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**SCHOOL MOTIVATION, COGNITIVE STRATEGIES AND  
TEST ANXIETY IN THE SCHOOL PERFORMANCE**

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**Abstract**

The multidimensional nature of academic learning has determined the research regarding the role of non-cognitive factors in academic performance. The examination of the relationship between motivation, the correct use of learning strategies, personality traits (anxiety, self-efficacy, self-confidence) and academic achievement has focused less on secondary school students. The present study intends to establish the nature of the connection between academic motivation, study strategies and those utilized during school examinations, as well as between test anxiety and academic performance. The research methodology entails the application of a questionnaire regarding the evaluation of study motivation and of learning strategies to a number of 220 8<sup>th</sup> grade students from Suceava county. The students' academic success was represented by the grades obtained at the national evaluation and the V-VIII grade point average. Discovering the students' weak points and providing counseling on learning and emotions management must therefore become a vital part of educational programs in schools.

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**Keywords:** Evaluation; motivation; cognitive strategies; test anxiety; school performance.

## 1. Introduction

Evaluative activities, especially tests and exams, have a profound impact on students, considering the significance given to the obtained grades from the perspective of the consequences, both personal and social. According to national statistics, a significant number of students obtain poor results at the end of middle school evaluation, a discovery that has prompted researchers to locate the causes of academic underachievement in some students. Beyond the struggle for good grades and the profound desire of some students to develop the intellectual competencies needed for access to a future professional

expertise, a large number of students of all levels are poorly motivated, do not wish to actively involve themselves in learning and avoid tasks that demand critical thinking (Turtorean, M., 2013).

In reality, the academic community has completely accepted the idea that school successes are not determined solely by cognitive abilities. Acknowledging that success is reflected by the results of the student in the evaluation undertaken by him, we can then take into consideration that there will be other non-cognitive factors which will influence the student's performance in the test. The incentive for this change in perspective is the fact that the answer validity of those tested is affected by individual affective or non-cognitive factors.

What keeps students going in order to move from one academic stage to another so that they can win a diploma? The team coordinated by Camille A. Farrington from Chicago University (2012) has examined the literature and has identified five categories of non-cognitive factors related to academic performance: academic behaviors, academic perseverance, academic mindsets, learning strategies and social skills.

Recent studies on certain non-cognitive factors not only hint at their importance in academic achievement, but also support the necessity of social investments for their development as an additional means of reducing certain ethnic/racial or gender inequalities in educational achievements (Farrington, C.A. et al, 2012, p. 5). The importance of studies backing the role of non-cognitive factors in learning has been increased by the desire to shift students' beliefs regarding their own intelligence, so as to connect school performance with self-control, discipline and conscientiousness. In fact, characteristics such as self-control (Marici M., 2016, p.10), "academic tenacity" (Dweck, C., 2011) are predictive factors for academic achievement, much more so than general intelligence (IQ). Neglecting the non-cognitive aspects of the student's personality can lead to major difficulties in operating the study acquisitions. Many students become aware of the negative factors (test anxiety, lack of learning abilities) interfering with academic achievement only at the end of the high school period (Stroud, K.C et al., 2010, p.18). Despite all this, it has been proven that students with a good school performance practice strategic learning and strongly believe in planning their work and monitoring their own understanding.

## **2. Problem Statement**

Academic achievement has always been the focus for those interested in the educational phenomenon, although this should not necessarily be correlated with exceptional achievements, and instead it should depend on the student's potential. Studies show that school results are a strong predictor of future school results – in other words, generally success is followed by more success and failure draws more failure ( Gherasim, L.R., Butnaru, S.,2013, p.12). There are no guarantees that academic achievement and the degree obtained will lead to social success and fulfillment, but without the certification of certain school acquisitions, the possibilities of professional insertion are much more limited.

While examining the role of non-cognitive factors in school performance, studies have concentrated on the answer of at least three questions regarding the learning process, expressed from the student's perspective: "Why do I study?", "Can I get involved successfully in this activity?" and "What do I need to reach this success?" (Wiegfield & Eccles, 2001).

As with all other human activities, motivation is a predictive factor for school results in any educational level (Griffits, Sharlkey and Furlong, 2009, Schipor, D.M.,2009). Motivation reflects a student's investment in the learning process, influencing the choice of certain study strategies and the effort spent in implementing them. Motivation is associated both with school results during the school year, as well as with those obtained in standardized tests (Finn and Rock, 1997, Jimerson, Campos and Greif, 2003). Wise (1996) elaborates a model of motivation and performance in evaluation conditions from the perspective of persistence in the task. There are authors that identify the following tenacity factors: place of control (James, 1984; Mische, Zeiss & Zeiss, 1974), the dominant personality characteristics (McGiboneyc and Carter, 1993), vocational success (Stephenson, 1961; Staw and Ross,1980), emotional intelligence (Harshome, May and Maller, 1929; Eysenck, 1953), neurotic tendencies (Wang, 1932;Eysenck, 1953) (apud Constantin et al., 2007). Studies undertaken on the Romanian school population have reported contradictory results on the effect of motivational orientation on school results. In the study on secondary school students, intrinsic and extrinsic motivations did not predict the grades and perceived competence. (Gherasim, Butnaru, Iacob, 2011), a fact explained by the decline during early adolescence of the tie between grades, perceived competence and motivation. The research coordinated by Pintrich (1994) on middle school students concludes that intrinsic motivation is strongly influenced in this period by the nature of school tasks. If the students receive stimulating tasks, if they are given the opportunity of making certain choices or of working together in groups, then they will be more motivated and involved from a cognitive perspective (Pintrich et al., 1994, p.158). An important factor in the level of commitment in an activity is the value of the task. Ecclesset. al. (1983) have defined the subjective values of tasks (interest in the task, importance for individuals and its usefulness) as stimulants for their fulfillment. The affective component, specifically the emotional reaction to a certain task is also important to a student's commitment. Anxiety towards the task is the most frequent affective variable associated with performance and academic success. The results of studies are consistent and show a negative effect of anxiety on academic performances (Pintrich and Schunk, 2002). The exam is, without a doubt, a stressor because it demands solving certain problems within a limited timeline and at as high a performance level as possible. The fear of not obtaining the desired result causes anxiety and concern. Thoughts regarding the occurrence of surprised factors or the perception of other candidates (in too large a number and very well-prepared) are triggers that can heighten stress. These thoughts, accompanied by a variety of emotional manifestations on a somatic and emotional level interferes unfavorably with the cognitive processes the student must employ during the preparation phase, as well as with the necessary concentration efforts.

Research results show that persons who are anxious before a test are characterized by a low level of self-efficacy (Arch, 1987; Pintrich and De Groot, 1990; Bandura, 1993,Zeidner, 2007). If the situation is perceived as a threat for the student when he observes a discrepancy between the demands of the tasks and his personal resources, emotions centered coping and irrelevant cognitions are evoked. A.Bandura (1993, p.132) claims that the people's beliefs in their own abilities to face successfully certain tasks affects not only the level of stress during difficult situations, but also their level of motivation. Students constantly judge their intellectual capacities when facing school demands, then decide whether to persist or not in their academic endeavors. Different studies have proven that self-efficacy is one of the strongest predictors of a student's achievement or success (Bandalos, Geske& Finney,2005). For example, in a

longitudinal study on a number of first year high school students, self-efficacy has been positively correlated with performance, personal adjustment, health and commitment to remain in school (Chemers, Hu, Garcia, 2005). Examining the sources of self-efficacy depending on students' gender and background, Usher and Pajares (2006, pp.125-141) correlate academic performance of middle school students with a series of variables such as: mastery experience, vicarious experience, social persuasions and physiological state.

Connected to the query "What do I need to achieve success?" is the usage of cognitive and metacognitive strategies in the learning activity. If it is difficult for children 5-6 years of age to evaluate time and the number of repetitions necessary for learning, children between 9-10 years of age are already capable of creating their own study time depending on the difficulty of the task (Lemeni, 2011, p.156). If at first they use certain strategies automatically and unconsciously, with time they will become aware of them and will start using them voluntarily. Cognitive strategies such as repetition, elaboration, organization and metacognitive ones such as planning, monitoring and evaluating are proven to be connected to motivation and success in learning. The perfect usage of learning strategies makes the difference between students with academic success and those with failure and influences significantly the level of self-efficacy (Kistiner, Rakoczy and Otto, 2010, Zimmerman, 2008, Graham and Harris, 2000). Lemeni (2001, pp.157-158) lists a few reasons why students do not use efficient learning strategies:

- They aren't informed on the conditions of using efficient learning strategies
- They encounter difficulties in understanding the material or have too little time for superior strategies of comprehending the material
- Their purposes are inconsistent with using efficient learning strategies (some students only wish to receive a reasonable grade with little effort)
- They have a low self-esteem relative to their ability to learn in an academic environment.

Researchers claim that we should analyze changes that occur at the level of self-regulation process, due to the development process (Au et al. 2009, apud. Gherasim, Butnaru, 2013, p.52). In this context we should take into consideration the fact that modifications of the self-regulation of learning depend on the belief in one's self-efficacy and also on classroom environment and parental support. Students that do not acquire and do not activate efficiently the learning strategies can expect a lower self-esteem (Gherasim, Butnaru, 2013, p.53).

### **3. Purpose of the Study**

The current study intends to tackle potential connections between the motivational structure, the strategies adopted during study and also during examinations and certain personality factors involved in academic success. We aim to:

- Verify if motivational and cognitive strategies can be associated with school performance and exam success;
- Check how test anxiety, level of self-efficacy and self-control are correlated to exam success;
- To establish if there are gender differences from the perspective of the variables: intrinsic motivation, test anxiety, learning strategies.

## 4. Research Methods

### 4.1. Participants

Initially, there were 300 protocols administered which contained the tools for the research. Later, the selected pool contained a number of 220 8<sup>th</sup> grade students from 2 middle schools from the rural area and 2 from the urban area in Suceava county, 117 girls and 103 boys have taken part in the study and the age mean was of 14 years and 9 months.

### 4.2. Measures

The SMALSI inventory and the MSLQ questionnaire have been applied during Orientation and Counseling classes in order to identify problematic profiles and areas (high test anxiety, low motivation, inefficient strategies of tackling cognitive tasks) so as to recommend and involve students in a program of psychological counseling that would help them efficiently deal with exams. Parents gave their written consent for the evaluation of the students and they were informed regarding the purposes of the research. Out of the 300 students who received the questionnaire in March-April 2016, we have kept 220 subjects who consented to the use of their data. The students' academic success was represented by the grades obtained at the national evaluation and the V-VIII grade point average. The data was taken from the Ministry of Education's official website.

In accordance with the purposes of the research, we have selected the following scales from the two instruments:

I. School Motivation and Learning Strategies Inventory (SMALSI) (Stroud, K.C., Reynoulds, C.R., 2006) (Romanian version, M. Porumb, coord., 2010)

A. *Academic motivation* represents the desire to receive information.

B. *Study Strategies* are defined as the conscious behaviors of a person while studying meant to enable the gaining and processing of information (selection of important information, creation of connections between already assimilated information and that recently acquired, memorizing strategies for the codification of information, etc.).

C. *Strategies used in tests* represent a set of abilities and knowledge regarding choosing the right answer, managing the time depending on the question's degree of difficulty.

D. *Test anxiety* represents a modifiable factor interfering with a student's ability to prove that they have gained a certain amount of information. The concept, as evaluated by SMALSI, contains the two traditional components of text anxiety, that is worry and exaggerated emotions (Cassady and Johnson, 2002).

II. Motivational strategies for learning (MSLQ) (Rao & Sachs, 1999), translated and adapted by O.R. Țugui-Ivan (2015).

E. *Self-efficacy* is the individual's belief concerning their abilities in organizing and executing actions in order to obtain certain designated types of performance.

F. *Self-regulation* is an individual's ability to monitor their own behavior in a relative autonomy when facing external pressure.

## 5. Findings

### 5.1. Correlation Analysis

Interpreting the results allows us to notice that there are positive and significant correlation between students' previous results and those obtained at the national examination ( $r = 0.652$ ,  $p < 0.001$ ), between the level of self-efficacy and test grades ( $r = 0.678$ ,  $p < 0.001$ ), as well as between motivation and results ( $r = 0.492$ ,  $p < 0.001$ ). Test results are positively correlated also to the use of learning strategies ( $r = 0.408$ ,  $p < 0.001$ ), using correct strategies during exams ( $r = 0.359$ ,  $p < 0.001$ ), as well as with the level of self-regulation ( $r = 0.372$ ,  $p < 0.001$ ). As far as the connection between test anxiety and exam results is concerned, the correlation is weak and negative ( $r = -0.208$ ,  $p = 0.002$ ). We have also noticed that the level of self-efficacy correlates strongly with academic motivation and the use of cognitive strategies, as we can see in the following table.

**Table 1.** Connection between motivational strategies, previous results and exam success

	Exam success	Cognitive strategies	Test strategies	Motivation	Self-efficacy	Self-regulation	Test anxiety	Previous results
Previous results	.652**	.356**	.285**	.356**	.471**	.270**	.000	1
Exam success	1	.408**	.359**	.492**	.678**	.372**	-.206**	.652**
Cognitive strategies	.356**	1	.664**	.718**	.470**	.568**	-.066**	.356**
Test strategies	.359**	.664*	1	.637**	.388**	.420**	.135*	.285**
Motivation	.492**	.718**	.637**	1	.628**	.547**	.023	.429**
Self-efficacy	.678**	.470**	.420**	.628**	1	.463**	-.360**	.471**
Self-regulation	.327**	.568**	.380**	.547**	.463**	1	-.296**	.270**
Test anxiety	-.206**	-.066	.135*	.023	-.360**	.296**	1	.000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

### 5.2. The effects of the gender variable on test anxiety, self-regulation, self-efficacy, school motivation and the use of cognitive strategies

Test T for independent samples shows there are no significant differences between boys and girls from the point of view of exam anxiety [ $F(2,218) = 16.052$ ,  $p > 0.05$ ]. The statistical results indicate significant differences between boys and girls concerning the other examined variables. Thus, 8<sup>th</sup> grade girls have more motivation for high academic results ( $M=37,74$ ,  $AS=8,35$ ) than boys do ( $M=46,69$ ,  $AS=8,63$ ), use cognitive strategies while learning more often ( $M=68,40$ ,  $AS=11,77$ ) than boys ( $M=55,03$ ,  $AS=10,74$ ), they use correct strategies to tackle tasks during tests more often ( $M=60,05$ ,  $AS=10,94$ ) than boys ( $M=50,64$ ,  $AS=11,71$ ). Also, girls have a higher self-regulation than boys ( $M=28,94$ ,  $AS=6,58$ ) and a feeling of self-efficacy that is again higher than in the boys ( $M=43,91$ ,  $AS=9,30$ ).

## 6. Discussions

Our study has aimed to verify the role of certain non-cognitive factors (self-efficacy, self-regulation, intrinsic motivation, test anxiety) in school performance. We have also verified the correlation between previous school results, cognitive strategies used by students during individual study sessions, optimal strategies used during testing and results obtained at the national evaluation at the end of the VIII-th grade.

This study confirms the findings in previous studies regarding the role of motivational factors in learning performance. Many studies have proven that intrinsic motivation is positively associated with student's educational success (Pintrich&DeGroot,1990, Schunk,1995, Zimmerman, 2008) and with their perception of their abilities (Ames, 1992). Moreover, a series of research studies have indicated that the goal orientation and the motivational one can influence another determinant factor of school performance, that is perceived self-efficacy (Au et.al, 2009). L.Gherasim and S.Butnaru (2013, p.74) have explained the basis and dynamics of this correlation: students intrinsically-oriented tend to attribute failure to internal, controllable causes (especially their effort), are more pleased by their results and they regulate their behavior in order to achieve future success, while extrinsically motivated students attribute their results to external causes in order to preserve their self-esteem. This study, however, contradicts another study on Romanian middle school students, which discovered that intrinsic and extrinsic motivation did not predict the grades and perceived competence of students (Gherasim, Butnaru, Iacob, 2011). The study confirms the conclusions of researchers who have discovered that the high levels of motivation and self-efficacy are positively correlated with the use of cognitive strategies and self-regulatory strategies in the case of middle school students (Pintrich&deGroot,1990, Pintrich, Roeser&deGroot, 1994).

As far as test anxiety is concerned, there has been no connection found between test anxiety and the use of cognitive strategies, however, it does have a negative relation with self-regulation in teenagers (Pintrich&deGroot,1990, Benjamin,McKeachie&Lin,1987). Our study indicates a moderate positive connection between test anxiety and self-efficacy. A. Bandura (1993, p.133) explains that students with a low level of confidence in their own ability to cope with academic tasks are vulnerable to achievement anxiety. More than this, previous experiences of academic success or failure can cause the anxiety to grow through their direct effect on the level of self-efficacy (Meece,Wigfield&Eccles, 1990). The feeling of self-efficacy is influenced by a series of emotional and physiological states, such as arousal, anxiety, which forms in true informative sources (Usher,Pajeras, 2006, p.127). Strong emotional reactions to academic tasks influence the students' confidence in their own abilities to gain success. Although our study does not reveal a powerful link between anxiety and performance, a significant percentage of students have confessed to feeling emotional and physiological effects associated to test anxiety. And, fear of evaluation is one of the main stress factors in a student's life.

Another objective of our research has dealt with checking certain gender differences regarding the tie between school success and non-cognitive factors. Our study confirms some previous findings which indicate the greater tendency for girls to use cognitive learning strategies, to show a greater level of intrinsic orientation towards learning than boys, as well as a higher level of self-efficacy and self-regulation. A series of previous research studies have reported gender differences regarding the level of self-efficacy (Saunders, Davis,Williams, 2004, Kerpelman and Mosher, 2004). The gender differences

concerning the dominance of the girls when it came to intrinsic motivation in learning have confirmed previous findings (Skaalvik&Skaalvik ,2004). There are studies which indicate girls have more intentions of continuing with their studies (Pricopie,2011) and have more confidence than boys in the ability of education to insure social and professional mobility (Bujorean, E.,2015). On the other hand, other studies have found no gender differences regarding the level of intrinsic motivation (Ryan&Pintrich,1997, Russilo&Arias, 2004) .

Our study contradicts previous results regarding differences between boys and girls from the point of view of test anxiety. A series of metaanalyses between 1990 and 2000 using data from researchers in various countries have shown a higher level of test anxiety in female subjects compared to male subjects (Zeidner, 1998; Robu, 2011; Ermolaev, 2016).

## 7. Conclusions

In the current context, students' ability to adapt to change entails that intellectual education in schools should involve, apart from the transmission of knowledge, attaining the methodology of learning and the building of a style of intellectual work (Momanu, M., 2008, p.97). Because orienting oneself to meta-cognitive goals brings an extra complexity to the teaching processes (Glava, A., 2007, p.30), it becomes necessary to project and organize certain teaching situations that will promote:

- The development of activities for planning, identifying the best learning strategies depending on the cognitive style and monitoring one's own progress and one's active dispositions (precision, involvement, focusing one's intellectual energy);
- The development of self-assessment strategies (Clipa et. al., 2011) allowing students to regulate their own learning process;
- Self-directed learning, seeing as the teacher is not the only source of knowledge
- Learning through cooperation that could permit confrontation, negotiation, restructuring and validating students' ideas and beliefs.

If we were to accept the idea that success is reflected in the student's test results, then we take into consideration the fact that non-cognitive factors might influence their performance during certain examinations. Consequently, the teacher will have to take this impact into consideration and, implicitly, adapt accordingly both the process of teaching-learning as well as the assessment procedure. The right environment for analyzing motivation, anxiety and attitude remains the classroom, where the practicing researcher will try to identify the causes of individual differences in using theoretical knowledge and practical abilities. On the other hand, individual determinants should be analyzed while interacting with contextual ones (parental support, the quality of the school environment, etc).

The exam is, without a doubt, a stressor, since it requires solving problems within a limited time span and as high a level as possible. Fear of not obtaining the desired result can cause anxiety and worry. Thoughts connected to the presence of undesired surprise situations or the perception of the other candidates (too many and very well-prepared) could cause the stressful situation to grow. Countering academic stress is highly linked with the efficiency with which students manage to go through and assimilate the study material, and, respectively, of the manner in which they organize their revision plan, their study strategies, but also on the manner in which they deal with their negative emotions. Practically,



students should learn to plan and organize study activities, taking into consideration the allotted time, their previous failures or successes, they should be aware of their own personality and ability so that they can be adequately motivated for constant learning during semesters, but also for intensive learning during exam sessions.

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