental group			Control group		
High level	Medium level	Low level	High level	Medium level	Low level
φ emp. =1,44	φ emp. =1,22	φ emp. = 2,59	No changes	No changes	No changes

Table 4. Results of experimental and control groups according to the check-list "Style of behavior self-regulation"

Experimental group			Control group		
High level	Medium level	Low level	High level	Medium level	Low level
No changes	φ emp. =2,59	φ emp. = 2,59	No changes	No changes	No changes

DISCUSSION

The problem of self-regulation and self-control of personal behavior is one of the most important in psychology both in respect of theoretical study and experimental research. Its different aspects are studied in researches by K. A. Abulkhanova-Slavskaya (1980), A. M. Volkov (1987), V. A. Ivannikov (1991), O. A. Konopkin (1995), A. N. Leontyev (1981), Y. V. Mikadze (1987), Y. M. Mislavskiy (1991), G. I. Solntseva (1987), V. A. Yadov (1975) and others.

Originally, the problem of self-regulation was determined under researches of will and stood for personal ability to change voluntarily and determinedly your own behavior, actions and states. Later the other researchers built a concept of regulation as a specific independent process. They were looking for peculiar mechanisms which were the foundation for personal ability to control your own actions: to stimulate or retard them. From this point of view sensual excitement, thoughts and moral feelings give actions of a person certain sense and thus adjust them.

L. S. Vygotskiy (2004) treated regulation from another point of view. He connected regulation not with stimulating or retarding actions but with getting hold of your own behavior through getting the system of artificial signs (psychological tools). L. S. Vygotskiy (2004) thought the highest stage of regulation was a willing regulation which was performed through uniting different mental functions into the single functional system which regulated activity or a certain mental process.

As of today, Russian psychological researches of regulation could be divided into 3 main groups according to the subject under review:

1) studying peculiarities of activity regulation (Konopkin, 1995; Abulkhanova-Slavskaya, 1980; Volkov, 1987; Mikadze, 1987; Solntseva, 1987);

2) studying personal regulation of behavior (Leontyev, 1981; Ivannikov, 1991; Mislavskiy, 1991; Sharov, 2000);

3) studying social, standard regulation of behavior (Bobneva, 1978).

The phenomenon of self-regulation is being studied from different sides which reflect its nature. The term "self-regulation" gives us biological characteristic of a person as an individuum while the term of self-regulating presents social characteristic of a human being as a personality.

CONCLUSION

To conclude with it is important to point out theoretical significance of the present research which is about generalization and systematization of works devoted to adolescents' self-regulation development through the system of sensory room. So, adolescents' self-regulation development through the system of sensory room under our program has been successful since we have managed: to teach adolescents methods of behavior self-regulation using facilities of the sensory room; to create a psychologically comfortable emotional environment for them; to develop adolescents' skills of cooperation and communication while working in groups; to provide them with conditions for affirmation, visualization and psycho-physiological regulation.

RECOMMENDATIONS

The present research has a practical value for developing and testing teaching programs aimed at adolescents' self-regulation development through the system of sensory room; its methodological recommendations have a practical application for psychologists, social and supervising teachers working with adolescents.

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