Original Article

The effect of Montessori's educational approach on anxiety and self-efficacy in elementary students' interpersonal relationships

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ABSTRACT

The present research was conducted to investigate the effect of the Montessori educational approach on anxiety and self-efficacy in the interpersonal relationships of elementary students. The present study was of quasi-experimental research type with a control group and pretest-posttest design. The statistical population of this research was all third-grade male students who were studying in Mashhad in the academic year of 2019-2020, in one district; and then two schools (15 students from each school) were selected based on the random multi-stage cluster, as research statistical sample. Then one school was randomly selected as the control group and the other was selected as the experimental group. After determining the desired groups and performing the pre-test, the Montessori education was performed on the experimental group during 12 sessions of 45 minutes (two sessions per week) and the control group remained on the waiting list. After performing, the post-test was applied again on both groups. The tools included Children's Anxiety Questionnaire and Self-Efficacy Questionnaire. The collected data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (multivariate analysis of covariance) methods with the help of SPSS-24 software. The results showed that education by the Montessori method has had a significant effect on anxiety (and its components) and self-efficacy in the interpersonal relationships (and its components) of third-grade male elementary school students in Mashhad. Therefore, it can be said that this educational method is useful in better promotion of education and improving the learning level of students.

Keywords: Montessori education, anxiety, self-efficacy in interpersonal relationships, students

Introduction

Learning in children is a product of being in society. In a social environment, thinking, and learning development in children [1]. In different societies, a lot of money is allocated to children's learning and education. Of course, with the help of psychology, we can discover and study the advantages and disadvantages of education by presenting theories and having the necessary knowledge and awareness. In other words, we can introduce the best teaching methods for children (Lange, 2000; quoted by Setiawan & Ena, 2019) [2]. Therefore, to encourage students to learn, teachers must first acquire knowledge of the student to be more purposeful in learning [3]. This knowledge can keep students away from risk factors. One of these factors is anxiety. Anxiety and stressful situations are risk factors for emotional development. In this case, the behavioral and neural mechanisms that reinforce the power of incompatibility, cannot well understand and regulate emotions [4]. Anxiety in elementary school students causes irreparable damage over time [5]. Most teachers have students who are anxious about their studies. This anxiety can significantly affect a student's academic performance [6]. In the early years of school, the student needs a high level of self-image and flexibility [7]. While in these years, many of the behaviors of parents and teachers and the pressure they put on the student during the study indicate the

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existence of anxiety in the student [8]. At the same time, the student receives less than the desired level, and this reduces his / her motivation to study [9]. This is an important issue for elementary and high school students [10]. Researches have shown that anxiety in primary school students increases with age [11]. In their researches, Zohreh and Marjan Sayadpour (2017), Nadem, Ali, Maqbool and Zaidi (2012), Syokwaa, Aloka and Ndunge (2014), Malanchini (2017), Balogun and Onyencho (2017) have shown the effect of anxiety on academic performance [12-16]. Students in the school environment need high self-confidence and high self-efficacy to fight anxiety. Self-efficacy is a motivational structure that has attracted the attention of researchers in terms of education in the past few decades [17]. Bandura defines self-efficacy as the willingness to approach a difficult task as an achievable challenge [18]. Teaching students to achieve self-efficacy concerning their peers can reduce their anxiety and improve academic performance [2]. In other words, students in interpersonal relationships come to different beliefs about their abilities [19]. In research on elementary students, Grenner et al. (2020) showed that there is a complex interaction between self-efficacy, writing, and performance [18]. Therefore, it is important to study the feelings of anxiety and self-efficacy in the interpersonal relationships of students according to Montessori's educational approach to comprehension. Although Montessori's education began first with children growing abnormally and then with children of low-income parents, it is now evolving and has spread to the public and private schools and kindergartens around the world [20]. According to Montessori (1946/1991), education should not be just a transfer of knowledge but should take a new path in pursuit of the freedom of human capacity [21]. This approach is based on the principle that children learn effectively if they receive information appropriate to their developmental stages [6]. The teacher guides the student into a regular and active life and then gives him/her the freedom to choose and perform in his / her activity [22]. The materials used in Montessori's method are not just simple educational materials that should be available to the teacher during his/her teaching, but these materials guide the child in the process of self-learning [23]. In his research Lillard (2019) has stated reasons that show evidence of the effectiveness of Montessori's method, which is consistent with previous researches [24]. In their study on 124 students, Dhiksha and Suresh (2016) showed that the self-esteem of students a la Montessori's method was significantly higher than that of traditional students and their anxiety was significantly lower [6]. Rice (2017) also reported the results of his research on the socialization of elementary school students as a result of Montessori's education [25]. According to internal studies, including the one done by Abbaszadeh (2016), who researched 30 female students in the third grade of elementary school, it was concluded that education a la Montessori affects students' academic interest [26]. Hosseinpour and Arefi (2015) showed that teaching a la Montessori is effective on students' social development [27].

Now, considering that the student needs a belief in self-efficacy within himself from the first years of study to be successful, and the experiences he/she gains during these years will build his/her self-confidence to achieve his/her future goals [28-30] and considering the adverse consequences of anxiety on academic performance and its widespread effects on the future of children, our research is typically necessary and important. Because in the future, many social activities are the responsibility of this group of society, and if they suffer from cognitive impairments and reluctance to study, they cannot play their role in society well. Therefore, considering the lack of research in the field of Montessori's education and considering the importance of two psychological constructs, anxiety and self-efficacy in interpersonal relationships, our research investigated the effect of Montessori's educational approach on anxiety and self-efficacy in students' interpersonal relationships. Therefore, in line with the objectives of this research, we proposed two hypotheses:

1. Montessori's educational approach affects elementary school students' anxiety.
2. Montessori's educational approach affects self-efficacy in the interpersonal relationships of elementary students.

Materials and Methods

Our research is applied in terms of purpose and is methodologically semi-experimental with pre-test-post-test and a control group.

Research participants

The statistical population of this research includes all male students in the third grade of elementary school who were studying in Mashhad in 2001-2020. The sample of this research included 30 people who were randomly selected based on multi-stage clusters. From among all primary schools for boys in the seven districts of Mashhad, we randomly selected one district and then two schools in this district. The third-grade classes of the two schools were randomly assigned to the control and experimental groups. Both groups were pre-tested for anxiety and self-efficacy in interpersonal relationships; then, 12 45-minute sessions of Montessori's method were performed on the experimental group. Finally, the post-test and filling the questionnaires were held for both groups. Inclusion and exclusion criteria for participation in study are 1) 9 and 10 years old students, 2) Studying in the third grade of elementary schools for boys in Mashhad, 3) Parents' dissatisfaction with the student's presence in the research stages.

Research tools

We used the following tools to measure the research variables.
Child Anxiety questionnaire: Wren and Benson developed this questionnaire in 2004 to assess the anxiety of children aged 7 to

12 years. This scale contains 25 items. Expressions of each subscale include: Thoughts: 4, 5, 7, 9, 11, 12, 15, 17, 20, 22, 24, non-task behaviors: 2, 6, 10, 14, 18, 21, 25 and involuntary reactions: 1, 3, 8, 13, 16, 19, 23. The questionnaire was scored based on the Likert scale, 1 for *never*, 2 for *sometimes*, 3 for *often,* and 4 for *always*. The minimum score on this scale is less than 40 and the maximum score is above 81. Wren and Benson (2004) evaluated the validity and reliability of this questionnaire in their studies and obtained Cronbach's alpha coefficient for the whole scale by 0.92 and the subscales of thoughts, non-task behaviors, and involuntary reactions, respectively by 0.89, 0.76, and 0.82 [31]. In Iran, Ahmadi and Baezat (2016) performed the validity and reliability of this questionnaire on 416 third, fourth, and fifth-grade elementary students; they reported a Cronbach's alpha coefficient for the whole scale by 0.85 [32].

Self-efficacy questionnaire in interpersonal relationships: This questionnaire was evaluated by Wheeler & Ladd (1982) for children's self-efficacy in two situations of conflict and non-conflict [33]. It eventually led to the development of a scale to measure the self-efficacy of elementary school children in interpersonal relationships with their peers. In a situation of conflict, the goal is to express direct opposition to peers with work that they are not interested in. While in non-conflict situations, there is less conflict between the goal of the child and his peers. This scale consists of 22 items and two subscales. Non-conflict situations: 1, 4, 6, 10, 11, 12, 13, 15, 17, 18, 20, 21, and conflictual situations: 2, 3, 5, 7, 8, 9, 14, 16, 19 and 22. The scale consists of 22 items written in incomplete sentences, followed by four options that are scored based on the Likert scale, including Score 4 for *very easy*, Score 3 for *easy*, Score 2 for *hard*, and Score 1 for *Very Hard*. The child was asked to fill in the blank by selecting one of the options. The minimum score on this scale is 22 and the maximum score is 88. Higher scores indicate greater self-efficacy [34]. To assess the reliability of this questionnaire, Cronbach's alpha coefficient of 0.87 and non-conflictual situation and conflict situation subscales were reported to be 0.78 and 0.83, respectively. Content validity was used to assess the validity of this scale [35]. In his research Ramezani Khorasgani (2011) obtained the Cronbach's alpha coefficient by 0.94 for all items of the self-efficacy scale in interpersonal relationships [36]. In research on 49 male and female students, Hossein Chari and Kiani (2008) reported a desired correlation coefficient for this scale (0.85) [37].

Montessori's training program

We should note that we adapted the content of the training sessions from Macho (1952; translated by Lafzi, 2016) [38]. The content of Montessori's training sessions was summarized in **Table 1**.

Table 1. Summary of the Content of Montessori's Training Sessions

Sessions	Program Content
First & Second Sessions	Understanding the concept of multiplication using a Montessori's math tutorial wooden box
Third & Fourth Sessions	Understanding the concept of fraction using Montessori's wooden fraction tray
Fifth & Sixth Sessions	Understanding the concept of the water cycle through the performance of a play: play and the choice of the role is the responsibility of the student himself, who played the role in a competition by bringing an appropriate mask and costume
Seventh & Eighth Sessions	Understanding the concept of solid, liquid, and gas as a group and holding hands (the concept of liquid), clinging to each other (the concept of gas) and apart and moving (the concept of gas)
Ninth & Tenth Sessions	Understanding the concept of area and environment: using paper cups, yarn, colored talc, checkered paper, and linen. Students can have an objective understanding of the area and environment. For example, they draw their friend's palm on paper (environment) and then paint it (area).
Eleventh & Twelfth Sessions	To understand the concept of teamwork and to communicate well with peers, students brought to school the ingredients of the food they had previously chosen and cooked in groups with the help of an instructor
Total Sessions	All test sessions are tailored to the students' preferences. The children ate breakfast and lunch together and helped the younger children to understand how to treat the younger ones as well as to feel a sense of responsibility and mutual respect. Besides, every week the children went to the greenhouse workshop with the instructor and planted a plant they had grown in their favorite pot, watered it until the end of the experiment, and finally took it home as a valuable achievement. During the testing process, each child was rewarded depending on the child's ability.

Method of implementation

After determining the questionnaires, in the first step, to coordinate admission to schools and collect data through the deputy of the university, we obtained a letter of admission to schools. In the next step, by referring to the education of Khorasan Razavi province, we received the confirmation of entering schools. Schools were selected by multi-stage random clustering. After receiving the confirmation of entering the mentioned boys' schools, by referring to these schools in Mashhad with the coordination of school principals, we executed both the Anxiety Questionnaire [31] and self-efficacy in interpersonal relationships [33] for the third-grade students in the academic year 2019-2020, under the supervision of the researcher, and completed them without defects. Then, Montessori's training was performed on the experimental group for 12 sessions. Sessions included twice a week and each session lasted for 45 minutes. At the end of the sessions on the experimental group, both questionnaires were completed again by both experimental and control groups in the presence of the researcher. We should note that to comply with the ethical principles, the students of both groups were assured that all their information is kept confidential and there is no need to

write their names on the questionnaire. The control group received the same training program after completing the research.

In this research, to analyze the data and test the research hypotheses, we performed two methods of descriptive statistics (mean and standard deviation) and inferential statistics (Mankova test) in SPSS-24 software. To evaluate the normality of the data, we used skewness and kurtosis, Levin test for homogeneity of variances, homogeneity of regression slope, and finally, to test the research hypothesis, we used analysis of covariance.

Results and Discussion

As mentioned, we selected the research sample from 9 and 10 years old boys of the third grade with an equal number (15 people) in both control and experimental groups. In the descriptive statistics section, participants were pre-tested and post-tested. **Table 2** shows the mean and standard deviation of their scores in the control and experimental groups.

Table 2. Mean and Standard Deviation of Research Variables and Its Components in Pre-test and Post-test

Research Variables	Group	Pre-test		Post-test	
		Mean	Standard Deviation	Mean	Standard Deviation
Anxiety	Experiment	71.76	4.92	37	4.13
	Control	73	7.40	71	3.39
Thoughts	Experiment	36.46	2.41	16.53	3.33
	Control	34.4	3.18	34.73	2.91
Non-task Behaviors	Experiment	17.73	2.93	11.13	2.13
	Control	20.13	3.94	20	1.77
Involuntary Reactions	Experiment	17.26	2.76	9.40	1.45
	Control	19.80	5.60	16.73	2.12
self-efficacy in Interpersonal Relationships	Experiment	46	3.25	75	4.81
	Control	45.2	4.70	47.86	4.40
Conflictual Situations	Experiment	20	3.16	34.06	3.63
	Control	18.66	3.61	22.13	3.31
Non-conflict Situations	Experiment	26	1.81	41.06	3.26
	Control	25.53	3.35	25.73	2.73

As can be seen in Table 2 that participants in both groups have similar average levels of anxiety pre-test (its components) and self-efficacy in interpersonal relationships (its components); but in the post-test, in the experimental group, the anxiety variable has a lower mean level and the self-efficacy variable in interpersonal relationships has a higher mean level than the control group participants. According to the research hypotheses, it is necessary to use the analysis of covariance test to analyze inferential statistics. Therefore, assumptions should be checked before performing the test. To use multivariate analysis of covariance, the two assumptions of data normality and variance homogeneity must first be confirmed. Skewness was used to confirm the normality and the Levin test was used to the consistency of the variances. The skewness results were obtained for almost all data between +1 and -1. Therefore, it is possible to accept the normality of the variable of anxiety (and its components) and that of the self-efficacy in interpersonal relationships (and its components), which is one of the main assumptions for using the parametric statistical method. The results of the Levin test are shown in **Table 3**.

Table 3. Levin Test Results to Investigate the Homogeneity of Error Variance in the Groups under Study

Variable	F	Df1	Df2	Significance Level
Anxiety	0.078	1	28	0.771
Thoughts	0.981	1	28	0.330
Non-task Behaviors	2.26	1	28	0.120
Involuntary Reactions	0.989	1	28	0.328
Self-efficacy in Interpersonal Relationships	0.042	1	28	0.840
Conflictual Situations	0.134	1	28	0.717
Non-conflict Situations	0.227	1	28	0.637

According to the results of **Table 3**, the significance level of this test for all variables is higher than 0.05, so the consistency of variances is accepted and the desired assumption is established. Finally, we investigated the homogeneity of regression slope, which is another assumption of the test. In this investigation, the interaction between the independent group (training) and the inverse variables (pre-tests) should be significant according to the null hypothesis. According to the results, F for anxiety, thoughts, non-task behaviors, and involuntary reactions is 0.83, 0.19, 1.54, and 0.41, and the significance level is 0.44, 0.82, 0.23, and 0.66, respectively. It is greater than 0.05. Therefore, the null hypothesis is confirmed in this case. According to the results, F for the self-efficacy in interpersonal relationships, conflictual situations, and non-conflict situations is respectively 0.116, 0.831, and 0.456, and the significance level is 0.142, 0.182, and 0.639, which is greater than 0.05. Therefore, the null hypothesis of this variable is also confirmed. Consequently, the homogeneity of the regression slope has been observed. Therefore, the data of this research can enter the analysis of covariance.

To investigate the first hypothesis of the research, the effect of Montessori's educational approach on the elementary students' anxiety, we used multivariate analysis of covariance (ANCOVA test). **Table 4** reports the results of the analysis of covariance.

Table 4. Results of Multivariate Analysis of Covariance

	Effect	Value	F	Degree of Freedom	Significance Level	Eta Square
Education	Pillai's Trace	646.0	1.12	3	000.0	64.0
	Wilks Lambda	354.0	1.12	3	000.0	64.0
	Hotelling's Trace	82.1	1.12	3	000.0	64.0

Roy's Largest Root	82.1	1.12	3	000.0	64.0

If the one-way ANCOVA is statistically significant, the significance level should be less than 0.05. As can be seen, the significance level in **Table 4** above is 0.000. This shows that there is a significant difference in terms of the variables under study between the control and experimental groups. As a result, in the case of this hypothesis, the null hypothesis is rejected and the research hypothesis is confirmed. Therefore, we can say with 95% confidence that there is a significant difference between the anxiety of the third-grade elementary school boys who received Montessori's education and the students who did not receive this education. Moreover, **Table 5** has reported the results of multivariate analysis of covariance of the second hypothesis of the research and the effect of Montessori's educational approach on self-efficacy in interpersonal relationships of elementary students.

Table 5. Results of Multivariate Analysis of Covariance

	Effect	Value	F	Degree of Freedom	Significance Level	Eta Square
Education	Pillai's Trace	0.419	5.28	3	0.007	0.419
	Wilks Lambda	0.581	5.28	3	0.007	0.419
	Hotelling's Trace	0.721	5.28	3	0.007	0.419
	Roy's Largest Root	0.721	5.28	3	0.007	0.419

As can be seen, the significance level in **Table 5** above is 0.007. This shows that there is a significant difference in terms of the variables under study between the control and experimental groups. Consequently, in the case of this hypothesis, the null hypothesis is rejected and the research hypothesis is confirmed. Therefore, we can say with 95% confidence that there is a significant difference between self-efficacy in interpersonal relationships of elementary school students who received Montessori's education and the students who did not receive this education. The results of the adjusted mean for the variables of anxiety, thoughts, non-task behaviors, and involuntary reactions in the control group were 71.10, 34.12, 19.99, 16.98, and in the experimental group 36.98, 16.49, 11.05, and 9.43, respectively. It showed that by removing the auxiliary variable, students' anxiety in the experimental group decreased. The results of the adjusted mean for the variable of the self-efficacy in interpersonal relationships, conflictual situations, and non-conflict situations in the control group were 48.71, 26.00, and 22.69 and in the experimental group were 75.27, 43.27, and 41.15, respectively. This showed that self-efficacy in interpersonal relationships of students in the experimental group increased. Consequently, according to the findings, Montessori's teaching method has an effect on anxiety and self-efficacy in interpersonal relationships of elementary students.

Conclusion

An important factor influencing students' academic performance and their level of learning is anxiety; it causes them not to be able to cope well with difficulties and, as a result, their self-esteem decreases [6]. Another important factor is self-efficacy belief, which affects a person's intrinsic motivation and behavior because this factor can regulate the relationship between knowledge and practice [39]. Therefore, we considered it necessary to examine the effect of Montessori's education on personality factors such as anxiety and self-efficacy in students' interpersonal relationships. The present research focuses on this area. In this research, we showed that Montessori's education has a significant effect on elementary school students' anxiety and reduces it. The results of this research are consistent with those of Dhiksha and Suresh (2016), Tovazzi and Caprara (2019), and Lillard (2019) [6, 23, 24]. In domestic researches, the findings of our research are consistent with the studies of Yarmohammadzadeh and Fakhimi Hosseinzadeh (2019) and Abbaszadeh (2016) [26, 40]. Dhiksha and Suresh (2016) showed that in Montessori's teaching method compared to the traditional method, the students have higher self-esteem and lower anxiety [6]. Increasing students' self-esteem leads to better academic performance and the child perceives the feeling of being useful. In their research, Tovazzi and Caprara (2019) showed that the experience of high success in education through Montessori's educational method is beneficial to prevent high rates of anxiety in students [23]. Therefore, Montessori's method was shown to be an optimal solution, especially for elementary students. In his research, Lillard (2019) outlined the influential evidence as to why children are attracted to the class environment and the educational content of Montessori's method and showed that it is still an acclaimed method of educating children [24]. In their article, Yarmohammadzadeh and Fakhimi Hosseinzadeh (2019) showed that Montessori's method increases the motivation of primary school students [40]. Abbaszadeh (2016) showed that this educational method increases the interest of students in the study [26]. Therefore, students in Montessori schools will have better academic performance based on the results obtained from previous researches as well as the present one, and dropping out of school will happen less than before due to the desire to learn in these schools. This explains that when children feel that their educational process is improving, their self-confidence is strengthened and their level of learning increases. Researches have shown that there is a direct relationship between feeling successful and reducing anxiety.

Another finding of this research showed that Montessori's education has a significant effect on self-efficacy in the interpersonal relationships of elementary students and increases self-efficacy in their interpersonal relationships. The results of this research are consistent with Setiawan and Ena (2019), Wheeler (2018), and Shivakumara, Dhiksha, and Nagaraj (2016) [2, 41]. In domestic researches, due to the lack of direct research in this field, the findings of the present research are consistent with the studies of Hosseinpour and Arefi (2015), Rahmani Boldaji, and Nezamzadeh Ejieh (2018) and are

inconsistent with the research of Golkarian (2018) [26, 42, 43]. Setiawan and Ena (2019) also stated in their research that students who are trained in Montessori's method will have a high sense of self-efficacy [2]. In research, Wheeler (2018) showed that Montessori's teaching method affects the self-efficacy and self-regulatory behavior of elementary students [44]. In research, Shivakumara et al. (2016) found that children who were taught by Montessori's method had higher self-image and social development than those trained by the traditional method [41]. This indicates a significant difference between traditional and Montessori methods. Hosseinpour and Arefi (2015) considered Montessori's educational method as a cause to increase the social development of children [27]. While Golkarian (2018) stated that Montessori's method does not affect children's social development [43]. Despite the many positive findings of the Montessori method, there is a possibility that the researcher has not selected the appropriate number of samples and locations that can be used to implement Montessori's method with appropriate tools. The non-adherence of some schools to the principles of Montessori's method has caused them to not be able to execute the implemented programs well, and consequently, they have not received a significant impact from their work. In explaining this effectiveness, we should state that the main issue in Montessori's method is the independence of the child, during which the student, due to his high self-efficacy, establishes a more useful and favorable relationship with his peers. So, the student achieves good social development while studying. One of the signs of social growth is the interest in teamwork and a sense of ability to do work. As the level of self-efficacy increases, the student will face academic achievement and increased learning. These findings show that Montessori's teaching method reduces students' anxiety about studying and learning and makes them interested in education. Moreover, in this research, Montessori children showed high self-efficacy. In this educational method, the students learn the concepts in their own space and learning style. Therefore, improving the teaching and learning process increases their self-confidence, flexibility, and self-efficacy. The experience of high success also seems to be a key issue in preventing high rates of anxious students. Therefore, Montessori's teaching method shows an optimal solution, especially for elementary students. Montessori accurately defines the teacher as a manager because he/she essentially plays the role of a class observer who does not want to teach as a unit speaker but wants to guide children on the path of development (of mind and psyche). The teacher should not only convey the concepts to the students but on the contrary, he/she should guide them in their development path with the least amount of intervention. Thus, the student learns to look critically at his work and to acquire skills in recognizing, correcting, and learning from mistakes. Learning based on experimental and practical methods in this educational method has caused students to have high self-efficacy and low anxiety. Therefore, we believe that the traditional teaching method should be replaced with Montessori's teaching method to grow and improve the academic performance of students. Because learning through the five senses, which is the main criterion of Montessori's method and the practical tools available in this method, increases the concentration and thus the level of learning in the student; by reducing anxiety and increasing the level of self-efficacy in interpersonal relationships, it increases the social development and communication with peers in them. One of the limitations of the present research concerns the statistical population, which consisted only of boys and one education district in Mashhad. Therefore, we suggest that future researches be conducted on both genders and in different areas of education to be more generalizable.

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References

1. Kaya MF. A qualitative research on determination of social studies teachers' perceptions of success. Turkish Studies. 2015;10:563-84.
2. Setiawan NA, Ena OT. Montessori Junior High School Students' Perceptions on Their Self-Efficacy in Reading. Indones J Eng Teach. 2019 Dec 31;8(2):26-37.
3. Soni A, Kumari S. The role of parental math anxiety and math attitude in their children's math achievement. Int J Sci Math Educ. 2017 Feb;15(2):331-47.
4. Warren SL, Zhang Y, Duberg K, Mistry P, Cai W, Qin S, et al. Anxiety and stress alter decision-making dynamics and causal amygdala-dorsolateral prefrontal cortex circuits during emotion regulation in children. Biol Psychiatry. 2020 Oct 1;88(7):576-86. doi: https://doi.org/10.1016/j.biopsych.2020.02.011.
5. Huberty TJ. Test and performance anxiety. Principal leadership. 2009 Sep;10(1):12-6.
6. Dhiksha J, Suresh A. Self-esteem and academic anxiety of high school students with Montessori and traditional method of education. Indian J Health Wellbeing. 2016 May 1;7(5):543.
7. Mammarella IC, Donolato E, Caviola S, Giofrè D. Anxiety profiles and protective factors: A latent profile analysis in children. Pers Individ Dif. 2018 Apr 1;124:201-8.
8. Rubinsten O, Marciano H, Eidlin Levy H, Daches Cohen L. A framework for studying the heterogeneity of risk factors in math anxiety. Front Behav Neurosci. 2018 Dec 3;12:291.
9. Caviola S, Carey E, Mammarella IC, Szucs D. Stress, time pressure, strategy selection and math anxiety in mathematics: A review of the literature. Front Psychol. 2017 Sep 1;8:1488.

10. Putwain DW, Pescod M. Is reducing uncertain control the key to successful test anxiety intervention for secondary school students? Findings from a randomized control trial. Sch Psychol Q. 2018 Jun;33(2):283-92.
11. Weems CF, Scott BG, Graham RA, Banks DM, Russell JD, Taylor LK, et al. Fitting anxious emotion-focused intervention into the ecology of schools: Results from a test anxiety program evaluation. Prev Sci. 2015 Feb;16(2):200-10. https://doi.org/10.1007/s11121-014-0491-1
12. Sayadpour Z, Sayadpour M. Effect of participatory learning on anxiety and motivation for academic achievement in students. Q Res Educ Sys, Tehran, 2017;39.
13. Nadeem M, Ali A, Maqbool S, Zaidi SU. Impact of anxiety on the academic achievement of students having different mental abilities at university level in Bahawalpur (Southern Punjab) Pakistan. Int Online J Educ Sci. 2012 Dec 1;4(3):519-28.
14. Syokwaa KA, Aloka PJ, Ndunge SN. The Relationship between anxiety levels and academic achievement among students in selected secondary schools in Lang'ata District, Kenya. J Educ Soc Res. 2014 May 2;4(3):403-13.
15. Malanchini M. Non-cognitive factors of educational achievement: motivation and anxiety. Ph.D. dissertation, Goldsmiths, University of London, 2017.
16. Balogun AG, Balogun SK, Onyencho CV. Test anxiety and academic performance among undergraduates: the moderating role of achievement motivation. Span J Psychol. 2017;20.
17. Assaran M, Tatar M, Seyed Moharrami I. Relationship between Self-Efficacy and Disappointment in Elementary Students. Tanin Salamat J. 2017;5(2):p. 49.
18. Grenner E, Johansson V, van de Weijer J, Sahlén B. Effects of intervention on self-efficacy and text quality in elementary school students' narrative writing. Logoped Phoniatr Vocol. 2020 Jan 7:1-0.
19. Peura PI, Viholainen HJ, Aro TI, Räikkönen EM, Usher EL, Sorvo RM, et al. Specificity of reading self-efficacy among primary school children. J Exp Educ. 2019 Jul 3;87(3):496-516.
20. Debs M. Diverse families, desirable schools: Public Montessori in the era of school choice. Harvard Education Press; 2021 Mar 9.
21. Montessori M. Education for a new world. Thiruvanmiyur, India: Kalashetra Press; 1946.
22. Montessori M. Il segreto dell'infanzia. Milano: Garzanti; 1999.
23. Tovazzi A, Caprara B. Montessori approach, math education and gender differences: how can teachers manage pupils' math anxiety?. FORMAZIONE & INSEGNAMENTO. Rivista internazionale di Scienze dell'educazione e della formazione. 2019 Jun 26;17(1):193-200.
24. Lillard AS. Shunned and admired: Montessori, self-determination, and a case for radical school reform. Educ Psychol Rev. 2019 Dec;31(4):939-65.
25. Rice EH. The impact of Montessori public elementary experiences on high school students (Doctoral dissertation, Capella University), 2017. (Order No. 10255712). Available from ProQuest Central Student. (1880564229). Retrieved from https://search.proquest.com/docview/1880564229?accountid=193930
26. Abbaszadeh Z. Effect of Montessori's method on the interest, amount, and outcome of the mathematics course for third third-grade elementary students, District 2 of Shiraz, MSc Thesis, Islamic Azad University, Faculty of Basic Sciences and Department of Mathematics; 2016.
27. Hosseinpour M, Arefi M. Investigating the effect of education a la Montessori on the social development of 5-6 year -year-old preschool children in Isfahan, Iran First International Comprehensive Congress of Psychology, Tehran, Iran Development Conference Center; 2015.
28. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. Psychol Rev. 1977 Mar;84(2):191-215.
29. Bandura A. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall. 1986;1986(23-28).
30. Bandura A. Self-efficacy: The exercise of control. New York City, New York: Freeman; 1997.
31. Wren DG, Benson J. Measuring test anxiety in children: Scale development and internal construct validation. Anxiety, Stress & Coping. 2004 Sep 1;17(3):227-40.
32. Ahmadi A, Baezat F. Factor structure and standardization of the Persian version of the Child Anxiety Scale. Q Clin Psychol Stud. 2015;6(24):180.
33. Wheeler VA, Ladd GW. Assessment of children's self-efficacy for social interactions with peers. Dev Psychol. 1982 Nov;18(6):795-805.
34. Hassanzadeh M. Investigating the Relationship between Family Communication Patterns, Social Self-Efficacy, and Creativity of Shiraz Middle School Students, MSc Thesis, Faculty of Educational Sciences and Psychology, Shiraz University, 2011.
35. Hussein Hossein Chari M. Comparison of perceived self-efficacy in social interaction with peers among a group of middle school male and female students. Psychol Stud. 2007;3(4):88-103.
36. Ramezani Khorasgani M. Relationship between self-efficacy, self-esteem, and hope among children with multiple sclerosis (M.S) and their comparison with healthy children in Isfahan, MSc Thesis, Imam Khomeini International University, Faculty of Social Sciences, Department of Psychology, 2011.
37. Hosseinchari M, Kiani R. Relationship between some demographic variables and perceived self-efficacy in social interactions with peers among junior high school students. Iran J Psychiatry Clin Psychol. 2008 Aug 10;14(2):184-92.

38. Macho C. Let me learn for myself, just guide me, translated by Lafzi, Leila, Zikr Publishing and Research Institute, Tehran, 2016.
39. Vorensky SB. Exploring teachers' self-efficacy about technology use in learning design and student performance in mathematics: A qualitative study about math anxiety, 2018.
40. Yarmohammadzadeh P, Fakhimi Hosseinzadeh K. Investigating the effect of teaching a la Montessori on self-image and motivation in first first-grade elementary school male students in Tabriz. Sci-Res J Educ Eval. 2019;45:31-50.
41. Shivakumara K, Dhiksha J, Nagaraj O. Efficacy of Montessori and traditional method of education on self-concept development of children. Int J Educ Policy Res Rev. 2016;3(2):29-35.
42. Rahmani Boldaji A, Nizamzadeh Ejieh A H. Investigating the effect of teaching a la Montessori on learning mathematical concepts and improving communication skills in students with intellectual disabilities. Except Educ. 2018;2(151):51-60.
43. Golkarian M. Investigating the effect of Montessori's educational method on the dimensions of creativity and social development of preschool children aged 3 to 6 years in Tabriz, Master Thesis, Payame Noor University, Tabriz, General Psychology, 2018.
44. Wheeler MW. The Effects of Record-Keeping on Teacher Self-Efficacy and Student Self-Regulation in the Primary Montessori Classroom, 2018. Retrieved from Sophia, the St. Catherine University repository website: https://sophia.stkate.edu/maed/281.