

SELF-EFFICACY AND MANIFESTATION OF MOTOR SKILLS IN PRIMARY SCHOOL CHILDREN

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ABSTRACT

Self-efficacy, as well as the understanding of emotions in children, is influenced by many factors such as gender, age, intelligence, and the manifestation of certain abilities through the form of motor and functional abilities. Adding to their importance, the manifestation of self-efficacy in the form of social, academic, and emotional components also contribute greatly to the manifestation of certain motor abilities. The aim of this work is to determine how much the manifestation of self-efficacy in the form of social, academic and emotional components contributes to the manifestation of certain motor skills of children, so that the improvement of self-efficacy would be part of the educational work. The sample consisted of 159 respondents, 80 males (body high 138.31+/-6.92, body weight 32.52+/-6.16) and 79 females (body high 140.29+/-7.94, body weight 34.76+/-7.36), of whom 79 were from the city and 80 from the suburbs, and 80 were in the third grade and 79 in the fourth grade of primary school. The research was conducted using the Self-Efficacy Questionnaire for Children in three areas: academic (which refers to the perceived ability to cope with learning and school material, and to meet school expectations), social (which refers to the perceived ability to relate to peers and perseverance) and emotional (which refers to the perceived ability to cope with negative emotions). The motor abilities were analysed using the Eurofit battery of tests. After analysing the results, no difference was observed between the subjects in the results of the self-efficacy questionnaire in relation to the sex of the subjects (social $t=0.78$ sig.=0.43, academic $t=0.76$ sig.=0.44, emotional $t=0.40$ sig.=0.68), age (social $t=-1.87$ sig.=0.06, academic $t=-1.65$ sig.=0.09, emotional $t=-0.72$ sig.=0.47) and place of residence (social $t=-0.69$ sig.=0.54, academic $t=0.43$ sig.=0.66, emotional $t=0.15$ sig.=0.87). However, a difference was observed in all Eurofit tests in subjects who had better results in certain components of self-efficacy. The key conclusion is that all three forms of self-efficacy (social, academic, and emotional) play a significant role in the expression of motor abilities.

Key words: self-efficacy, social development, emotional development, Eurofit

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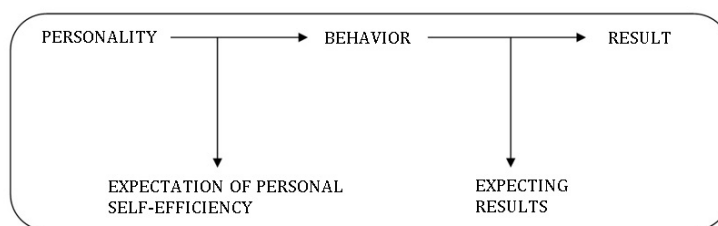
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INTRODUCTION

Everything that contributes to the understanding of society and social relations helps the child to expand his freedom of action, to remove fears that are hidden as a result of not knowing himself, society, and the nature around him (Šuran, 2018). Emotions play an important role in a child's development and it is very important to pay special attention to the expression of children's emotions (Frevert, Eitler, & Olsen, 2014). According to the authors, self-efficacy as a form of expressing certain emotions in children should be given a lot of attention and this form of expressing emotions should be taken very seriously (Bandura, 1977; Adorić, Proroković, Penezić, & Tucak, 2006). According to Bandura, self-efficacy refers to individuals' beliefs about whether they can complete a certain task (Bandura, 1977).

Self-efficacy, as well as the understanding of emotions in children, are influenced by many factors such as gender, age, intelligence, personality or motivation of the child, then environmental factors such as socioeconomic status, parents' education and the quality of family relationships (Korajac, 2021). The environment in which it grows and develops in everyday life plays a big role in the child's development (Macuka, & Burić, 2015; Babarović, Burušić, & Šakić, 2021). Self-efficacy is the main concept of social-cognitive theory and represents an individual's assessment of his/her own abilities to organize and perform the actions needed to achieve the desired result, and these assessments and beliefs then influence behavior (Bandura, 1997). According to Bandura's theory, self-efficacy represents two foundations of different expectations. The first is the expectation of the end result, that is, the belief that some behavior will (or will not) lead to the desired result. Another is the expectation of personal efficacy, that is, the individual's belief that he/she is capable (or not capable) of achieving the required behavior (Bandura, 1999). According to (Bandura, 1977), the relationship between these two types of expectations is shown as follows (Figure 1).



*Figure 1 - Conceptual difference between expectations of personal efficacy and expectations of results
(Ivanov & Penezić, 2001).*

Competence is the possession of certain abilities and capacities to act effectively, which suggests that competence represents the potential for action, while efficacy is the power to achieve a result (Korajac, 2021). A child who is considered to be competent is likely to be efficacious, while a child who is considered to be efficacious is certainly competent (Bezinović, 1988). Expectations of personal efficacy are based on four basic sources of information: experiences with personal results in similar situations, observations of the success of others in similar situations, verbal

reassurance, and emotional or physiological arousal (Bandura, 1999). In addition to general self-efficacy, specific self-efficacies can also be measured, which were included in this work as part of the self-efficacy scale for children and can be divided into three subscales: social, academic and emotional self-efficacy (Bandura, 1999; Adorić, Proroković, Penezić, & Tucak, 2006). Social self-efficacy refers to an individual's belief that they are capable of engaging in and participating in the social tasks necessary to initiate and maintain interpersonal relationships (Smith, & Nancy, 2000). Academic self-efficacy refers to the perceived ability to cope with learning and schoolwork and to meet school expectations. In addition, children who demonstrate higher academic self-efficacy have better academic performance (Bandura, 1999). Emotional self-efficacy refers to the perceived ability to cope with negative emotions, but also to the individual's belief that he or she can understand and manage personal emotions (Adorić, Proroković, Penezić, & Tucak, 2006).

Motor abilities are part of anthropological characteristics, and are based on the specific level of development of the basic latent dimensions of movement of a person and the ability to participate in solving and performing motor tasks (Marinac, 2018). Each individual motor ability is regulated by the appropriate mechanisms of the central nervous system that manage it, and they are connected to other human abilities (Pejčić, 2005). If motor skills are not developed to the level that is objectively possible to achieve given genetic limitations, it is highly likely that such an individual will not be able to successfully and easily perform various everyday tasks, nor will the development of other characteristics and abilities with which motor skills are associated improve.

The aim of this work is to determine how much the manifestation of self-efficacy in the form of social, academic and emotional components contributes to the manifestation of certain motor skills of children, so that the improvement of self-efficacy would be part of the educational work.

MATERIALS AND METHODS

The sample of respondents consisted of 159 respondents, 80 boys (body high 138.31+/-6.92, body weight 32.52+/-6.16) and 79 girls (body high 140.29+/-7.94, body weight 34.76+/-7.36), of which 79 respondents from the city and 80 respondents from suburban settlements, and 80 third grade and 79 fourth grade primary school respondents (9-11 years). Parents were informed about the research and signed consent for each child. The research was approved by the Ethics Committee.

Self-efficacy was analyzed using the *Self-efficacy Questionnaire for Children* (Muris, 2001) in three areas: academic (which refers to the perceived ability to cope with learning and school material, and to meet school expectations), social (which refers to the perceived ability to relate to peers and perseverance) and emotional (which refers to the perceived ability to cope with negative emotions) (Figure 2).

Social self-efficacy was analyzed using 9 questions (2, 6, 8, 11, 14, 17, 18, 20, 23), academic self-efficacy was analyzed using 8 questions (1, 4, 7, 10, 13, 16, 19, 22), while the emotional component was analyzed using 7 questions (3, 5, 9, 12, 15, 21, 24).

Based on this, 3 subtests were formed that specifically analyzed a certain self-efficacy, by adding the answers and dividing by the number of questions, thus obtaining the average answer values for each subtest separately.

SEQ-C	Read each statement carefully and indicate how much that statement applies to you by circling the number that indicates that answer. Answer quickly and don't think long about the questions asked.
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1= NOT at all 2=mostly NO 3=not sure 4=mostly YES 5=completely YES

Age: _____

Gender: M/F

	CLAIMS	Answers
1.	How well can you get teachers to help you when you get stuck on schoolwork?	1 2 3 4 5
2.	How well can you express your opinions when other classmates disagree with you?	1 2 3 4 5
3.	How well do you succeed in cheering yourself up when an unpleasant event has happened?	1 2 3 4 5
4.	How well can you study when there are other interesting things to do?	1 2 3 4 5
5.	How well do you succeed in becoming calm again when you are very scared?	1 2 3 4 5
6.	How well can you become friends with other children?	1 2 3 4 5
7.	How well can you study a chapter for a test?	1 2 3 4 5
8.	How well can you have a chat with an unfamiliar person?	1 2 3 4 5
9.	How well can you prevent to become nervous?	1 2 3 4 5
10.	How well do you succeed in finishing all your homework every day?	1 2 3 4 5
11.	How well can you work in harmony with your classmates?	1 2 3 4 5
12.	How well can you control your feelings?	1 2 3 4 5
13.	How well can you pay attention during every class?	1 2 3 4 5
14.	How well can you tell other children that they are doing something that you don't like?	1 2 3 4 5
15.	How well can you give yourself a pep-talk when you feel low?	1 2 3 4 5
16.	How well do you succeed in understanding all subjects in school?	1 2 3 4 5
17.	How well can you tell a funny event to a group of children?	1 2 3 4 5
18.	How well can you tell a friend that you don't feel well?	1 2 3 4 5
19.	How well do you succeed in satisfying your parents with your schoolwork?	1 2 3 4 5
20.	How well do you succeed in staying friends with other children?	1 2 3 4 5
21.	How well do you succeed in suppressing unpleasant thoughts?	1 2 3 4 5
22.	How well do you succeed in passing a test?	1 2 3 4 5
23.	How well do you succeed in preventing quarrels with other children?	1 2 3 4 5
24.	How well do you succeed in not worrying about things that might happen?	1 2 3 4 5

Figure 2 - Layout of the Self-efficacy Questionnaire for Children (Muris, 2001).

The motor abilities were analyzed using the Eurofit battery of tests (Hadžikadunić, Hadžikadunić& Avdić, 1987). This battery of tests is adapted for pupils from the sixth grade of elementary school and older. However, as the sample of respondents in this work was in the third and fourth grade of elementary school, the tests were adapted to their capabilities and way of performance. To collect data, the following tests were performed: flamingo-FLB (balance assessment test), hand tapping-PLT (movement frequency assessment test), sit and reach-SAR (flexibility assessment test), standing long jump-SBJ (explosive strength assessment test), hand grip-HGR (strength

assessment test), lying down sit-SUP (repetitive strength assessment test), squat hold-BAH (static strength assessment test) and running back and forth 10x5m-SHR (test to evaluate running speed and agility). Basic descriptive parameters (descriptive statistics) and comparative statistics (independent T-test) were calculated. All results are presented in tables and graphs, and were processed with the statistical program SPSS version 20.

RESULTS WITH DISCUSSION

Table 1 - Descriptive and comparative statistics of respondents in all three subtests in relation to gender, age and place of residence

Demographic characteristics						
	gender		age		place of residence	
	m	f	third	fourth	city	suburb. area
Subtest	social		social		social	
M	4,21	4,11	4,18	4,14	4,27	4,05
KS	0,42	0,11	0,18	0,10	0,08	0,30
t	0,78		-1,87		-0,69	
Sig.	0,43		0,06		0,54	
ES	0,09		0,37		0,07	
Subtest	academic		academic		academic	
M	4,08	3,98	4,06	4,00	4,15	3,91
KS	0,33	0,35	0,35	0,07	0,10	0,16
t	0,76		-1,65		0,43	
Sig.	0,44		0,09		0,66	
ES	0,09		0,31		0,03	
Subtest	emotional		emotional		emotional	
M	4,16	4,06	4,14	4,08	4,23	4,00
KS	0,35	0,08	0,73	0,07	0,08	0,16
t	0,40		-0,72		0,15	
Sig.	0,68		0,47		0,87	
ES	0,03		0,08		0,00	

Legend: M-mean, KS-valuesof normality of data distribution, t-value of independent T-test, Sig.-significance, ES-effect difference

Observing the results presented in Table 1, it can be concluded that the demographic characteristics of the respondents (gender, age and place of residence) did not affect the statistically significant difference between the respondents in all three subtests that examined self-efficacy. Although the research did not show a statistically significant difference in the results on the self-efficacy questionnaire between male and female pupils, it can still be confirmed that male pupils have a higher level of self-efficacy in all subtests that analyzed the social, academic and emotional components compared to female pupils. Confirmation of these results can also be found in the literature that shows potential demographic differences in self-efficacy and help-seeking, including gender. For example, an impact has been found in self-efficacy (Ryan, Gheen, & Midgley, 1998) and help-seeking (Ryan, Gheen, & Midgley, 1998; Ahmad, Hussain, & Azeem, 2012; Putwain, & Daniels, 2010), with girls being less self-efficacious and more likely to seek help than boys. The research also found no statistically significant difference

between third and fourth grade pupils. The literature mentions that age has been found to be a negative predictor of academic achievement. Accordingly, it can be said that academic achievement will decline as children grow older. In particular, when we consider the increased importance of peer relationships and social acceptance during this period of life, it is known that pupils' academic self-efficacy and academic achievement can be negatively (Phillips, & Lindsay, 2006) or positively (Wentzel, 1991) influenced by the quality of friendships. Finally, the research did not show a statistically significant difference in the results on the self-efficacy questionnaire between respondents in relation to their place of residence, and it was concluded that pupils with a place of residence in the city had a higher level of self-efficacy on all subtests that analyzed the social, academic and emotional components compared to pupils who live in suburban areas.

Since the essence of this research was related to the examination of the manifestation of certain motor abilities in relation to the achieved results that showed a certain level of self-efficacy of the respondents, the sample was divided. The complete sample of respondents was divided into two groups, in such a way that one group consisted of respondents who had average results in all subtests above 4 (group 1), while the other group consisted of respondents who had average values below 4 (group 2). Table 2 shows their results.

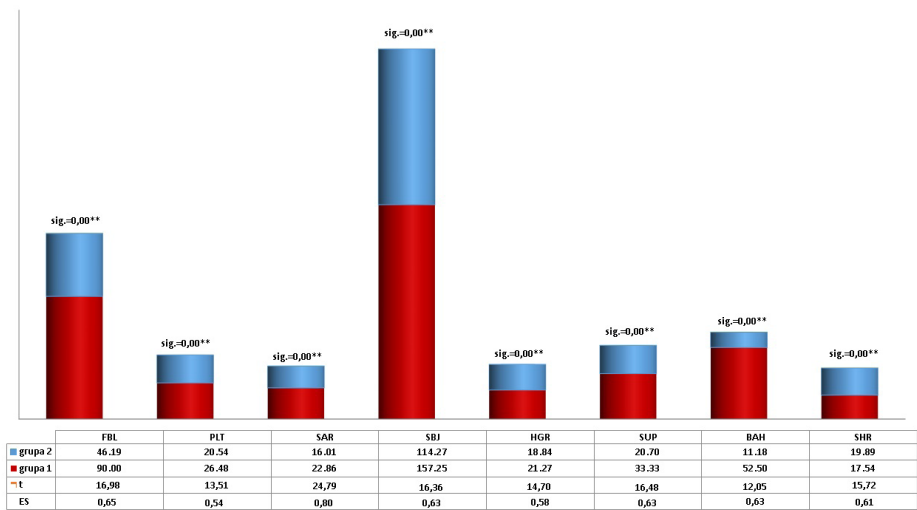
Table 2 - Results of two groups of respondents on all subtests

groups	Subtests					
	social		academic		emotional	
	M	S.D	M	S.D	M	S.D
Group 1	4,65	0,23	4,31	0,66	4,30	0,69
Group 2	3,67	0,42	3,74	0,28	3,92	0,27

Legend: M- mean, S.D-standard deviation

On the sample which was divided in this way, the results of the manifestation of certain motor abilities that were collected using the Eurofit battery of tests were analyzed. The results obtained in relation to the social self-efficacy subtest are shown in graph 1. Based on the results shown in Graph 1, it can be seen that group 1, which had better results in the social efficiency subtest, on average also achieved better results in all tests of the Eurofit battery. Based on the significance value (sig.=0.00**), it can be concluded that there is a statistically significant difference between the groups on all tests, i.e. that the respondents who showed better social self-efficacy (which referred to the perceived ability to relate to peers and perseverance), achieved better results in demonstrating motor skills. The effect of difference (ES- size of effect of difference) was also calculated using Partial eta squared analysis (Cohen, 1988), which ranged from (0.54-0.80). Based on this analysis, it can be concluded that the variables: flamingo (FBL)-65%, hand tapping (PLT)-54%, sit and reach (SAR)-0.80, standing long jump (SBJ)-63%, hand grip (HGR)-58%, sit-up (SUP)-63%, squat endurance (BAH)-63% and 10x5m back-and-forth run (SHR)-61% can be explained by the difference achieved in the social self-efficacy subtest.

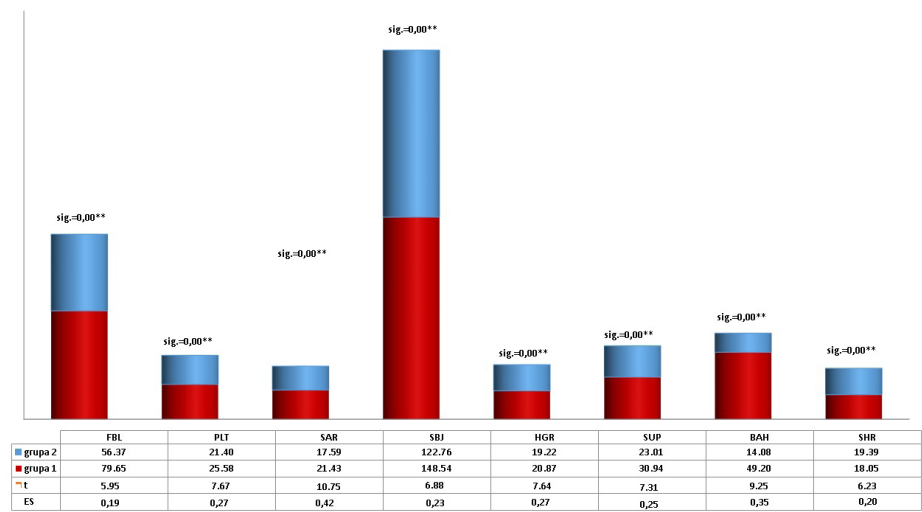
Graph 1 - Results of the respondents in the Eurofit battery of tests in relation to the social self-efficacysubtest



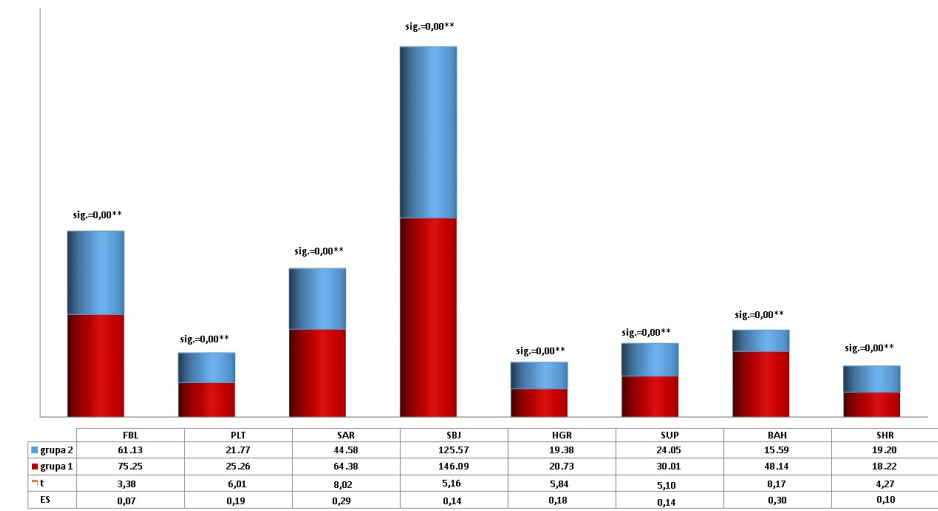
Legend:flamingo-FLB (balance assessment test), hand tapping-PLT (movement frequency assessment test), sit and reach-SAR (flexibility assessment test), standing long jump-SBJ (explosive strength assessment test), hand grip-HGR (strength assessment test), lying down sit-SUP (repetitive strength assessment test), squat hold-BAH (static strength assessment test) and running back and forth 10x5m-SHR (test to evaluate running speed and agility), t-value of independent T-test, Sig.-significance, ES-size of effect difference

Based on the results shown in graph 2, it can be noted that group 1, which had better results in the academic efficiency subtest, also achieved better results on average in all tests of the Eurofit battery. Based on the significance value (sig. =0.00**), it can be concluded that there is a statistically significant difference between the groups in all tests, i.e. that the respondents who showed better academic self-efficacy (which refers to the perceived ability to cope with learning and school material, and to meet school expectations), achieved better results in demonstrating motor skills. The effect of difference (ES- size of effect of difference) was also calculated using Partial eta squared analysis (Cohen, 1988), which ranged from (0.18-0.42). Based on this analysis, it can be concluded that the variables: flamingo (FBL)-18%, hand tapping (PLT)-27%, sit and reach (SAR)-0.42, standing long jump (SBJ)-23%, hand grip (HGR)-27%, sit-up (SUP)-25%, squat endurance (BAH)-35% and 10x5m back-and-forth (SHR)-20% can be explained by the achieved difference in the academic self-efficacy subtest.

Graph 2 - Results of the respondents in the Eurofit battery of tests in relation to the academic self-efficacy subtest



Graph 3 - Results of respondents in the Eurofit battery of tests in relation to the emotional self-efficacy subtest



The results shown in Graph 3 also show that group 1, which had better results in the emotional efficacy subtest, also achieved better results on average in all tests of the Eurofit battery. Based on the significance value (sig.=0.00**), it can be concluded that there is a statistically significant difference between the groups in all tests, i.e. that the respondents who showed better emotional self-efficacy (which refers to the perceived ability to cope with negative emotions) also achieved better results in the manifestation of motor abilities. The effect of difference (ES-effect size of difference) was also calculated using Partial eta squared analysis (Cohen, 1988), which ranged

from (0.07-0.30). Based on this analysis, it can be concluded that the variables: flamingo (FBL)-7%, hand tapping (PLT)-19%, sit and reach (SAR)-0.29, standing long jump (SBJ)-14%, hand grip (HGR)-18%, sit-up (SUP)-14%, squat endurance (BAH)-30% and 10x5m back-and-forth run (SHR)-10% can be explained by the difference achieved on the emotional self-efficacy subtest.

Children with developmental and emotional disorders are restricted in participating in games and play, which may lead to inactive lifestyles and further disruption of their psychosocial and physical development (Emck, Bosscher, Beek & Doreleijers, 2009). The lower self-efficacy of children leads to lower motor performance and their preference to participate in activities (Engel-Yeger & Hanna Kasis, 2010). However, in addition to these claims, we must not forget, and pay special attention to the emotional development of children and their emotional state in those critical periods of development. The reason for this can be seen from the results of this research, which showed that emotions, through the manifestation of self-efficacy, also play a significant role in the manifestation of certain motor skills. Pejčić (2005) states that motor skills are the basic content of physical and health culture in children. Children with emotional disorders have balance problems and self-perceived motor incompetence; children with behavioral disorders show poor ball skills and tend to overestimate their motor performance; children with pervasive developmental disorders demonstrate poor gross motor performance and self-perceived motor incompetence (Emck, Bosscher, Beek & Doreleijers, 2009). This tells us that we should view children as complete individuals, that is, individuals with certain latent motor skills, but also as individuals who have emotions. As we have seen from the results of this research, emotions play a major role in understanding how much they can actually manifest their abilities what is same as results got research conducted on Italian schoolchildren, self-efficacy was greatly perceived by better motor-test performers, especially by females (Codella, Puci, Vandoni, Correale, Galvani, Togni, Casolo, Passi, Orizio, Alberti, Esposito, Montomoli, & La Torre, 2020). Motor skills are very important for the optimal development of abilities and traits in childhood and are an essential foundation for the acquisition, scope and quality of many professional and kinesiology motor skills. Motor skills, which in most cases are developed in preschool and elementary school children, represent the basis for later specific abilities, i.e. movement structures (Jukić, 2016). Based on the aforementioned claims and research, it can be concluded that the development of motor knowledge and skills should be approached properly and at the time when children are most sensitive to their development. The selection of motor abilities as the basic content ensures the achievement of defined goals of physical and health culture, which are mostly focused on the development of the most important abilities and traits and on the possibility of applying learned knowledge in everyday life situations. This provides room for further analysis, and in particular monitoring the emotional state of children during their time in schools and, as much as possible, in free activities. It is important to encourage the use of self-regulated learning strategies and increase motivation in the learning interventions in physical education classes, while also improving motor skills to engage in these activities (Susaki, 2021).

CONCLUSION

This paper has attempted to connect the previous presentations on the manifestation of motor skills with certain theories of the psychological state of children. The research showed that male pupils have a higher level of self-efficacy than female pupils and that fourth-grade pupils have lower results in determining the meaning of certain emotions compared to third-grade pupils. Also, the place of residence of pupils played a role in the difference in the expression of self-efficacy, where pupils with a place of residence in the city achieved better results than those pupils who live in suburban settlements. Finally, when self-efficacy was linked across the 3 subtests, the key conclusions were that all three forms of self-efficacy (social, academic, and emotional) play a significant role in the expression of latent motor abilities. This research can serve as a basis for further, more complex research on a larger sample with a larger number of tests of both self-efficacy and motor abilities.

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